DRAFT
Class Environmental Assessment
Sanitary Sewer Crossing of the Holland River in the Vicinity of the Bradford Street Bridge
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1.0 Introduction

The Town of East Gwillimbury is located in the Regional Municipality of York encompassing an area of 238 square kilometres north of the Oak Ridges Moraine and is in close proximity to the designated lands of the Provincial Greenbelt Plan. The Town was formed by the amalgamation of the Township of East Gwillimbury with all the previously incorporated villages and hamlets within the township. The Town consists of a number of growing urban areas and villages including Holland Landing, Queensville, Mount Albert, River Drive Park, and Sharon. The northernmost interchange of Ontario Provincial Highway 404 is at the south edge of East Gwillimbury with an interchange proposed for the Queensville Sideroad between Leslie Street and Woodbine Avenue. The Study Area is presented on Figure 1.0-1.

MMM Group was retained by the Town to undertake a Schedule ‘B’ Municipal Class Environmental Assessment (Class EA) to address the wastewater servicing plan requirements of Official Plan Amendment Area No. 60 in Holland Landing. The wastewater servicing plan for the area directs all new and existing sanitary flows to York Region’s Bradford Street Pumping Station via a 525 mm sewer under the Holland River.

Section 1 of this Class EA provides an introduction to the undertaking, background information and an overview of the Municipal Class EA process. Section 2 of this report describes the public and agency consultation process undertaken to comply with Class EA requirements. Section 3 provides more detailed background information regarding policy adherence. Section 4 provides a needs assessment and justification of the project along with the Problem Statement and description of the project. Section 5 describes the existing natural, socio-economic, archaeological and geophysical environments. Section 6 identifies alternative solutions to the project and provides an evaluation of those alternatives. Section 7 is an analysis of the preferred solution for the location of the watercrossing. Section 8 describes mitigation measures both during construction and operation to minimize potential impacts. Sections 9 and 10 provide a summary of required approvals and property acquisition in order for the proposed undertaking to proceed through a Detailed Design. Section 11 is a list of references used in the preparation of this Class EA Project File Report.

Appendices to this report provide detail regarding public and agency consultation, and archaeological conditions and considerations.
1.1 Background

The Master Servicing Plan for Official Plan Amendment (OPA) #60 for Holland Landing identified that the wastewater servicing plan for the Holland Landing/River Drive Area directs all new and existing sanitary flows to the Region of York’s Bradford Street Pumping Station. Bradford Street is the only logical place to cross the river that results in fewer disturbances to the natural environment. The OPA identified that sanitary services will require a crossing through the Holland River at Bradford Street to tie into the existing pumping station. A trunk sewer, approximately 1000 metres (m) in length is to be located on the west side of the East Holland River, connecting to the Bradford Street Pumping Station. This Environmental Assessment addresses the need for extending the new sanitary sewerage flow in the vicinity of Holland Landing/River Drive Area. Alternatives will be examined that will have minimal disruptions to the existing wetlands along the river, that have fewer hydrologic problems, and the minimize construction costs.

The Province of Ontario has recognized East Gwillimbury as a growth area as follows:

- Sharon, Holland Landing and Queensville are identified as Settlement Areas in the Greenbelt Plan, 2005.
  - Settlement areas within the Greenbelt support and provide significant economic, social, and commercial functions to prime agricultural areas and rural areas. They are an integral part of the long-term economic and social sustainability of the Greenbelt and the Greenbelt Plan envisions that they continue to evolve and grow.

- Sharon, Holland Landing and Queensville, as well as the surrounding lands are shown as built up areas and/or Designated Greenfield Areas-Conceptual within the Greater Golden Horseshoe Growth Plan Area as set out in Regulation 416/05 of the Places to Grow Act, 2005.
  - Designated Greenfield Areas are areas which require that growth be planned to achieve a minimum density target that is not less than 50 residents and jobs combined per hectare (Growth Plan for the Greater Golden Horseshoe, 2006).
1.2 **Municipal Class Environmental Assessment Process**

This study is being undertaken in compliance with the Master Servicing Plan, Official Plan Amendment Area No. 60 (Holland Landing) which sets out the long-range servicing scheme for the West Holland Landing Area. This study has been conducted in accordance with the requirements for Schedule ‘B’ projects as described in the Municipal Engineers Association’s Municipal Class Environmental Assessment (June 2000, as amended in 2007).

The Class EA planning process requires the integration of sound engineering judgment, prudent long-term planning and protection of all aspects of the environment (natural, social, economic and technical). This process includes consultation with the public and government review agencies to obtain comments and input, to ensure regulatory compliance and ultimately, to achieve acceptance for the preferred alternative.

The Class EA process is a method of dealing with municipal infrastructure projects (including roads, water and wastewater projects) which display the following important characteristics:

- Recurring;
- Similar in nature;
- Generally limited in scale;
- Predictable range of environmental effects;
- Responsive to mitigation measures.

The Class EA process in Ontario, shown on **Figure 1.2-1** follows a logical decision-making process and incorporates all aspects of:

- Identifying the problem or need for the project (Phase 1);
- A thorough evaluation of the planning options or alternative solutions to the problem (Phase 2 – last phase for Schedule ‘B’);
- An assessment of design alternatives (pre-design for ‘Schedule B’ or Phase 3 for a Schedule ‘C’);
- The completion of documentation for the public record (Phase 4, Environmental Study Report for Schedule ‘C’); and
- The implementation of the project including design, with appropriate monitoring during construction (Phase 5).
Figure 1.2-1 Class EA Process in Ontario

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

Note: This flow chart is to be read in conjunction with Part A of the Municipal Class EA

[Diagram of the Class EA Process]

This flow chart documents the EA Process. Public Consultation forums are highlighted in light green.

Source: Municipal Engineers Association 2003
The Class EA document applies to a group of projects which are approved under the Ontario Environmental Assessment Act (EA Act), provided they are planned according to the requirements of the Class EA. The specific requirements of the document depend on the type of project, its complexity and the significance of potential environmental impacts. Three types of projects are identified in the document and are summarized in Figure 1.2-2:

- **Schedule ‘A’** projects are limited in scale and have minimal adverse impacts.
- **Schedule ‘B’** projects have the potential for some adverse environmental impacts and are approved provided they are ‘screened’ by the public and government review agencies. This type of project requires the completion of Phases 1 and 2 of the planning process.
- **Schedule ‘C’** projects are more complex and have the potential for significant environmental impacts. This type of project is subject to the full Class EA process.

**Figure 1.2-2: Class EA Project Types**

As a Schedule ‘B’ project, this study has demonstrated the mandatory ‘need’ (Phase 1) and evaluation of alternative solutions (Phase 2) required for completion of the Class EA. The focus of Phase 2 has been on the development and evaluation of alternative solutions and the selection of the preferred alternative. This Schedule ‘B’ Class EA concludes with the Notice of Completion and filing of the Class EA Project File Report.
This report is intended to be a summary, documenting the first two phases of the Class EA. The report will be available for the mandatory 30-day public review period by the public and agencies that have an interest in this project.

If an affected agency or the public has a concern that cannot be resolved by discussion or negotiation with York Region, a request can be made to the Minister of the Environment for the issuance of a Part II Order or ‘bump up request’ for the elevation of this project to a Schedule ‘C’ project or to an Individual Environmental Assessment.

Subject to comments received and receipt of necessary approvals, York Region intends to proceed to the detail design phase with this project.
2.0 Public and Agency Consultation

In integral component of the Class EA process is public consultation. This includes regulatory agency contact, as well as contact with local stakeholders and First Nations. Input received from this consultation is important in determining the preferred alternative. The main components of consultation which took place for this project included:

- Notice of Project Initiation;
- Review Agency Contact; and
- Public Consultation Centre

2.1 Initial Notification

The Notice of Study Commencement was published in the ERA Banner on October 13 and 20, 2008. The Notice identified the study area, the East Gwillimbury and MMM Group project managers to contact for additional information and described the purpose of the Environmental Assessment to determine the alternative routes for a new sewer under the Holland River in the vicinity of the Bradford Street Bridge. Letters were mailed to regulatory agencies advising of the project start-up. Interested parties were invited to provide comments on the Class EA to MMM Group or to the Town of East Gwillimbury. The Notice of Study Commencement and the list of regulatory agencies are both included in Appendix A.

2.2 Public Consultation Centre

A Public Consultation Centre (PCC) was held on Wednesday October 28, 2009 from 5:00 to 7:00 pm at the East Gwillimbury Civic Centre, 19000 Leslie St., Sharon, Ontario, L0G 1V0.

Notification of this PCC, as described above, was published in the ERA Banner on October 13 and 20, 2009.

Display boards were present for participants to view and provide feedback to the project team. The information presented on the display boards included the following:

- The Class EA process;
- The problem/opportunity statement;
- Project background/ justification;
- The proposed alternatives
- Proposed construction techniques; and
- Potential environmental impacts.
Members of the public were invited to complete and submit comment forms to express concerns/issues related to the information on display. The PCC was an open house format with materials on display and the project team available to answer/discuss questions/concerns that members of the public may have. Two (2) members of the public and two (2) elected officials were present for the PCC.

The materials provided to the public and the Notification of PCC are included in Appendix A.

The following members of the project team were present to answer questions and explain the information presented:

- Irene Hauzar  Senior Planner, MMM Group
- Rob Whitham  Senior Project Engineer, MMM group
- Pam Foster  Project Planner, MMM Group

Attendees were presented the three proposed alternatives for the sanitary sewer crossing and were generally in favour of the project, the chosen alternatives and the process that will be used to select the final watercrossing. The turnout at the PCC was lower than normally experienced at other Class EA PCCs however, the project team contact information was advertised to the community through the ERA banner if additional members of the public or elected officials had comments on the project.

No additional comments were received from members of the project relating the proposed locations of the watercrossing.

### 2.3 Agency Consultation

A list of agencies considered having an interest in this project is included in Appendix A. Each agency was sent a copy of the Notice of Commencement and Notice of Public Consultation Centre.

The Ministry of the Environment provided comments on December 30, 2008 on the Notice of Commencement.

The Lake Simcoe Region Conservation Authority (LSRCA) was consulted at the Notice of Commencement in December 2008, no comments have been received.

### 2.4 First Nations Consultation

Indian and Northern Affairs Canada and specific First Nations groups considered to have an interest in the project were included on the project agency list from the initiation of the study. They were sent a Notice of Commencement and a Notice of Public Consultation Centre.

There were no comments on the project received from the First Nations groups to date.
2.5 Property Owner Consultation

The Town of East Gwillimbury officials have been in contact with property owners through the advertisement of the PCC. Further consultation will occur as the project proceeds to the detailed design phase.
3.0 Background Information

3.1 York Region Official Plan

The Regional Official Plan (OP) for York Region (approved in 1994, Office Consolidation 2008) is a policy document which guides economic, environmental and community building decisions directly affecting the use of land and the management of growth. The OP provides a framework to be used by municipalities in order to achieve the overall vision for the entire Region and provide for the protection of the environment.

The York Region Official Plan contains a number of policies that relate to providing adequate sanitary sewer services to residents and businesses of York Region. Wastewater policies within the York Region Official Plan have been developed to ensure that no draft plan of subdivision or plan of condominium proceeds in advance of the confirmation of the allocation of appropriate sewer and water servicing capacity.

3.2 York Region Water and Wastewater Master Plan Update Study 2009

The York Region Water and Wastewater Master Plan is currently undergoing an update. It was previously updated and reviewed in 2002 and 2004 respectively. Typically, Master Plans for infrastructure projects are updated every five years to ensure water and wastewater management programs remain consistent with the changing needs of the community. The York Region Water and Wastewater Master Plan will identify the need for new infrastructure including 48 kilometers of trunk sewers and forcemains, 3 new pumping stations, one new wastewater treatment plant, one new wastewater equalization tank, and expansion and/or upgrades of eight existing wastewater treatment facilities. The update to the York Region Water and Wastewater Master Plan will assess York Regions’ water and wastewater needs for the next 40-50 years.

3.3 Lake Simcoe Protection Plan (LSPP)

The Lake Simcoe Protection Plan was approved and took effect in July 2009 in order to protect the significant urban, agricultural and natural heritage systems within the Oak Ridges Moraine and the Green Belt. The Town of East Gwillimbury and the study area are located within the boundaries of the Lake Simcoe Protection Plan Watershed and as such are required to comply with the policies of the Plan. The plan seeks to restore the aquatic life in the watershed, improve water quality, improve the health of the ecosystem and rehabilitate important areas, and addressing the impacts of invasive species, climate change and recreational activities.
The LSPP sets out policies for the development within the Watershed as it pertains to aquatic life, water quality, water quantity, shorelines and natural heritage and other threats and activities. The LSPP sets out that no structures, including boathouses are permitted in Lake Simcoe or other lakes or in a permanent or intermittent stream if the structure impedes natural flow. This policy does not apply to infrastructure projects that have a demonstrated need through an environmental assessment. The construction of the crossing of the Holland River at Bradford Street will be constructed below the Holland River, and therefore will not impact the natural flow of the river.

### 3.4 Greenbelt Plan

The communities of Queensville, Sharon and Holland Landing are surrounded by the provincially designated Greenbelt Plan (2005) area. The location of the Bradford Street Crossing will be located in a settlement area, and is not directly located within the green belt. The Town of East Gwillimbury itself is identified as a ‘Settlement Area’ within the ‘Protected Countryside’ which is governed by policies protecting areas of natural heritage, hydrologic and/or landform features. The section of the Greenbelt Plan which apply to this study fall under Section 4.2 Infrastructure as the expansion of services to settlement areas within the Protected Countryside are subject to the infrastructure policies of the Greenbelt Plan. These include:

**Section 4.2 Infrastructure**: Provides policy direction on the type and kinds of infrastructure permitted within the ‘Protected Countryside’ designation including the planning, design and construction requirements for any new infrastructure.

**Subsection 4.2.1 General Infrastructure**: Provides policy direction on permitted existing, expanded or new infrastructure within the Protected Countryside provided it meets one of two objectives.

**Subsection 4.2.2 Sewage and Water Infrastructure Policies**: Provides policy direction for water and sewer infrastructure within or crossing the Protected Countryside.

An analysis of applicability and compliance to the Greenbelt Plan as it relates to the preferred alignment is contained in Section 7.0.
4.0 Needs Assessment and Justification

In order to determine the need for a new sanitary trunk sewer line to extend across the Holland River in the vicinity of the Bradford Street pumping station, an examination of the following must first be determined:

- Approved population growth and estimated future population growth;
- Residential and employment sewer demand estimates; and,
- Places to Grow Act, 2005.

4.1 Approved Population Growth and Estimated Future Population Growth

The Official Plan Amendment (OPA) #60 for the Town of East Gwillimbury, Holland Landing Community Plan emphasizes community building, along with implementation in a manner that matches the growth with the capacity for full municipal servicing. The new development permitted by OPA #60 will allow the Holland Landing Community to accommodate a total of 16,000 residents; all of which will be accommodated by the sewer extension of full services in the future.

4.2 Residential and Employment Sewer Demand Estimates

As stated in Section 4.1, the residential goals for the West Holland Landing area include accommodating a total of 16,000 residents; all of which will be accommodated by the extension of full services in the future. Additional commercial development is proposed for the West Holland Landing area includes retail stores, financial institutions, office and personal service facilities, restaurants, and cultural and entertainment facilities.

In addition, certain industrial/business park land uses are incorporated into the future development plans for the West Holland Landing area. The permitted uses for industrial/business parks include manufacturing and assembly, clean processing and reclaiming, warehousing and materials storage, contractors yards and transportation terminals, and other similar facilities. Additional sewer and wastewater use will be associated with these proposed employment areas.

4.3 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe has been prepared under the Places to Grow Act, 2005. It is the framework for implementing the Government of Ontario’s vision for building stronger, prosperous communities by better managing growth in the
region to 2031. This plan works within the existing planning framework to provide growth management policy direction for the Greater Golden Horseshoe. The Plan provides policy direction by directing growth to settlement areas that offer municipal water and wastewater systems and limiting growth in settlement areas that are serviced by other forms of water and wastewater services.

### 4.4 Problem/Opportunity Statement

Under the Municipal Class EA process there is a need to provide a problem/opportunity statement, the problem/opportunity statement for the watercrossing in West Holland Landing is as follows:

*The Town of East Gwillimbury provides wastewater services to residents and businesses to meet existing and anticipated growth in an efficient and cost-effective manner.*

*In addition to water conservation and demand reduction strategies, additional wastewater infrastructure expansion is needed to meet the needs of the current population as well as accommodate growth in a timely manner.*

### 4.5 Project Description

The Class EA for the construction of a new sanitary truck sewer line to extend across the Holland River in the vicinity of the Bradford Street Pumping Station identifies the preferred location of a new trunk sewer line from the vicinity of Holland Landing Road to the Bradford Street Pumping Station. Through the Class EA process, alternative trunk sewer alignments were identified and examined. The evaluation took place using environmental, technical, and economic criteria. The result of this project will identify the preferred alignment of the new sanitary trunk sewer line across the Holland River adjacent to West Holland Landing. The design of sanitary sewer systems to service future anticipated growth shall be on the basis of gravity flow whenever possible in order to minimize the need for pumping stations.
5.0 Existing Environmental Conditions

5.1 Natural Environment

5.1.1 Landform and Soils

The study area within the Region of York lies to the north of the Oak Ridges Moraine and is part of the Mixedwood Plains Ecozone of Canada. This ecozone is generally located within the Great Lakes – St. Lawrence River valley with a climate that is characterized by warm summers and cool winters. At one time, the Mixedwood Plains Ecozone was heavily forested, however due to agriculture and urbanization, less than 10% of the original forest remains. The forest that remains generally consists of mixed coniferous-deciduous stands in the northern areas of the ecozone with the diverse Carolinian Forest in the south-western areas. The topography generally consists of level plains and gently rolling hills that include deep moraine, lacustrine and marine/estuarine deposits that combine to make the most productive agricultural soils in Canada (ESWG, 1995).

Within the Mixedwood Plains Ecozone, the study area lies within the Manitoulin – Lake Simcoe Ecoregion that extends eastward from Manitoulin Island to Kingston. The climate is consistent with the ecozone with a mean annual temperature of 6°C, summers averaging 16.5°C and winters averaging -4.5°C. Precipitation is evenly distributed throughout the year and averages 750 mm to 1000 mm. Dominant land use includes agriculture and urbanization with significant areas of mixed forest. The forested areas are dominated by sugar maple (Acer saccharum), American beech (Fagus grandifolia), eastern hemlock (Tsuga canadensis), red oak (Quercus rubra), American basswood (Tilia americana), white pine (Pinus strobus), white birch (Betula papyrifera) and trembling aspen (Populus tremuloides). Moist sites are dominated by yellow birch (Betula allegheniensis), American elm (Ulmus americana), red maple (Acer rubrum), slippery elm (Ulmus rubra), black ash (Fraxinus nigra) and eastern white cedar (Thuja occidentalis) with dry sites dominated by red oak, white pine and red pine (Pinus resinosa) (ESWG, 1995).

The Mixedwood Plains Ecozone is located in the West St. Lawrence Lowland that is underlain by carbonate rich Palaeozoic bedrock and dominated by a wide variety of deep glacial deposits. The study area is located within the Schomberg Clay Plains that borders the north slope of the Oak Ridges Moraine with soils that contain deep deposits of stratified clay and silt. In the areas near Schomberg and Newmarket, a drumlinized till plain lies under the clay with smaller drumlins completely covered by clay deposits and larger drumlins left mostly uncovered. As a result of the larger drumlins not being
completely covered, the rolling topography has been maintained and the area is not as flat as many other lake plains. Soils within the Schomberg Clay Plains are well-drained and include a combination of silty clay and clay loams (ESWG, 1995; Chapman and Putnam, 1984).

### 5.1.2 Terrestrial

Vegetation surveys were conducted in summer 2009 in the vicinity of the Holland River along the proposed alternative routes for the sanitary sewer. Vegetation types were identified according to the Ecological Land Classification System for Southern Ontario (Lee et al. 1998). A botanical survey was conducted in the natural and cultural communities within the vicinity of the Holland Landing Pumping Station to be located to the north side of Bradford St. just east of the Holland River. The proposed alternative locations of the watercrossing are located in the vicinity of this proposed pumping station.

The locations of the proposed alternatives are surrounded by wetland communities associated with the floodplain of the East Holland River. These communities are not considered to be provincially rare. One provincially endangered species, the butternut was found. The butternut will not be impacted by the construction of the watercrossing. No regionally rare species were seen. Identified vegetation types are described below. A map displaying the Terrestrial Habitat Locations can be found in Figure 5.1-1.

**Manitoba Maple Mineral Deciduous Swamp**

A deciduous swamp occurs just north of the existing Holland Landing pumping station. This community has a patchily distributed canopy which is dominated by Manitoba Maple closely followed by hybrid white willow (Salix X rubens) and red ash. The sub canopy is also dominated by Manitoba maple followed by red ash and trembling aspen. The shrub layer vegetation is relatively sparse and limited to Manitoba maple and red ash. Ground cover vegetation grows abundantly due to extensive light penetration of higher vegetation layers. Ground cover vegetation is dominated by invasive pink touch-me-not (Impatiens glandulifera) followed by spotted jewelweed, thicket creeper and fringed loosestrife (Lysimachia ciliate). Other ground cover species include tall stinging nettle (Urtica dioica ssp. gracilis), wild cucumber (Echinocystis lobata), tall meadowrue (Thalictrum pubescens), moneywort (Lysimachia nummularia) and Canada enchanter’s nightshade.

A single young butternut grows in relatively dry soil on top of an old berm. The butternut has been designated a provincially endangered species (MNR, 2009). Although crown foliage and bole canker suggests a relatively healthy individual, riverbank grape covers it
extensively. It is not anticipated that the butternut will be impacted by the construction of the watercrossing.

Willow Mineral Deciduous Swamp
This community dominates the East Holland River floodplain to the south of Bradford Street and east of the river. The canopy is dominated by Hybrid white willows with other species limited to a small number of Manitoba maples. The understory is sparse, and is strongly dominated by Manitoba maple with a few red ash and hybrid white willow also found. Shrub layer vegetation is dominated by Manitoba maple with other species limited to the vines riverbank grape and hedge bindweed (*Catystegia sepium ssp. angulata*) climbing into the layer. Groundcover vegetation is abundant due to available light penetration and is dominated by spotted jewelweed followed by reed canary grass, moneywort, and fringed loosestrife. Other groundcover species are hydrophilic species and include wood nettle (*Laportea Canadensis*), hairy herb-willow (*Epilobium hirsutum*), the invasive pink touch-me-not, cursed crowfoot (*Ranunculus sceleratus var. sceleratus*) and true forget-me-not.

Reed Canary Grass Mineral Meadow Marsh
The community occurs just south of Bradford Street and appeared to be strongly dominated by reed canary grass followed by cattails (*Typha sp.*). Neither trees nor shrubs appear to occur within this community.

5.1.3 Fish and Aquatic Habitat
The proposed alternatives are situated primarily within the East Holland Sub watershed area with small areas to the northeast draining into the Black River or Maskinonge River. The East Holland River is the major watercourse in the study area. The Holland River flows in a westerly direction crossing Holland Landing Road at its intersection with Mount Albert Road. The River then flows northerly, parallel and to the east of Holland Landing Road eventually flowing just to the west of Holland Landing Pumping Station.

A map displaying the Watercourses and Aquatic Habitat within the study area and surrounding region can be found in Figure 5.1-2.

Fish Community
The proposed alternative watercrossings are located in the East Holland River which is the receiving waterbody for all the drainage features described and is known to support coolwater and warmwater fish communities. It ultimately flows to Lake Simcoe at the south end of Cook’s Bay.

The proposed watercrossing will cross the East Holland River adjacent the existing Bradford Street crossing. Fish community investigations conducted by LSRCA in 2003 and 2004 at this location resulted in the capture of a similar fish community to the historic records described above. Coolwater fish species captured included black crappie, brook stickleback, common shiner, creek chub, western blacknose dace, white sucker and unknown minnow (*Cyprinidae*) and warmwater fish species captured included brown bullhead, common carp, fathead minnow, goldfish, largemouth bass and pumpkinseed.

**Aquatic Habitat**

The proposed alternatives are located in proximity to the main branch of the East Holland River is located approximately 400m west of the Bradford Street/ Yonge Street intersection. At this location, the East Holland River generally flows in a northwesterly direction through natural areas consisting of meadow and deciduous lowland forest. Habitat consists of slow moving runs and pools with the channel ranging in width from 14m to 15m and substrate is dominated by silt (100%). Habitat is uniform through this reach of the East Holland River and remains similar downstream.

### 5.2 Socio-Economic Environment

The Town of East Gwillimbury is currently completing an Official Plan review which commenced in 2006, which includes detailed analysis on the physical, economic, social, and environmental conditions of the community.

The study area is located in the southwest corner of the town of East Gwillimbury, which is designated as “Urban Area” (Draft Consolidated Official Plan, February 2009). “Urban Area” is a land use designation that was established to address community growth within the villages of Holland Landing, Queensville, Sharon and Mount Albert. This designation includes specific policies and criteria for development for more detailed Secondary Plans, which in turn are used to assess individual development applications. A Community Land Use Plan for the Holland Landing area can be found in **Figure 5.2-1**.
This proposed schedule is a revision to the Schedule C-1 of the draft OP, as recommended by the Holland Landing Landowners Group.

LEGEND:

- Holland Landing Secondary Plan
- Prestige Employment
- General Employment
- Low Density Residential
- Medium Density Residential
- Local Centre
- Neighbourhood Commercial
- Community Commercial
- Natural Heritage System
- Open Space

- Elementary School
- Proposed Elementary School
- Proposed Secondary School

- Hydro Corridor
- Arterial Road
- Collector Road
- Local Road
- Proposed Collector Road
- Railway
- Lake*
- River*


FIGURE 5.2-1
Holland Landing Land Use Plan
The study area is located within the low density, medium density, and natural heritage land use designations. Low density residential uses are generally characterized by the following traits:

- Predominately at-grade housing forms such as single-detached dwellings, semi-detached dwellings and street townhouses;
- Uses that are accessory or incidental to the use of land for a dwelling unit;
- Uses that support the day-to-day lives of residents such as schools, places of workshop, and limited commercial uses;
- Uses that enhance and protect natural features, such as parks and open space.

Medium density residential uses are generally characterized by the following traits:

- Predominately above grade housing forms such as stacked town homes, terrace homes and apartment buildings with a maximum height of three storeys;
- Uses that are accessory or incidental to the use of land for a dwelling unit;
- Uses that support the day-to-day lives of residents such as schools and limited commercial uses.

The current land uses within the study area include low density residential and open field areas.

### 5.3 Archaeological Assessment

A Stage 1 site assessment was carried out in conjunction with the work completed for the Holland Landing Queensville Sharon Wastewater Infrastructure Study Area. The Stage 1 Archaeological Assessment is included in Appendix B.

Archaeological potential was identified by conducting background research and visiting the proposed force main alignment in November 2006. The general study area contains steeply sloping areas, as well as minor disturbances including gravel shoulders, wet drainage ditches, two tributaries to the East Holland River, sidewalks and driveways. High potential areas include any undisturbed grass margins, rural residential frontages and agricultural fields which border the study corridor, all of which would require further Stage 2 testing. Archaeological potential was deemed to be low in the segment extending westward from 2nd Concession to connect with Holland Landing west along Mount Albert Road to Olive Street, then north on Olive Street to Bradford Street to connect with the Bradford Street Pumping Station.
In terms of archaeological potential, potable water is the single most important resource necessary for any extended human occupation or settlement. As water sources have remained relatively stable in southern Ontario since post-glacial times, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. The Ministry of Culture primer on archaeology, land use planning and development in Ontario stipulates that undisturbed lands within 300 metres of a primary water source, and undisturbed lands within 200 metres of a secondary water source are considered to be of high archaeological potential.

5.4 Geophysical Environment

5.4.1 Physiography and Drainage

Climate

Based on the available data at the Bradford Muck Research Station for the period of 1975-1997, the lowest monthly temperatures are observed during the months of December, January or February and the warmest monthly temperatures are observed during the months of June, July or August. The mean annual temperature ranges between 5.1 deg. C and 8.1 deg. C, while the mean monthly temperature ranges between -13.8 and 25.4 deg. C.

Sharon Station is the only other long-term meteorological station in the study area. The annual precipitation at this station for the period 1986-1997 ranged from 659 to 948 mm with an annual long-term mean of 810 mm.

Physiography

Topography within the study area ranges between approximately 230 m above mean sea level (masl) to the west and east of Holland Landing Road to 220 masl in East Holland River.

The study area terrain falls within two Physiographic Regions (after Chapman and Putnam 1984): the Schomberg Clay Plains and the Simcoe Lowlands. Scattered remnants of a drumlinized till plain (Newmarket Till) are also identified in the study area that likely correspond to the buried Peterborough Drumlin Field. The Oak Ridges Moraine lies approximately 6 km south of the study area.

Schomberg Clay Plains

As described by Chapman and Putnam (1984) a number of topographic basins (Schomberg Ponds) along the northern slopes of the Oak Ridges Moraine contain deep deposits of stratified clay and silt, known as Schomberg Clay Plains. The average thickness of clay deposit is about 5 m (15 feet). However, nearly 15 m (50 feet) thick clay was encountered near the Holland Landing area. The Schomberg sediments are
typically varved clays with summer bands lighter in colour and clayey silt and winter bands that are dark slightly denser and silt clay in texture. Individual varves can be millimeters to several centimeters thick.

The soils of the Schomberg Clay Plains have been classified as well-drained Schomberg silty clay loam, the imperfectly drained Smithfield silty clay loam, and the poorly drained Simcoe silty clay and silt loams.

Simcoe Lowlands

The lowlands bordering Georgian Bay and Lake Simcoe are termed the Simcoe Lowlands by Chapman and Putnam (1984). This physiographic region is divided into the Nottawasaga Basin in the west and the Lake Simcoe Basin to the east. The southern part of the Lake Simcoe Basin covers parts of Holland Landing. The soils of Holland Landing are sandy and have wet subsoils. South of Lake Simcoe a low, swampy, sandy plain covers the broad valley of the Holland River and is referred to as the Holland Marsh. The East Holland River flows north to Lake Simcoe through the study area.

Glacial Till Uplands

There are scattered portions of a drumlinized upland, likely representing the Peterborough Druml Field physiographic unit that are evident as the top of hills exposed above the Schomberg Clay Plains. This forms the upper confining layer (aquitard) for the Lower Sediment Unit.

Flood plain deposits of both recent and post glacial times are confined within the valley lands of the East Holland River.

Drainage

The study area is situated primarily within the East Holland River Subwatershed area. The surface water in tributaries to the southwest of Holland Landing Road flow northeast into East Holland River. A tributary system to the north of Holland Landing Road flows northwest towards the East Holland River, which ultimately discharges into Lake Simcoe.

The lower elevation portions of the study area are dominated by lacustrine deposits such as silt and clay, resulting in poor drainage and high water table conditions especially in Schomberg Clay Plain and Simcoe Lowlands.

Streamflow measurements for the period 1965 to 2008 are available at gauging station 02EC009 at Holland Landing (catchment ~181 km²). The average annual streamflow at station 02EC009 for the period ranged from 0.771 m³/sec (134 mm/yr) to 1.95 m³/sec (340 mm/yr) with an annual long term mean of 1.32 m³/sec (230 mm/yr). The estimated groundwater discharge by streamflow separation at station 02EC009 for the period 1986-1997 ranged from 0.48 m³/sec to 1.06 m³/sec (83 mm/yr to 185 mm/yr) with an annual long term mean of 0.72 m³/sec (125 mm/yr).
5.4.2 Regional Hydrostratigraphy

The geology of the surrounding areas has been investigated through numerous local and regional scale studies conducted previously. The geology of the study area can be described as a succession of sediments deposited by glacial, fluvial, and lacustrine processes. Bedrock occurs at depths ranging from 100 m to 150 m more generally close to 100 m but to depths of 150 m in bedrock valleys.

The surficial geology of the study area is illustrated in Figure 5.4-1 (regional surficial geology with topography), which is based on the Ontario Geological Survey seamless digital Quaternary map of Southern Ontario (OGS 2003).

The work by Sharpe et al (1997) identified 5 principal geological units overlying bedrock with the Newmarket Till identified as a key marker for understanding the geological history and structure of the region. The conceptual hydrogeologic model developed for the overburden geology of the Greater Toronto Area including the Oak Ridges Moraine (GLL & Earthfx, 2004, Kassenaar and Wexler 2006) identifies up to seven hydrostratigraphic layers overlying bedrock as described below from surface down.

Surficial Deposits (Aquifer/Aquitard)

Surficial deposits lying stratigraphically above the Newmarket Till are dominated by glaciolacustrine and lacustrine deposits formed during and after the final retreat of the Wisconsinan ice sheets. These deposits range from massive to laminated clay and silt deposited in deep water low energy environments (Unit 8a on Figure 5.4-1) to sand and gravel deposited along former shorelines of glacial Lake Algonquin (Units 6 and 9 on Figure 5.4-1) and as terraced deposits along stream valleys (Unit 12 on Figure 5.4-1). In the Holland Landing-Queensville-Sharon area, glaciolacustrine clay and silt of the Schomberg Ponds are mapped in lower lying areas and in conjunction with the underlying Newmarket Till (Unit 5b on Figure 5.4-1) form the uppermost unit in the area and can have characteristics of both aquifer and aquitard.

Also present at surface are recent alluvial deposits of silt, sand and gravel that are deposited primarily in the low areas associated with the East Holland River and its tributaries and East Holland River to the south (Unit 19 on Figure 5.4-1). These deposits are generally fine grained but may form local aquifers of restricted extent which can be up to several metres thick.

Kettleby Till (Aquitard)

The Kettleby Till (Unit 5d on Figure 5.4-1) represents the final advance of ice southwards out of the Lake Simcoe basin at the end of the Wisconsinan glaciation approximately 13,000 years ago and is generally equivalent in time to the Halton Till.
Title: Surficial Geology and Well Records

Legend:
- MOE Water Well Records
- Proposed Sewer Alignment
- Topographic Contour (5 m Interval)
- Roads
- Waterbody
- Watercourse

Surficial Geology:
- 5b: Sandy silt to silty sand till
- 5d: Silty clay to clayey silt till
- 8a: Silt and clay
- 9c: Sand
- 12: Sand and silt
- 19: Gravel, sand, silt, clay and muck

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south of the moraine. In the Holland Landing-Queensville-Sharon area the Kettleby Till has a relatively fine-grained matrix (silty-clay) and is not widespread.

**Oak Ridges Moraine Aquifer (ORMA)**

The ORMA is developed in sands and gravels of the Oak Ridges Moraine, reaching a maximum thickness in excess of 95 m beneath the crest of the moraine but thinning rapidly towards its margins. Although an important aquifer regionally, the ORMA does not form a significant aquifer in the immediate vicinity of study area but lies south and east of the community of Holland Landing.

**Newmarket Till (Aquitard)**

In the conceptual model (Sharpe et al 1997, Kassenaar and Wexler 2006) the Newmarket Till (Unit 5b on Figure 5.4-1) is a regionally extensive aquitard unit that separates the ORMA and surficial deposits from the underlying Thorncliffe Formation and Aquifer.

In places where the ORMA is absent it may be difficult to distinguish Halton/Kettleby Till from Newmarket Till based on MOE water well records. The Newmarket Till is thought to have been eroded in some areas by subglacial meltwater which formed a series of broad ‘tunnel channel’ valleys filled with thick sediment deposits, predominantly silt. Kassenaar and Wexler (2006) have suggested that two such channels, running in a north-south direction, roughly coincide with the Holland and East Holland Rivers and extending southwards to the moraine.

**Thorncliffe Formation and Aquifer**

The Thorncliffe Formation consists of glaciofluvial to glaciolacustrine deposits which have been interpreted to extend under most of York Region from Lake Simcoe to Lake Ontario. There is considerable variation in the type of sediments that comprise the Thorncliffe Formation, both locally and regionally. This unit is an important source of potable water to both private and municipal supplies and is exploited by deep municipal wells in Holland Landing. The Thorncliffe Formation and the following deposits are not exposed in the study area and have no interaction with the project.

**Sunnybrook Diamict (Aquitard)**

Like the Thorncliffe Formation, the Sunnybrook Diamict is considered to be a regionally extensive unit. The Sunnybrook is typically described as a clast-poor mud (silt and clay) deposited on the floor of a glacially dammed lake, or formed by the overriding of pre-existing lake sediments by advancing ice.

**Scarborough Formation and Aquifer**

The Scarborough Formation marks the start of the Wisconsinan glaciation, and is interpreted as a fluvio-deltaic system fed by large braided melt water streams and rivers
draining from an advancing ice sheet. The Scarborough Aquifer is interpreted to underlie much of York Region, but is generally thin in within the study area.

Bedrock (Aquitard)

The underlying bedrock in the study area is mapped as grey to black shale of the Georgian Bay Formation limestone of the Simcoe Group. The bedrock is interpreted to gently slope from the northeast to southwest (190 to 160 masl) although in the interpreted valley elevations are believed to range from 170 masl at the northeast to about 70 masl in the southwest.

5.4.3 Regional Groundwater Flow

On a large regional scale, the Oak Ridges Moraine is both a surface and groundwater flow divide, with water flowing either north towards Lake Simcoe or south towards Lake Ontario. There is generally a downward gradient through the overburden deposits to the Thorncliffe Aquifer and from the Thorncliffe Aquifer into the Scarborough Aquifer, though upward gradients are interpreted in the low lying river valleys, such as the Holland and Black Rivers and Mount Albert Creek valleys.

In the Oak Ridges Moraine Aquifer and Algonquin sand deposits that form the extensive shallow surficial sand deposits generally to the north of study area, groundwater flow is in a northerly direction and appears strongly influenced by local watercourses such as Holland River and East Holland River.

In the Thorncliffe Aquifer, regional groundwater flow is towards the north and northwest, with a noticeable convergence towards the upper East Holland River and Black River systems.

5.4.4 Local Hydrogeological Setting

A preliminary hydrogeological review was carried out for the study area, using MOE water well records and information available from hydrogeological investigations for areas to the east and to the west of the study area. A better understanding of local hydrogeological conditions for this project will become available during a hydrogeological investigation for the Site at the detailed design stage.

Historical Groundwater Use

Based on review of MOE water well records, static water levels in the study area generally range from 0 m to 8 meters below ground surface (mbgs). Domestic well yields range from as low as low as 0.2 L/sec to a maximum of 0.9 L/sec (2-12 IGPM), indicating that the majority of overburden soils have a low to moderate transmissivity but are generally sufficient for domestic supplies. Essentially all of the area wells are overburden wells. Bedrock was rarely encountered and at drilled depths in excess of 100m. Some flowing wells were also found within the study area indicating upward vertical gradients due to confined aquifer conditions and lower elevation.
Well yields and local geologic conditions indicate that local aquifers are not very promising in terms of water yielding capacity. Area geology is primarily composed of glacial till with poor potential for groundwater.

Subsurface Conditions

Surface and near-surface deposits are predominantly glacial till overlain by clay and silt deposits. The majority of well records indicate many wells were completed in relatively shallow, 10 to 20m depth, zones where sand and/or sand and gravel deposits had been encountered. These granular zones may be in or associated with the contact between the Newmarket till and surficial sediments or near the base of the till. Elevation of this shallow aquifer is not consistent and varies with topography and the thickness of the upper sediments and Newmarket till. Several private wells were completed in area of Holland River tunnel channel to the east of Holland Landing Road, where silty sand and sand with gravel was encountered.

A distinct aquifer zone occurs at approximately 180 to 190 masl and most drilled wells intercept this zone. This aquifer can be traced to the east at Leslie Street and occurs at approximately 200 to 210 masl. Stratigraphically the aquifer appears to correlate with the lower part of the Thorncliffe and is at a depth of 40 to 70 m varying with topography. Another aquifer zone is indicated by a few well records at an elevation of 150 to 160masl, however it is not widely used for domestic supply. Municipal water supply wells are completed in the deep aquifer zones.

Recharge and Discharge Areas

The Oak Ridges Moraine is the major physiographic feature in the area that was formed during the Wisconsin era of glaciation. Many of the headwater streams in the area depend on the discharge from the shallow groundwater system to maintain baseflow. Within the moraine recharge rates are relatively high with substantial discharge to the headwater system. North of the moraine, through the study area, recharge occurs at moderate to low rates due to relatively low permeability surficial deposits. On balance, however, substantial recharge occurs off of the moraine with discharge to watercourses occurring throughout much of the bottom lands from local and regional groundwater flow.

Several local discharge areas can possibly exist to the west of Holland Landing Road. These areas will be identified during a hydrogeological investigation at the detailed design stage.

5.4.5 Geotechnical Baseline Investigations

Several geotechnical investigations were carried out at the site and to the east of the site between 2000 and 2009. The results of these studies are summarized below:
Trow conducted a geotechnical investigation for planning and design of West Holland Landing Sanitary Collector Sewer in April, 2008. This included advancing 3 boreholes along Bradford Street and 6 boreholes along Holland Landing Road. A total of 6 observation monitoring wells were installed. The upper part of soils encountered in boreholes was found to be 0.4-3.2 m thick fill. A 1.3-2.8 m thick organic silt was found below the fill layer in boreholes BH1, BH6 and BH9 close to East Holland River. Deposit of sand was encountered in BH1-4 and BH7, located in the vicinity of East Holland River and a creek crossing. Sand was encountered at depths of 1.0 to 8.8 mbgs, containing trace of silt and trace to some gravel. The thickest layer encountered in all boreholes, except for BH6 and BH7 was silt. The silt was found to be greater than 7 m, compact to dense and containing some sand and some clay. Deposits of clayey silt/ silty clay were found in BH1 and BH5 at depths extending below 11.7 m. Silty sand till was found in BH6-7 at depths greater than 4.0 mbgs. Groundwater levels ranged between 1.7 and 4.8 mbgs.

In July 2004, Trow Associates Inc. (Trow) carried out a geotechnical investigation for the York Durham Sanitary Sewer project. A total of 57 boreholes were drilled to depths ranging from 3.8 to 14.1 mbgs. The boreholes encountered a wide variety of soil types including fill, organic deposits, non cohesive soils (sand, silt, gravel), cohesive soils (silty clay and clayey silt) and glacial till deposits which can be further classified into clayey silt till, sandy silt till or silty sand till. A total of 21 piezometers were installed in these boreholes to allow for a groundwater level monitoring. Depth to water levels varied from 0.3 m to 3.8 mbgs.

In January 2009, Soil Engineers Ltd. (Soil Eng) carried out three soil investigations for proposed residential developments by Mannington Lands, LRT Technologies Inc. (LRT) and Kerbel Group Inc. (Kerbel). These developments were designed next to each other, to the east of Yonge Street, west of Holland Landing Road and north of existing Holland Landing Airpark. Mannington Lands was designed to be the southern development and the Kerbel development was designed to be the northern development. The goal of these soil investigations was to evaluate subsurface conditions in the area.

A total of 14 test pits and 53 boreholes were advanced for Kerber development, to depths ranging between 4.7 and 21.8 mbgs. A total of 16 monitoring wells were installed at the Site to evaluate groundwater conditions. During drilling, topsoil was encountered in all boreholes at the depth of 0 to 1.2 m, except for K12. The rest of soils were found at different depths and composition, which indicates glacial origin of the soils. Silty clay till was encountered in 28 boreholes in the southern portion of the property at various depths, extending to the maximum drilling depths in 14 of 28 boreholes. A layer of silty clay was encountered in 45 of 53 boreholes, above or below the silty clay till.

Sandier deposits were found generally to the north and east of the Kerbel development. As such, silty fine sand and fine sand was found in the upper to middle portion of soil profiles in the northern portion of the property; fine to coarse sand was found in the middle part of the development. Localized deposits of sandy silt till and silty sand till were encountered in the eastern portion of the development; sandy silt was found in the...
northern part of the development. Groundwater levels ranged between 0.6 and 15.2 mbgs upon well completion.

A total of 10 test pits and 22 boreholes were advanced for the LRT development. The drilled depths ranged between 4.7 and 16.9 mbgs. Groundwater monitoring wells were installed in 9 out of 22 boreholes. The soils encountered are similar to soils in the southern portion of Kerbel development, ranging from silt to silty clay till. Groundwater was found at depth of 2.4 to 14.6 mbgs upon well installation.

For the Mannington Lands, a total of 8 test pits and 34 boreholes were advanced at the property to depths of 5.0 to 17.2 mbgs. Soil stratigraphy was found to be similar to the LTR’s, ranging from silt to silty clay till. A single occurrence of silty/ fine sand was found at the depth of 0 to 2.1 mbgs int the northwest portion of the property. Sandy silt was encountered at the depth of 0-1.7 mbgs in three boreholes in the middle of the development (M13) and along the eastern boundary of the development (M29 and M31). Groundwater was found at the depth of 2.1 to 7.6 mbgs, the majority of boreholes were found to be dry upon well installation.
6.0 Identification and Evaluation of Alternatives

6.1 Alternatives under Evaluation

In order to address the Problem Statement, the following alternatives were considered to address the wastewater servicing plan requirements for the Holland Landing/River Drive area:

- No Construction/ Do Nothing;
- One of the following proposed alternatives for the construction of a new sanitary sewer crossing:
  - Option A- West Across Holland River, North of Bradford St.
  - Option B- West Across Holland River, South Across Floodplain, North of Bradford St.
  - Option C- South of Bradford St.

The two options are discussed in greater detail in subsequent sections.

6.1.1 No Construction and No Changes to the System

The ‘Do Nothing’ alternative is not an adequate solution to address the problem/opportunity statement that was outlined in Section 4.4 of this Class Environmental Assessment. As per the Master Servicing Plan for Official Plan Amendment Area # 60 for the Holland Landing/River Drive area all new and existing sanitary flows are to be directed to the Bradford Street Pumping Station via a sewer under the Holland River. The ‘Do Nothing’ approach does not satisfy the requirement of Official Plan Amendment # 60. Additionally, further wastewater infrastructure is needed to meet the needs of the current population, to accommodate expected growth and meet the demands of Places to Grow (2005).

6.1.2 Construction of a New Sanitary Sewer Line

The new construction alternative would involve the construction of a new trunk sewer that would cross the Holland River at Bradford Street to tie into the existing Bradford Street Pumping Station. The new trunk sewer will adequately satisfy the requirements of OPA #60 and allow for the planned growth that is identified for the Holland Landing/River Drive Area.

Three alternative crossings for the trunk sewer will be further evaluated in tandem with the ‘Do Nothing’ alternative in Section 6.2.
6.2 Evaluation of Proposed Alternatives

Three potential watercrossings of the Holland River for the sanitary sewers were identified according to environmental and geotechnical conditions. Proximity to the existing infrastructure and the existing and proposed service population were also factored when identifying options.

The three potential options for the watercrossing are:

- **Option A:** Extends the sewer pipe westerly across the Holland River, then along the north side of Bradford Street right-of-way to Toll Road, then down the center of the right-of-way of Holland Landing Rd.

- **Option B:** Extends the sewer pipe from the Bradford Street Pumping Station westerly across the Holland River, then southerly across the floodplain of the Holland River, then along the north side of the Bradford Street right-of-way to Toll Road, then down the center of the right-of-way of Bradford Street to Holland Landing Road

- **Option C:** Extends the sewer pipe from the Bradford Street Pumping Station southerly underneath Bradford Street, to the east of the Holland River, then along the south side of the right-of-way of Bradford Street to Toll Road, then down the centre of the right-of-way of Bradford Street to Holland Landing Road.

*Figures 6.2-1, 6.2-2 and 6.2-3* illustrate Options A, B, and C for the watercrossing within the context of the study area.

An evaluation of each option, including natural, environmental, social, cultural, economic and technical factors has been undertaken to select the preferred option. This evaluation is presented in *Table 2.*
FIGURE 6.2-1
Option A - West Across Holland River, North of Bradford Street
<table>
<thead>
<tr>
<th>West Holland Landing Watercrossing Alternatives Scoring Table</th>
<th>Do Nothing</th>
<th>Option A- West Across Holland River, North of Bradford St.</th>
<th>Option B- West Across Holland River, South Across Floodplain, North of Bradford St.</th>
<th>Option C- South of Bradford St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility with the existing York Durham Sewer System</td>
<td>Not Preferred- ‘Do Nothing’ does not satisfy the requirements of the Master Servicing Plan for OPA # 60</td>
<td>Equal- directs existing and anticipated sanitary flows to York Region’s Bradford Street Pumping Station</td>
<td>Equal- directs existing and anticipated sanitary flows to York Region’s Bradford Street Pumping Station</td>
<td>Equal- directs existing and anticipated sanitary flows to York Region’s Bradford Street Pumping Station</td>
</tr>
<tr>
<td>Constructability of the alternative</td>
<td>Not Preferred- ‘Do Nothing’ would not require construction</td>
<td>Preferred- Constructability will depend on the geotechnical conditions, however environmental impacts are less significant than Options B and C</td>
<td>Not Preferred- Option B extends south of Bradford Street into a Wetland area and would require several shaft locations adjacent the Holland River.</td>
<td>Not Preferred- Option C extends south of Bradford Street into a Wetland area, the constructability is limited due to poor soil conditions.</td>
</tr>
<tr>
<td>Operation and maintenance requirements associated with the alternative</td>
<td>Not Preferred- ‘Do nothing’ would not create the increased operational capacity necessary for anticipated growth</td>
<td>Preferred- deep repairs if required will impact road closures equally for Alternatives A &amp; C but impact on property is less. Preferred- Accessible for inspection and maintenance from Bradford St..</td>
<td>Not Preferred- deep repairs if required will impact road closures equally for Options A &amp; C but impact on property is greater. Not Preferred- Inspection and maintenance would require access to the property north of Bradford St.</td>
<td>Not Preferred- deep repairs will potentially cause slightly more road closures and impact on private property will be greater. Not Preferred- Inspection and maintenance would require access to the property south of the Bradford St.</td>
</tr>
<tr>
<td>Reliability of alternatives during operation</td>
<td>Not Preferred- ‘Do Nothing’ does not provide a reliable solution to the anticipated growth</td>
<td>Preferred- least amount of deep underground infrastructure in operation</td>
<td>Not Preferred- Options B &amp; C both will have more deep underground infrastructure in operation</td>
<td>Not Preferred- Options B &amp; C both will have more deep underground infrastructure in operation</td>
</tr>
<tr>
<td>Approval requirements</td>
<td>Not Preferred- Does not satisfy the requirements of the Master Servicing Plan for OPA # 60</td>
<td>Equal- Approvals for Option A, B and C would be the same.</td>
<td>Equal- Approvals for Option A, B and C would be the same.</td>
<td>Equal- Approvals for Option A, B and C would be the same.</td>
</tr>
<tr>
<td>Geotechnical effects</td>
<td>Preferred- no geotechnical effects associated with ‘Do Nothing’</td>
<td>Preferred- soil conditions for all three options are similar, however Option A has less environmental impacts (including soil).</td>
<td>Not Preferred - soil conditions are similar for all three options, however environmental impacts (including soil) are greater.</td>
<td>Not Preferred- soil conditions are similar for all three options, however environmental impacts (including soil) are greater.</td>
</tr>
<tr>
<td>Overall category</td>
<td>1 Preferred 0 Equal</td>
<td>2 Preferred 1 Equal</td>
<td>0 Preferred 2 Equal</td>
<td>0 Preferred 2 Equal</td>
</tr>
<tr>
<td>Effects on groundwater</td>
<td>Not Preferred- anticipated growth requires additional sewer capacity, if no extra capacity is constructed, ground water impacts may occur</td>
<td>Equal- effects on groundwater will be mitigated</td>
<td>Equal- effects on groundwater will be mitigated</td>
<td>Equal- effects on groundwater will be mitigated</td>
</tr>
<tr>
<td>Effects on surface water</td>
<td>Not Preferred- without additional capacity, surface water impacts may occur.</td>
<td>Preferred- All three alternatives will be constructed 20m below the Holland River limiting the impact on surface water</td>
<td>Not Preferred- Options B and C will be constructed 20m below the Holland River; however several shafts will be located in the floodplain.</td>
<td>Not Preferred- Options B and C will be constructed 20m below the Holland River, however several shafts will be located in the floodplain.</td>
</tr>
<tr>
<td>Effects on the terrestrial environment and biota</td>
<td>Not Preferred- without additional capacity, growth may impact the terrestrial environment and biota</td>
<td>Preferred- no significant impacts are anticipated on the terrestrial environment and biota</td>
<td>Not Preferred- impacts to the terrestrial environment and biota may occur due to shaft locations in floodplain.</td>
<td>Not Preferred- impacts to terrestrial environment and biota may occur due to shaft locations in floodplain.</td>
</tr>
<tr>
<td>Overall category</td>
<td>0 Preferred 0 Equal</td>
<td>1 Preferred 2 Equal</td>
<td>0 Preferred 1 Equal</td>
<td>0 Preferred 1 Equal</td>
</tr>
<tr>
<td>Visual Impacts- Viewshed</td>
<td>Equal- no impact on viewed</td>
<td>Equal- no impact on viewed as alternative is under Holland River</td>
<td>Equal- no impact on viewed as alternative is under Holland River</td>
<td>Equal- no impact on viewed as alternative is under Holland River</td>
</tr>
<tr>
<td>Displacement of existing residences, businesses and/or community, institutional and recreational uses</td>
<td>Equal- will not displace any surrounding land uses.</td>
<td>Equal- temporary disruption to surrounding uses, will be mitigated through construction staging</td>
<td>Not Preferred- requires several shaft locations adjacent the Holland River, this option would require an easement on a neighbouring private property to accommodate shaft construction</td>
<td>No Preferred- requires several shaft locations adjacent the Holland River, this option would require an easement on a neighbouring private property to accommodate shaft construction</td>
</tr>
<tr>
<td>Disruption of existing residences, businesses and/or community, institutional and recreational uses</td>
<td>Not Preferred- additional sewer capacity necessary to service growth in the community</td>
<td>Preferred- minor and temporary disruption to surrounding land uses during construction, effects will be mitigated</td>
<td>Equal- disruptions to surrounding land uses will more significant than Option A due to several shaft locations needed for construction.</td>
<td>Equal- disruptions to surrounding land uses will more significant than Option A due to several shaft locations needed for construction.</td>
</tr>
</tbody>
</table>

June 2010
## Alternatives Scoring Table

<table>
<thead>
<tr>
<th>West Holland Landing Watercrossing</th>
<th>Do Nothing</th>
<th>Option A- West Across Holland River, North of Bradford St.</th>
<th>Option B- West Across Holland River, South Across Floodplain, North of Bradford St.</th>
<th>Option C- South of Bradford St.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of traffic operations</td>
<td>Preferred- no change in traffic operations</td>
<td>Not Preferred- temporary disruptions to local traffic will take place as a result of the construction of all three options, traffic nuisance effects will be mitigated through construction staging</td>
<td>Not Preferred- temporary disruptions to local traffic will take place as a result of the construction of all three options, traffic nuisance effects will be mitigated through construction staging</td>
<td>Not Preferred- temporary disruptions to local traffic will take place as a result of the construction of all three options, traffic nuisance effects will be mitigated through construction staging</td>
</tr>
<tr>
<td>Effects on property values</td>
<td>Not Preferred- lack of additional capacity in area and associated impacts may cause a stabilization of decrease in property values area.</td>
<td>Equal- Impact of new sewer line on property values is unknown</td>
<td>Equal- Impact of new sewer line on property values is unknown</td>
<td>Equal- Impact of new sewer line on property values is unknown</td>
</tr>
<tr>
<td>Impacts on Agricultural Resources</td>
<td>Equal- no impacts on agricultural resources</td>
<td>Equal- no adjacent agricultural uses</td>
<td>Equal- no adjacent agricultural uses</td>
<td>Equal- no adjacent agricultural uses</td>
</tr>
<tr>
<td>Effects on agricultural operations</td>
<td>Equal- no impacts on agricultural operations</td>
<td>Equal- no adjacent agricultural uses</td>
<td>Equal- no adjacent agricultural uses</td>
<td>Equal- no adjacent agricultural uses</td>
</tr>
<tr>
<td>Health and safety during construction/operation</td>
<td>Not Preferred- no construction or operation is required, therefore not impacting health and safety, however a lack of additional capacity may cause health and safety concerns.</td>
<td>Preferred- option would not require several shafts along the Holland River, minimizing construction safety, operational safety would be the same for all three options</td>
<td>Not Preferred- Option would require the installation of several shafts along the Holland River due to poor soil conditions, operational health and safety would be the same for all three options</td>
<td>Not Preferred- Option would require the installation of several shafts along the Holland River due to poor soil conditions, operational health and safety would be the same for all three options</td>
</tr>
<tr>
<td>Overall category</td>
<td>1 Preferred 4 Equal</td>
<td>2 Preferred 5 Equal</td>
<td>0 Preferred 5 Equal</td>
<td>0 Preferred 5 Equal</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>Effects to archaeological resources</td>
<td>Equal- no impacts from the ‘Do Nothing’ approach are expected</td>
<td>Equal- archeological resources may be present in the study area, Stage 2 testing required</td>
<td>Equal- archeological resources may be present in the study area, Stage 2 testing required</td>
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<tr>
<td></td>
<td>Effects to built heritage features/cultural landscape units</td>
<td>Equal- no impacts from the ‘Do Nothing’ approach are expected</td>
<td>Equal- no impacts to built heritage features and cultural landscape units are expected</td>
<td>Equal- no impacts to built heritage features and cultural landscape units are expected</td>
</tr>
<tr>
<td>Overall category</td>
<td>0 Preferred 2 Equal</td>
<td>0 Preferred 2 Equal</td>
<td>0 Preferred 2 Equal</td>
<td>0 Preferred 2 Equal</td>
</tr>
<tr>
<td>Financial</td>
<td>Capital costs</td>
<td>Not Preferred- No upfront capital costs associated with ‘do nothing, however additional costs may be incurred later if servicing is not addressed.</td>
<td>Preferred- Watercrossing construction costs will depend significantly on the geotechnical makeup</td>
<td>Not Preferred- Option B requires several shaft locations adjacent to the Holland River due to poor soil conditions, increasing the overall upfront capital costs</td>
</tr>
<tr>
<td></td>
<td>Operating and maintenance costs</td>
<td>Not Preferred- additional operation and maintenance costs may be incurred later if servicing is not addressed.</td>
<td>Equal- operating and maintenance costs for all three options would be equal</td>
<td>Equal- operating and maintenance costs for all three options would be equal</td>
</tr>
<tr>
<td></td>
<td>Effects on local and regional economies (from project expenditures)</td>
<td>Not Preferred- ‘Do Nothing’ does not require any project expenditures</td>
<td>Equal- the effects on the local and regional economies will be similar for all three options</td>
<td>Equal- the effects on the local and regional economies will be similar for all three options</td>
</tr>
<tr>
<td></td>
<td>Effects on municipal finances</td>
<td>Not Preferred- the anticipated growth would positively impact municipal finances, the additional sewer capacity is necessary to service growth.</td>
<td>Equal- municipal financing of the project will be required</td>
<td>Equal- municipal financing of the project will be required</td>
</tr>
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June 2010
## Community Planning

<table>
<thead>
<tr>
<th>Overall category</th>
<th>0 Preferred</th>
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<th>3 Equal</th>
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<th>3 Equal</th>
<th>0 Preferred</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Conformity with the Places to Grow, ORMCP, Greenbelt Plan and Lake Simcoe Protection Plan</td>
<td>Not Preferred- 'Do nothing' does not provide for additional wastewater capacity to accommodate for the anticipated growth and meet the density targets outlined in Places to Grow (2005).</td>
<td>Preferred- Option A has the least environmental impacts, conforming with policies contained in ORMCP, Greenbelt and Lake Simcoe Protection Plan</td>
<td>Not Preferred- Options B and C would result in greater environmental impacts</td>
<td>Not Preferred- Options B and C would result in greater environmental impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on approved/planned land uses</td>
<td>Not Preferred- new development permitted by OPA#60 for Holland Landing will accommodate up to 16,000 residents, additional wastewater capacity needed to service additional growth.</td>
<td>Equal- additional 16,000 residents will be accommodated by the sewer extension of full services in the future</td>
<td>Equal- additional 16,000 residents will be accommodated by the sewer extension of full services in the future</td>
<td>Equal- additional 16,000 residents will be accommodated by the sewer extension of full services in the future</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disturbing or altering existing community character or structure</td>
<td>Equal- no alterations to the existing community will take place with the 'Do Nothing' alternative</td>
<td>Preferred- community will be altered with the influx of anticipated growth, additional changes to the community as a result of the sewer will be minimal</td>
<td>Equal- community will be altered with the influx of anticipated growth, and several construction shafts needed for construction under Option B and C.</td>
<td>Equal- community will be altered with the influx of anticipated growth, and several construction shafts needed for construction under Option B and C.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

## Overall Planning

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<th>0 Preferred</th>
<th>2 Equal</th>
<th>0 Preferred</th>
<th>2 Equal</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAND TOTAL</td>
<td>2 Preferred</td>
<td>5 Equal</td>
<td>8 Preferred</td>
<td>18 Equal</td>
<td>0 Preferred</td>
<td>15 Equal</td>
<td>0 Preferred</td>
<td>15 Equal</td>
</tr>
</tbody>
</table>
6.4 Recommended Proposed Alternative

Based on the evaluation undertaken in Section 6.2 using the natural, technical and socio-economic criteria, Option A has been selected as the Preferred Alternative. Option A crosses the Holland River in a westerly direction north of Bradford Street. This site was selected as the Preferred Alternative because it was the most favourable in terms of technical, social, environmental and community planning factors. Option A was either equal to or more favourable to the other alternatives in all evaluation criteria. Option A is also seen as more favourable because it avoids the floodplain to the North of Bradford Street and also the wetlands to the south of Bradford Street.

Construction and operation of the new trunk sewer under the Holland River will have a net positive benefit on its surroundings as it will satisfy the requirements of OPA #60 for the Holland Landing Area, allowing for additional growth in the Holland Landing Community. It will also provide sanitary services to current and future residents. Option A for the watercrossing will also have the most minimal impacts of the three options on the surrounding neighbours, the natural heritage and will not require several shaft locations throughout construction as it does not travel through the existing wetland to the south of the Bradford St bridge. Option A will involve trenchless construction technology when crossing under the Holland River, and associated buffer and wetland areas. Finally, Option A does not cross the floodplain to the north of Holland Street, decreasing the projects impact on the natural heritage and aquatic environment.
7.0 Analysis of the Preferred Solution

7.1 Holland Landing Watercrossing

As mentioned in Section 6.2, each alternative was examined to minimize the disruption to the existing wetlands along the river and to minimize the hydrologic problems associated with construction beneath the river, and to minimize costs.

7.1.1 Green Belt Compliance

As mentioned in Section 3.3 of this Class EA Report, the lands outside the ORMCP Area are subject to the policies of the Provincial Greenbelt Plan. The Holland Landing/River Drive area itself is identified as a ‘Settlement Area’. Within this area, all existing, expanded or new infrastructure development must demonstrate that no negative effects on key natural heritage features will occur. As the lands for the preferred solution are located within the Protected Countryside, compliance with the provincial legislation must be demonstrated. Table 7 presents the policies of Section 4.2 Infrastructure Uses of the Greenbelt Plan which are applicable to this project and how each will be satisfied.
### Table 7: Greenbelt Plan Compliance

<table>
<thead>
<tr>
<th>PLAN REQUIREMENT FOR THE PROTECTED COUNTRYSIDE</th>
<th>ADDRESSING THE REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 4.2.1(1)(a) and (b):</strong> All existing, expanded or new infrastructure subject to and approved under the Canadian Environmental Assessment Act, the Environmental Assessment Act, the Planning Act, the Aggregate Resources Act, the Telecommunications Act or by the National or Ontario Energy Boards, or which receives a similar environmental approval, is permitted within the Protected Countryside, subject to the policies of this section and provided it meets one of the following two objectives:</td>
<td></td>
</tr>
<tr>
<td>a) It supports agriculture, recreation and tourism, rural settlement areas, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or</td>
<td>• A new trunk sewer is a requirement of OPA #60 in order to provide adequate servicing for approved growth.</td>
</tr>
<tr>
<td>b) It serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban growth centres and between these centres and Ontario’s borders.</td>
<td></td>
</tr>
<tr>
<td><strong>Section 4.2.1 (2):</strong> The location and construction of infrastructure and expansions, extensions, operations and maintenance of infrastructure in the Protected Countryside, are subject to the following:</td>
<td></td>
</tr>
<tr>
<td>a) Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System, traversed and/or occupied by such infrastructure;</td>
<td>• Natural Heritage System occupation or crossing.</td>
</tr>
<tr>
<td>b) Planning, design and construction practices shall minimize, wherever possible, the negative impacts and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt;</td>
<td>• No light intrusion or road salt is associated with this project.</td>
</tr>
<tr>
<td>c) Where practicable, existing capacity and coordination with different infrastructure services is optimized so that the rural and existing character of the Protected Countryside and the overall urban structure for southern Ontario established by Greenbelt and any provincial growth management initiatives are supported and reinforced;</td>
<td>• Option A will be constructed under the Holland River, minimizing overall impact on the surrounding landscapes.</td>
</tr>
<tr>
<td>d) New or expanding infrastructure shall avoid key natural heritage features or key hydrologic features unless need has been demonstrated and it has been established that there is no reasonable alternative, and</td>
<td>• Existing utilities such as telephone, cable and hydro will be consulted with respect to construction schedules.</td>
</tr>
<tr>
<td>e) Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a key natural heritage feature or key hydrologic feature, including related landform features, planning, design and construction practices shall minimize negative impacts and disturbance on the features or their related functions, and where reasonable, maintain or improve connectivity.</td>
<td>• Option A will avoid the floodplain and wetland areas, further reducing the sewers impact on the Natural Heritage System.</td>
</tr>
<tr>
<td><strong>4.2.2 (1):</strong> Proposals for infrastructure within or crossing the Protected Countryside shall demonstrate that:</td>
<td></td>
</tr>
<tr>
<td>a) Sewage and water servicing can be provided in a manner that does not negatively impact ecological features and functions, quality and quantity of ground and surface water, including stream baseflow, and is sufficient to accommodate the proposed use(s);</td>
<td>• Not Applicable</td>
</tr>
<tr>
<td>b) Applicable recommendations, standards or targets within watershed plans and water budgets are reflected; and</td>
<td>• Not Applicable</td>
</tr>
<tr>
<td>c) Any sewage and water servicing installation is planned, designed and constructed to minimize surface and groundwater disruption.</td>
<td>• Best management practices will be utilized (e.g. anti-seepage collars, erosion controls, siltation fencing) to minimize effects on water quality and quantity.</td>
</tr>
<tr>
<td><strong>4.2.2 (2):</strong> Where settlements do not currently have Great Lake or Lake Simcoe based water and sewage services, extensions to</td>
<td>• This Class EA began in 2005 prior to the Greenbelt Act and Plan coming into force, however,</td>
</tr>
</tbody>
</table>

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**June 2010**
### Table 7: Greenbelt Plan Compliance

<table>
<thead>
<tr>
<th>PLAN REQUIREMENT FOR THE PROTECTED COUNTRYSIDE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>or expansions of existing Great Lake or Lake Simcoe based services to such settlements is not permitted, unless such servicing is required to address failed individual on-site sewage or water services or to ensure the protection of public health where it has been determined by a medical officer of health (or health authority) that there is a public health concern associated with existing services within the settlement. The capacity of the services provided in the these circumstances will be restricted to that required to service the affected existing settlement plus the capacity for potential development within the approved settlement boundary as it existed on the date this Plan came into effect.</td>
<td>alternatives that considered Great Lake or Lake Simcoe based water services were screened from further evaluation considering the Plan. There has not to date been an identified health concern associated with existing services.</td>
</tr>
<tr>
<td>(3) Where settlements currently have, or have approvals for, Great Lake based water and/or sewer services as of the date this Plan came into effect, such services may be extended and expanded to service growth within an approved settlement boundary as it existed on the date this Plan came into effect. Where only Great Lake water exists or has been approved, corresponding municipal sewage service shall be required in order for any expansion of the current settlement boundary where such expansion would be permitted by this Plan.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(4) Where settlement area expansions are contemplated by a municipality, the environmental assessment in support of expanded sewage and water services must be completed or approved prior to amending the boundaries of the settlement within the municipal official plan. The expansion must not extend into the Natural Heritage System or the specialty crop area.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(5) The extension of municipal or private communal sewage or water services outside of a settlement boundary shall only be permitted in the case of health issues or to service existing uses and the expansion thereof adjacent to the settlement. Notwithstanding the above, where municipal water services exist outside of settlements areas, existing uses within the service area boundary as defined by the environmental assessment may be connected to such a service.</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| (6) New or expanded partial servicing, where site conditions are suitable for the long-term provision of such services, is only permitted in the following circumstances:  
  a) Where such servicing is necessary to address failed individual on-site sewage or water services serving existing development; or  
  b) To allow for infilling and intensification within settlement areas served by partial services as of the date this Plan came into effect. | Not applicable |
| 4.2.2 (7) In the siting of new municipal and other wells, consideration shall be given to the location of vulnerable areas | Proximity to and effects on ANSIs, Wetlands, ESAs and other vulnerable areas were considered |
8.0 Recommended Mitigation Measures

The permanent watercrossing will not have any significant impacts on the natural, cultural or economic environments due to its low ecological significance and sensitivity of site features.

The preferred option has been chosen to avoid or mitigate environmental impacts. Such impacts will generally be limited to temporary impacts associated with construction activities of the watercrossing.

Inconvenience to the public will be minimized as traffic restrictions along Bradford Street and Holland Landing Road will be limited and industry standard noise and dust control measures will be utilized. Environmental inspection and monitoring will be carried out during construction and the timing of the construction activities will take into account local traffic patterns and other sensitive issues.

It is anticipated that the construction will result in minor and temporary inconvenience to residents. Open cut construction methods for installation of the entire proposed trunk sewers are not considered feasible, due to constraints such as excessive depth, CN Rail crossing, Holland River crossing and other watercourse crossings. Therefore, trenchless construction methods will be required and will be better suited for most of this option, whereas open cut construction techniques will occur along Bradford Street and Holland Landing Road. Excavation will be required for the construction of the new sewer pipe. A staging pit for directional drilling from east to west will be excavated at the existing Bradford Street Pump Station site on the east side of the Holland River. No other excavation will occur near the Holland River or the adjacent floodplain areas. Final grades will match existing elevations in order to ensure that there is no impact on floodplain function of the Holland River. Road access will be reduced, however access will be maintained during construction and entrances will be reinstated to the satisfaction of residents at the conclusion of the project. Only short-term minor temporary inconvenience to residents is anticipated.

8.1 During Construction

8.1.1 Air Quality

Material handling, such as excavation, loading and hauling, is the most significant sources of dust during construction activities. However, dust control during these activities can be easily achieved through planning and proper implementation of construction practices and mitigation measures. These mitigation measures may include, but are not limited to, using appropriate dust suppression measures such as spraying down the site and roadways, limiting excavation on windy days, washing trucks, and using dust covers on haulage trucks.
The construction activities required are not expected to create quantities of dust that will exceed acceptable MOE guidelines. However, while the appropriate mitigation measures will be implemented during construction, there may be localized residual dust emissions around the site.

To prevent air quality impacts associated with construction vehicle exhaust fumes, emission control devices on equipment should be functional and effective, and new or well-maintained heavy equipment and machinery, preferably fitted with muffler/exhaust system baffles, and engine covers should be used.

8.1.2 Noise

A short term increase in on-site noise levels from construction activities will occur in the immediate area of the construction. However, sound levels at the nearest property boundary are expected to be well below MOE Sound Level Limits. Construction activities will also be restricted to hours of 7am to 7pm Monday through Saturday and 9am through 7pm on Sundays as prescribed in Bylaw # 2004-80 of the Town of East Gwillimbury.

Ensuring that equipment is in sound working order and using noise attenuation devices (mufflers on motorized equipment) will ensure compliance with government requirements and will result in sound levels being within acceptable levels both on and off site.

Although these recommended mitigation measures will be effective at minimizing the likely environmental effects due to noise associated with the construction of the project, minimal residual localized effects may result.

8.1.3 Natural Environment

Monitoring Program during Dewatering

It is anticipated that some dewatering may be required for the sewer installation. However, since the sewer construction is proposed to be done mostly by trenchless techniques, only limited dewatering volumes are expected to be taken during this stage. Sensitive areas will be open-cut excavations at Bradford Street and East Holland River and along Holland Landing Road near creek crossings. Dewatering of cuts/excavations as a result of groundwater interception will be done in accordance with approved control measures and regulatory approvals. A Permit to Take Water (PTTW) may be required to be obtained from the MOE prior to construction, if dewatering volumes exceed 50 m$^3$/day.

Evaluation of soil excavation limits and dewatering impacts on river flows, natural features (i.e., creeks, woodlots, and wetlands) will be conducted in collaboration with
biologists during the detailed design stage. A monitoring program will be proposed for the areas of concern. Mitigation measures to reduce dewatering impacts will be proposed and may include using sheet piles in areas with high groundwater seepage rates, redirecting groundwater during dewatering back to the environment, etc.

A private water well monitoring program will also be carried out as a part of a hydrogeological investigation at the detailed design stage. This will allow evaluating an impact of dewatering activities on groundwater users. This will include monitoring groundwater quality and water levels in pre-construction, construction and post-construction conditions. A contingency plan will be included in the program to respond to emergency situations during the project construction phase. A mitigation plan to reduce the dewatering impact on water well users will be prepared in support of PTTW to the MOE.

Environmental Considerations

A spill prevention and control plan to prevent groundwater contamination at the construction phase will be developed at the detailed design stage. The plan will identify measures to prevent spills during construction and manage any unanticipated occurrences. This will include identifying appropriate response measures, materials and instructions or use, including maintenance of materials on-site or otherwise available for immediate use, and appropriate notification procedures (i.e. the MOE, LSRCA will be immediately notified of any spills).

During the detailed design stage, environmental site assessments Phase I and Phase II will be conducted by MMM to assess sources of actual and potential soil contamination at the Site. Based on results of these investigations, areas of concern will be identified to a contractor to be managed by standard soil management programs. In a contract, the contractor will be required to identify the suspected material, to test the material and manage the contamination.

The standard soil management program will provide for characterization of subsurface soil prior to excavation, control of subsurface soil exposed through excavation and sampling of subsurface soil to determine the requirements for disposal. In the event that excavations will be conducted within the site, and soil needs to be removed from the subsurface, the soil will be tested to identify soil management options. These options may include an on-site management of soil, an off-site soil management at a remediation site requiring fill or an off-site management of soil at a waste receiving facility.

Erosion and Sediment Control
Detailed erosion and sediment mitigation measures will be developed at the detailed design stage to support a PTTW Application. These measures will be focused on maintaining appropriate water quality taken during dewatering prior to releasing water back to water courses and preventing soil erosion. These measures may include recommendations on using siltation bags to filter water, lining water banks with tarp, maintaining existing drainage areas, etc.

There is no loss of riparian vegetation anticipated with the construction of the sanitary sewer line.

**8.1.4 Traffic**

There will be occasional disruptions to traffic during construction activities. These impacts will be temporary and can be minimized by ensuring that disruptions are restricted to off-peak hours and that proper signage is posted.

**8.1.5 Utilities**

Construction schedules shall be co-ordinated with the local hydro utility company and similarly, with other municipal services and utilities including telephone, gas and cable, to ensure any disturbance in service is minimal and short-term.

**8.1.5 Archaeology**

As described in Appendix B a Stage 2 Archaeological assessment will be conducted in undisturbed construction areas. In the event that archaeological resources or human remains are found during construction activities, work will stop and provincial authorities will be notified as described in Appendix B.

**8.2 During Operation**

No mitigation measures during the operation of the sanitary sewer will be required.
9.0 Approvals

It is anticipated that the following approvals and permits will be required and undertaken during the Detail Design phase of this project:

- Local permits will be required from the Town of East Gwillimbury prior to and during the construction of the watercrossing and the overall trunk sewer.

- Permit approvals from the Lake Simcoe Region Conservation Authority (LSRCA) as required under Ontario Regulation 179/06 will be required prior to site alteration. Through the LSRCA permit process, any approvals under the federal Fisheries Act can be obtained via the Level III Fish Habitat Agreement with Fisheries and Oceans Canada (DFO). Additional habitat compensation may be required if loss of natural features occurs.

- A Permit to Take Water may be required to be obtained from the Ministry of Environment for installation of sanitary sewers at the Holland River Crossing. Dewatering calculations for the sewer installation will be carried out by MMM at the detailed design stage.
10.0 Property Acquisition Requirements

The preferred alignment will be angled from Bradford Street to a proposed manhole on the Bradford Street Pumping Station Site. A small easement may be necessary on the private property where the sewer alignment is closest to the Bradford Street North right-of-way limits. Additionally, a 3.0m wide easement may be required to offset the sewer alignment itself. Going forward, determining the exact easement limits will be determined by the Town and the Region during the detailed design phase of the project.
11.0 References

Archeoworks Inc., 2007. *Stage 1 Archaeological Assessment for the Holland Landing Queensville Sharon Wastewater Infrastructure Study Area, Town of East Gwillimbury, Regional Municipality of York (Ontario).*


The Master Servicing Plan for Official Plan Amendment No. 60 (OPA 60) Holland Landing, Ontario identified that the wastewater servicing plan for the area directs all new and existing sanitary flows to York Region’s Bradford Street Pumping Station via a 525 mm sewer under the Holland River. The crossing would be in the vicinity of the Bradford Street Bridge.

The environmental investigations will review alternative routes for the crossing within the limits imposed by the earlier approvals.

The approved recognized sewer crossing is being undertaken in accordance with the requirements of the Municipal Class Environmental Assessment (June 2000, as amended in 2007). The project is currently being planned under “Schedule B”.

Public input and comment are invited for incorporation into the planning and design of this project. A Public Consultation Centre will be scheduled to provide additional information and review aspects of the project, including alternatives being considered, and to answer questions regarding the project. Separate notification will be provided for this meeting.

If you wish to comment on the Class EA for the crossing of the Holland River, please contact the Town’s Consultant, MMM Group, or the Town at the following addresses:

**Bob Burdett, B.Sc.**
Senior Project Manager
MMM Group Ltd.
100 Commerce Valley Drive West
Thornhill, ON
Tel. (905) 882-4211 ext. 2223
Fax. (905) 882-7276
E-mail: BurdettB@mmm.ca

**Don Allan**
Manager of Development Engineering
The Town of East Gwillimbury
19000 Leslie Street
Sharon, ON L0G 1V0
Tel. (905) 478-3819
E-mail: dallan@eastgwillimbury.ca

This notice issued October 2008
The Master Servicing Plan for Official Plan Amendment No. 60 (OPA 60) Holland Landing, Ontario identified that the wastewater servicing plan for the area directs all new and existing sanitary flows to York Region’s Bradford Street Pumping Station via a 525 mm sewer under the Holland River. The crossing would be in the vicinity of the Bradford Street Bridge.

The environmental investigations will review alternative routes for the crossing within the limits imposed by the earlier approvals.

The sewer crossing study is being undertaken in accordance with the requirements of the Municipal Class Environmental Assessment (June 2000, as amended in 2007). The project is currently being planned under “Schedule B”.

Public input and comment are invited for incorporation into the planning and design of this project. A Public Information Centre has been scheduled to provide additional information and review aspects of the project, including alternatives being considered.

Public Information Centre
Wednesday, October 28, 2009
5:00 – 7:00 p.m.
East Gwillimbury Civic Centre
19000 Leslie Street, Sharon, ON
Holland Landing Room

If you wish to comment on the Class EA for the crossing of the Holland River, please contact the Town’s Consultant, MMM Group, or the Town at the following addresses:

Bob Burdett, B.Sc.
Senior Project Manager
MMM Group Ltd.
100 Commerce Valley Drive West
Thornhill, ON
Tel. (905) 826-4770 x332
Fax. (905) 826-8007
E-mail: BurdettB@mmm.ca

Don Allan
Manager of Development Engineering
The Town of East Gwillimbury
19000 Leslie Street
Sharon, ON L0G 1V0
Tel. (905) 478-3819
E-mail: dallan@eastgwillimbury.ca

This notice issued October 2009
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<thead>
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<th>FirstName</th>
<th>LastName</th>
<th>JobTitle</th>
<th>Company</th>
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<th>Address2</th>
<th>City</th>
<th>PostalCode</th>
<th>Work Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr.</td>
<td>David</td>
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<td>Indian and Northern Affairs Canada</td>
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## WEST HOLLAND LANDING EA

### STUDY CONTACT LIST

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### First Nations

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<td>Mr. Randy Pitt</td>
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<td>Band, Curve Lake Indian Band, Hiawatha Indian Band, Mississaugas of Scugog Indian Band v. HTMQ and Ontario (Third Party), Federal Court of Canada, filed in Montreal, Court file reference # T-195-92; and Moose Deer Point First Nation, Chief Edward Williams suing on his own behalf and on behalf of the members of Moose Deer Point First Nation v. Her Majesty the Queen in Right of Ontario, Superior Court of Justice File #01-CV-220612CM. I am unable to comment with respect to the possible effect of these claims as the cases have not yet been adjudicated and any statement regarding the outcome of the litigation would be speculative at this point. It is recommended that you consult legal counsel as to the effect this action could have on the lands you are concerned with. If you are interested in further details about the claims, copies of the pleadings can be obtained from the Court for a fee; please contact the appropriate</td>
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<tr>
<td>Title</td>
<td>FirstName</td>
<td>LastName</td>
<td>JobTitle</td>
<td>Company</td>
<td>Comment Received</td>
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<td></td>
<td>Ms.</td>
<td>Louise</td>
<td>Trepanier</td>
<td>Court Registry Office and make reference to the court file number listed above. We cannot make any comments regarding claims filed under other departmental policies. For information on any claims you should also contact Don Boswell of the Specific Claims Branch at (819) 953-1940 to inquire about any Specific Claims, and Guy Morin of the Comprehensive Claims Branch at (819) 956-0325 to inquire about any current Comprehensive Claims. If you have any further questions please do not hesitate to contact me at (819) 994-1947</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Mr.</td>
<td>Alan</td>
<td>Kary</td>
<td>Director, Claims East of Manitoba Comprehensive Claims Branch</td>
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<td></td>
<td></td>
<td>Deputy</td>
<td>Director, Policy and Relationships Branch</td>
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Sincerely,
Marc-André Millaire
Litigation Team Leader
<table>
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<tr>
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<tbody>
<tr>
<td>Ms.</td>
<td>Ragini</td>
<td>Dayal</td>
<td>Heritage Advisor</td>
<td>Ministry of Culture</td>
<td>Notice of Study</td>
<td>December 16, 2008</td>
<td></td>
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<tr>
<td>Mr.</td>
<td>Tom</td>
<td>Charpentie</td>
<td>Advisor</td>
<td>Bell Canada</td>
<td>Commencement returned with no comment</td>
<td></td>
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<tr>
<td>Ms.</td>
<td>Deb</td>
<td>Garnich</td>
<td></td>
<td>Canada Post Corporation</td>
<td>Notice of Study</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Peter</td>
<td>Roberts</td>
<td>Planning and Records Supervisor</td>
<td>Consumers Gas</td>
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<tr>
<td>Mr.</td>
<td>Rob</td>
<td>Dobos</td>
<td>Head, Environmental Assessment Section</td>
<td>Environment Canada</td>
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<tr>
<td>Ms.</td>
<td>Nancy</td>
<td>Eves</td>
<td>Chair</td>
<td>Heritage East Gwillimbury Advisory Committee</td>
<td>Notice of Study</td>
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<tr>
<td>Ms.</td>
<td>Carrie-Lynn</td>
<td>Ognibene</td>
<td></td>
<td>Hydro One Networks Inc.</td>
<td>Notice of Study</td>
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</table>

Mr. Burdett, Thank you for sending Hydro One the notices of commencement for two Class EA projects in the Town of East Gwillimbury. I have forwarded them to Greg Wall, Senior Real Estate Coordinator, Hydro One Networks, who will advise if our Company has an interest in providing input to these studies.

Mr. Wall works in our office at 185 Clegg Road, Markham, L6G 1B7 and can be reached by telephone at 905-946-6233.
<table>
<thead>
<tr>
<th>Title</th>
<th>FirstName</th>
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<tbody>
<tr>
<td>Mr.</td>
<td>David</td>
<td>Yee</td>
<td>Information Officer</td>
<td>Indian and Northern Affairs</td>
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<tr>
<td>Ms.</td>
<td>Nadia</td>
<td>Bartolini</td>
<td>A/Research Manager Specific Land Claims Branch</td>
<td>Indian and Northern Affairs Canada</td>
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<tr>
<td>Mr.</td>
<td>Tom</td>
<td>Hogenbirk</td>
<td>Manager, Engineering</td>
<td>Lake Simcoe Region Conservation Authority</td>
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<tr>
<td>Ms.</td>
<td>Cathy</td>
<td>Wilson-Pinkney</td>
<td>Manager, Marketing and Communications</td>
<td>Ministry of Agriculture and Food</td>
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<tr>
<td>Mr.</td>
<td>John</td>
<td>Wilson</td>
<td>Regional Director – Central Office</td>
<td>Ministry of Community and Social Services</td>
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<tr>
<td>Mr.</td>
<td>Nebo</td>
<td>Orazietti</td>
<td>Manager Accommodations – Facilities</td>
<td>Ministry of Community Safety and Correctional Facilities</td>
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<tr>
<td>Mr.</td>
<td>Keith</td>
<td>Menezes</td>
<td>Director (Acting), Business Planning and Financial Management Branch</td>
<td>Ministry of Consumer and Business Services</td>
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<tr>
<td>Mr.</td>
<td>Malcolm</td>
<td>Horne</td>
<td>Heritage Planner</td>
<td>Ministry of Culture</td>
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<tr>
<td>Mr.</td>
<td>Steven</td>
<td>Mitchell</td>
<td>Facilities, Architecture and Assessment Director</td>
<td>Ministry of Education</td>
<td>With regard to the two submissions dated December 1, 2008, the Ministry has no comments to provide at this time. The Director for Central Region is no longer David Walker. Future submissions may be directed to Filomena Savoia, Director.</td>
<td></td>
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</tr>
<tr>
<td>Ms.</td>
<td>Filomena</td>
<td>Savoia</td>
<td></td>
<td>Ministry of Labour</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Marc</td>
<td>Magierowicz</td>
<td>Planner, Community Planning and Development Manager, Central Municipal Service Office</td>
<td>Ministry of Municipal Affairs and Housing</td>
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<tr>
<td>Mr.</td>
<td>Bruce</td>
<td>Singbush</td>
<td></td>
<td>Ministry of Municipal Affairs and Housing</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Peter</td>
<td>Waring</td>
<td>Area Supervisor</td>
<td>Ministry of Natural Resources</td>
<td>Letter received from Megan Belore</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ms.</td>
<td>Marja</td>
<td>Gates</td>
<td>Central Region EA Coordinator</td>
<td>Ministry of the Environment</td>
<td>Dear Mr. Burdett, Thank you for sending the notices of study commencement for the crossing of Holland River for Sanitary Sewer construction and the proposed north-South Collector Road in Sharon</td>
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<td></td>
<td></td>
<td>Letter received dated January 6, 2009</td>
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<td></td>
<td></td>
<td></td>
<td>PF emailed both study area maps to Dorothy</td>
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<td>December 12, 2008</td>
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<td></td>
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<td>December 15, 2008</td>
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</table>

January 5, 2009
### West Holland Landing EA

**Study Contact List**

<table>
<thead>
<tr>
<th>Title</th>
<th>FirstName</th>
<th>LastName</th>
<th>JobTitle</th>
<th>Company</th>
<th>Comment Received</th>
<th>Date</th>
<th>Response</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Mr.</td>
<td>Neil</td>
<td>Downs</td>
<td>Manager of Corporate Policy Unit</td>
<td>Ministry of Tourism and Recreation</td>
<td>Class EAs. Could you please email maps of the study areas for the 2 Class EAs, in order for us to provide comments? Thank you,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms.</td>
<td>Roger</td>
<td>Hanmer</td>
<td>Regional Director – Central Region Operations</td>
<td>Ministry of Transportation</td>
<td>Dorothy Moszynski</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mr.</td>
<td>Paul</td>
<td>Weaver</td>
<td>Operations Director</td>
<td>Ontario Hydro Centre Ontario Electric</td>
<td>Returned Notice of Study Commencement – “this project does not relate to this agency’s mandate, policies and programs. Our agency will not be providing input or participating in this study”</td>
<td>Dated</td>
<td>None required</td>
<td>December 17, 2008</td>
</tr>
<tr>
<td>Mr.</td>
<td>David</td>
<td>Pickles</td>
<td>Senior Policy Advisor</td>
<td>Ontario Native Affairs Secretariat</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Garry</td>
<td>Pringle</td>
<td>Environmental Assessment Coordinator</td>
<td>Rogers Television York Region</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Tim</td>
<td>Gibson</td>
<td>Chief Building Official</td>
<td>Town of East Gwillimbury</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Ken</td>
<td>Beckett</td>
<td>Fire Chief</td>
<td>Town of East Gwillimbury</td>
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<tr>
<td>Mayor</td>
<td>James R.</td>
<td>Young</td>
<td></td>
<td>Town of East Gwillimbury</td>
<td>Good Morning Bob</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Alan</td>
<td>Wells</td>
<td>Chief Administrative Officer</td>
<td>Town of East Gwillimbury</td>
<td>I am writing regarding two notices recently received by the Town of East Gwillimbury:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ms.</td>
<td>Lucille</td>
<td>King</td>
<td>Director of Corporate Services/Municipal Clerk</td>
<td>Town of East Gwillimbury</td>
<td>1. Class EA for the Proposed North South Collector Road, Sharon Community – West of Leslie Street</td>
<td></td>
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<tr>
<td></td>
<td>B. Wayne</td>
<td>Hunt</td>
<td>Town Engineer</td>
<td>Town of East Gwillimbury</td>
<td>2. Class EA for the Crossing of the Holland River in the Vicinity of the Bradford Street Bridge, to Accommodate the Construction of a Sanitary Sewer In the Community of Holland Landing</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mr.</td>
<td>Dan</td>
<td>Stone</td>
<td>Director of Planning</td>
<td>Town of East Gwillimbury</td>
<td>Please be aware that the contact person for both these studies is Carolyn Kellington,</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ms.</td>
<td>Carolyn</td>
<td>Kellington</td>
<td>Manager of Community Planning</td>
<td>Town of East Gwillimbury</td>
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## WEST HOLLAND LANDING EA
### STUDY CONTACT LIST

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<tr>
<th>Title</th>
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<tbody>
<tr>
<td>Ms.</td>
<td>Theresa</td>
<td>Bartley</td>
<td>President</td>
<td>Town of East Gwillimbury</td>
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<tr>
<td>Ms.</td>
<td>Jane</td>
<td>Ross</td>
<td>Co-ordinator of Land Use Planning</td>
<td>York Region School Board</td>
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<tr>
<td>Mr.</td>
<td>Tom</td>
<td>Pechkovskiy</td>
<td>Manager Planning Services</td>
<td>York Catholic District School Board</td>
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<tr>
<td>Mr.</td>
<td>Roland</td>
<td>Chenier</td>
<td>Clerk</td>
<td>Town of Georgina</td>
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<tr>
<td>Ms.</td>
<td>Anita</td>
<td>Moore</td>
<td>Clerk</td>
<td>Town of Newmarket</td>
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<tr>
<td>Ms.</td>
<td>Michele</td>
<td>Kennedy</td>
<td>Clerk</td>
<td>Town of Whitchurch-Stouffville</td>
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<tr>
<td>First Nations</td>
<td>Chief</td>
<td>Jeff R.</td>
<td>Marsden</td>
<td>Alderville First Nation</td>
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<tr>
<td>First Nations</td>
<td>Chief</td>
<td>Valerie</td>
<td>Monague</td>
<td>Beausoleil First Nation (Christian Island)</td>
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<tr>
<td>Chief</td>
<td>Brett</td>
<td>Mooney</td>
<td>Chippewas of Georgina Island</td>
<td>Chief requesting notification of Karry Sandy-McKenzie, Barrister &amp; Solicitor 8 Creswick Court Barrie, ON L4M 2J7 705 792-5087</td>
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<tr>
<td>Chief</td>
<td>Sharon</td>
<td>Stinson-Henry</td>
<td>Chippewas of Mnjikaning (Rama)</td>
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<tr>
<td>Chief</td>
<td>Keith</td>
<td>Knott</td>
<td>Curve Lake First Nation</td>
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<tr>
<td>Chief</td>
<td>Greg</td>
<td>Cowie</td>
<td>Hawathia First Nation</td>
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<tr>
<td>Councillor</td>
<td>Luc</td>
<td>Laine</td>
<td>Chief in Charge of Land Claims</td>
<td>Notice of Study Commencement returned without comment</td>
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<tr>
<td>Chief</td>
<td>Chris</td>
<td>Nahrgang</td>
<td>Kawartha Nishnawbe First Nation</td>
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<tr>
<td>Chief</td>
<td>Tracy</td>
<td>Gauthier</td>
<td>Mississaugas of Scugog Island</td>
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<tr>
<td>Chief</td>
<td>Bryan</td>
<td>LaForme</td>
<td>Mississaugas of the New Credit First Nation</td>
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<tr>
<td>Chief</td>
<td>Dave</td>
<td>General</td>
<td>Six Nations of the Grand River Territory</td>
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</tr>
<tr>
<td>Ms.</td>
<td>Lori</td>
<td>Jacobs</td>
<td>United Anishnabaag Councils</td>
<td>Letter returned marked “return to sender”</td>
<td></td>
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</tr>
<tr>
<td>Mr.</td>
<td>Allan</td>
<td>Dokis</td>
<td>Intergovernmental Affairs Director</td>
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</tr>
<tr>
<td>Mr.</td>
<td>Randy</td>
<td>Pitt</td>
<td>Office Manager</td>
<td>Association of Iroquois and Allied Indians</td>
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</table>
Class EA for the Sanitary Sewer Crossing of the Holland River in the Vicinity of the Bradford Street Bridge
Welcome to the Public Information Centre

October 28, 2009
5:00pm-7:00pm

Please sign in by printing your name and address

We welcome your input. Please take your time and review the information available. You are invited to ask questions.

Please provide your input by filling out a Comment Sheet

East Gwillimbury

MMM GROUP
What is the Study About?

• The Master Servicing Plan for Official Plan Amendment No. 60 (OPA #60) Holland Landing, Ontario identified that the wastewater servicing plan for the area directs all new and existing sanitary flows to York Region’s Bradford Street Pumping Station via a 525 mm sewer under the Holland River in the vicinity of the Bradford Street Bridge.

• The environmental investigations will review alternative routes for the crossing within the limits imposed by the earlier approvals.

• The approved recognized sewer crossing is being undertaken in accordance with the requirements of the Municipal Class Environmental Assessment (June 2000, as amended in 2007). The project is currently being planned under “Schedule B”.
The Municipal Class EA

**PHASE 1**
- PROBLEM OR OPPORTUNITY

**PHASE 2**
- ALTERNATE SOLUTIONS

**PHASE 3**
- ALTERNATE DESIGN CONCEPTS FOR PREFERRED SOLUTION

**PHASE 4**
- ENVIRONMENTAL STUDY REPORT

**PHASE 5**
- IMPLEMENTATION

**SCHEDULE A/A+**
- ✓

**SCHEDULE B**
- ✓
- ✓

**SCHEDULE C**
- ✓
- ✓
- ✓*

**MASTER PLANS**
- ✓
- ✓
- ✓*
- ✓*

* Phases 3 and 4 for any Schedule C Project included in the Master Plan must be completed prior to implementation.

East Gwillimbury

MMM GROUP
Problem/Opportunity Statement

The process for a Class EA Schedule “B” requires a clear statement of the problem or opportunity being addressed:

York Region provides wastewater services to municipalities to meet existing and anticipated growth in an efficient and cost-effective manner.

In addition to water conservation and demand reduction strategies, additional wastewater infrastructure expansion is needed to meet the needs of the current population as well as accommodate growth in a timely manner.
Background

The Master Servicing Plan for Official Plan Amendment (OPA) #60 for Holland Landing directs all new and existing sanitary flows to the Region of York’s Bradford Street Pumping Station.

The servicing plan identified a trunk sewer to be located on the west side of the East Holland River, connecting to the Bradford Street Pumping Station.

This Environmental Assessment addresses the need for extending the new sanitary sewerage flow in the vicinity of the Holland Landing/River Drive Area.
Justification for the Project

- Official Plan Amendment (OPA #60) emphasizes matching growth with the capacity for full municipal servicing.
Justification for the Project

- New development permitted by OPA #60 will allow the Holland Landing Community to accommodate a total of 16,000 residents; all of which will be accommodated by the sewer extension of full services in the future.
Why the Bradford Street Bridge Location?

- OPA #60 recognizes the need to connect with existing servicing system
- Study Team examined ways to minimize impacts to the river and the environment
- Determined that the Bradford Street location has:
  - Fewer property impacts
  - Less disruption to traffic
  - Less constructability and cost issues
Alternatives Under Consideration

Option A

- Option A extends the sewer pipe westerly across the Holland River, then along the north side of Bradford Street right-of-way to Toll Road, then down the center of the right-of-way of Holland Landing Road.
Alternatives Under Consideration

Option B

- Option B extends the sewer pipe from the Bradford Street Pumping Station westerly across the Holland River, then southerly across the floodplain of the Holland River, then along the north side of the Bradford Street right-of-way to Toll Road, then down the center of the right-of-way of Bradford Street to Holland Landing Road.

- Option B requires several shaft locations adjacent to the Holland River.
Alternatives Under Consideration

Option C

- Option C extends the sewer pipe from the Bradford Street Pumping Station southerly underneath Bradford Street, to the east of the Holland River, then along the south side of the right-of-way of Bradford Street to Toll Road, then down the centre of the right-of-way of Bradford Street to Holland Landing Road.
Proposed Construction Methodology

- Open cut construction methods are not suitable for the sewer pipe installation due to constraints such as excessive depth, CN Rail crossing, Holland River crossing and other watercourse crossings.
- Trenchless construction method is more appropriate.
- Directional drilling is proposed under the Holland River to minimize environmental impacts.
- Trenchless technology will be used to minimize impacts to the community and the environment.
- Open cut construction techniques will occur along Bradford Street and Holland Landing Road.
Potential Environmental Impacts

- Sewer pipe will cross approximately 6.5 metres (20 ft) beneath the Holland River; therefore minimizing any disturbance to the river bed.
- Environmental impacts are mitigated by the directional drilling of the sewer pipe beneath the Holland River.
- Minor disturbance expected at tunnel shaft locations on either bank of the Holland River and along Holland Landing Road.
Next Steps

• Review comments from Public Information Centre
• Completion of Environmental Study Report
  – Fall 2009
How to Get Involved

For further information on the study, please contact:

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APPENDIX B
Archaeological Assessment
Stage 1 Archaeological Assessment (AA) for the:
Holland Landing Queensville Sharon
Wastewater Infrastructure Study Area
Town of East Gwillimbury
Regional Municipality of York
Ontario

Class EA

Project Number: 007-2201-06
Licence#: P029-312-2006

February 2007

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Katie Bryant

Report Preparation:
Katie Bryant

Graphics:
Katie Bryant
Mike Lawson
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Project Personnel i

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INTRODUCTION

This report involves the Stage 1 archaeological assessment for the Holland Landing Queensville Sharon Wastewater Infrastructure Study Area, located in the Town of East Gwillimbury, Regional Municipality of York, Ontario. Co-ordinating an environmental assessment in support of a Class EA for this project is Marshall Macklin Monaghan Limited, of Markham, Ontario; Marshall Macklin Monaghan retaining Archeoworks Inc. to complete the Stage 1 archaeological assessment of the proposed force main alignment and elevated water tank sites as seen in Figure 1. While a Stage 1 archaeological assessment was completed by Archaeological Services Inc. in 2000 for the Holland Landing and Queensville portions of the study area, it was requested that the entire study area, including revised alignments and proposed elevated water tank sites, be reviewed again along with the Sharon portion. Archaeological potential was identified by conducting background research and visiting the proposed force main alignment and elevated water tank site areas, to accommodate any required construction activities. The Stage 1 research, reported herein, was conducted under the project direction of Ms. Kim Slocki, in accordance with the Ontario Heritage Act (1990) under an archaeological consulting licence (P029) issued to Kim Slocki.

1) Registered Archaeological Sites

In order that an inventory of archaeological resources could be compiled for the study area, the site record forms for registered sites housed at the Ministry of Culture (MCL) were consulted. The study area under review is located within Borden Block BaGu. According to the Ministry of Culture site record files, 19 archaeological sites are registered within a 2000-metre radius of the study area. These sites are listed below in Table 1.

Table 1: Sites within Two Kilometres of the Study Area

<table>
<thead>
<tr>
<th>Borden #</th>
<th>Name</th>
<th>Cultural Affiliation</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BaGu-1</td>
<td>Harvey Graham</td>
<td>Prehistoric – Woodland, Historic - Iroquoian</td>
<td>Burial, Campsite</td>
</tr>
<tr>
<td>BaGu-42</td>
<td>Kelly</td>
<td>Prehistoric</td>
<td>Campsite</td>
</tr>
<tr>
<td>BaGu-3</td>
<td>Orpel</td>
<td>Late Archaic, Early Woodland</td>
<td>Burial, Campsite</td>
</tr>
<tr>
<td>BaGu-4</td>
<td>Swezie</td>
<td>Historic Euro-Canadian</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-5</td>
<td>Thompson</td>
<td>Historic Euro-Canadian</td>
<td>Campsite</td>
</tr>
<tr>
<td>BaGu-22</td>
<td>Solstice</td>
<td>Middle Archaic</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-25</td>
<td>Sparrow</td>
<td>Archaic</td>
<td>Campsite</td>
</tr>
<tr>
<td>BaGu-26</td>
<td>Spring Valley</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-6</td>
<td>Drive-In</td>
<td>Early Archaic</td>
<td>Campsite</td>
</tr>
<tr>
<td>BaGu-27</td>
<td>Falcon</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-32</td>
<td>Merganser</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-44</td>
<td>Swasey</td>
<td>Euro-Canadian</td>
<td>Homestead</td>
</tr>
<tr>
<td>BaGu-45</td>
<td>Blue Heron</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-47</td>
<td>Gleason</td>
<td>Euro-Canadian</td>
<td>Homestead</td>
</tr>
<tr>
<td>BaGu-49</td>
<td>Thophilus Wakefield</td>
<td>Euro-Canadian</td>
<td>Homestead</td>
</tr>
<tr>
<td>BaGu-50</td>
<td>Merlin</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-51</td>
<td>Oriole</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-52</td>
<td>Toucan</td>
<td>Prehistoric</td>
<td>Findspot</td>
</tr>
<tr>
<td>BaGu-56</td>
<td>Howard</td>
<td>Euro-Canadian</td>
<td>Farmstead</td>
</tr>
</tbody>
</table>
Having noted the presence of the above listed sites in relation to the study area, it might be useful to place them in the proper context by reviewing the cultural history of occupation in Southern Ontario provided in Table 2 below.
### Table 2: History of Occupation in Southern Ontario

<table>
<thead>
<tr>
<th>Period</th>
<th>Archaeological Culture</th>
<th>Date Range</th>
<th>Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PALEO-INDIAN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>Gainey, Barnes, Crowfield</td>
<td>11,000 - 10,400 BP</td>
<td>Small nomadic hunter-gatherer bands. Fluted projectile points</td>
</tr>
<tr>
<td>Late</td>
<td>Holcombe, Hi-Lo, Lanceolate</td>
<td>10,400 - 9,500 BP</td>
<td>Small nomadic hunter-gatherer bands. Lanceolate projectile points</td>
</tr>
<tr>
<td><strong>ARCHAIC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>Side-notched, corner notched, bifurcate-base</td>
<td>9,500 – 8,000 BP</td>
<td>Small nomadic hunter-gatherer bands; first notched and stemmed points, and ground stone ce</td>
</tr>
<tr>
<td>Middle</td>
<td>Otter Creek, Brewerton</td>
<td>8,000 – 4,500 BP</td>
<td>Small territorial hunter-gatherer bands; wider variety of ground stone tools; first copper tools; bone tools</td>
</tr>
<tr>
<td>Late</td>
<td>Narrow, Broad and Small Points</td>
<td>4,500 – 2,800 BP</td>
<td>More numerous territorial hunter-gatherer bands; increasing use of exotic materials and artistic items for grave offerings; regional trade networks</td>
</tr>
<tr>
<td></td>
<td>Normanskill, Lamoka, Genesee, Adder Orchard etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WOODLAND</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>Meadowood, Middlesex</td>
<td>2,800 – 2,000 BP</td>
<td>Introduction of pottery, burial ceremonialism; panregional trade networks</td>
</tr>
<tr>
<td>Middle</td>
<td>Point Peninsula</td>
<td>2,000 – 1,200 BP</td>
<td>Cultural and ideological influences from Ohio Valley complex societies; incipient horticulture</td>
</tr>
<tr>
<td>Late</td>
<td>Algonquian, Iroquoian</td>
<td>1,200 - 700 BP</td>
<td>Transition to larger settlements and agriculture</td>
</tr>
<tr>
<td></td>
<td>Algonquian, Iroquoian</td>
<td>700 - 600 BP</td>
<td>Establishment of large palisaded villages (Iroquoian)</td>
</tr>
<tr>
<td></td>
<td>Algonquian, Iroquoian</td>
<td>600 - 400 BP</td>
<td>Tribal differentiation and warfare (Iroquoian)</td>
</tr>
<tr>
<td><strong>HISTORIC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>Huron, Odawa, Algonquin</td>
<td>AD 1600-1650</td>
<td>Tribal displacements</td>
</tr>
<tr>
<td>Late</td>
<td>Six Nations Iroquois, Ojibway, Algonquin</td>
<td>AD 1650 - 1800s</td>
<td>Migrations and resettlement</td>
</tr>
<tr>
<td></td>
<td>Euro-Canadian</td>
<td>AD 1800 – present</td>
<td>European immigrant settlements</td>
</tr>
</tbody>
</table>

### 2) Physiographic Description and Precontact Potential

An investigation of the study area’s physiography was conducted by reviewing The Physiography of Southern Ontario (3rd Edition), a volume published by the Ministry of Natural Resources and authored by L.J. Chapman and D.F. Putnam. This investigation is conducted to aid the researcher in developing an argument for archaeological potential based on the environmental conditions of each subject property. Environmental factors such as close proximity to water, soil type, and nature of the terrain, for example, can be used as predictors to determine where human occupation may have occurred in the past. The study area is situated within both the Schomberg Clay Plains (to the north) and the Oak Ridges Moraine (to the south) physiographic regions of Southern Ontario.
Within the Schomberg Clay Plains, the surface under the clay is that of a drumlinized till plain. The smaller drumlins are completely covered, but many of the larger ones escaped complete burial although the clay may occur well up the slopes of the hills. Since the rolling relief of the underlying till plain has not entirely been eliminated, these areas are not so flat as many lake plains. The Schomberg sediments are typically varved clays with annual layers of two, three, four or more inches in thickness. The summer band makes up three-quarters to four-fifths of the thickness, is more silty, and is grey in colour. The winter band is slightly denser and is brownish grey. Both portions of the varve are highly calcareous and small fossil shells are sometimes found in them. It is very slippery when wet and inclined to be mealy when dry (Chapman & Putnam, 1984).

Within the Oak Ridges Moraine, the surface is hilly with a knob-and-basin relief typical of end moraine. For the most part, these hills are composed of sandy or gravelly materials. In general this upland is to be regarded as the source area for many streams which drain the till plains on either side of it. However, there is in much of the moraine itself, a virtual lack of streams. There is much hilly, sandy soil which is subject to blowing. Some nearly level topography is provided by sandy outwash or occasionally fine sandy loam. The characteristic soil of the kames is droughty and unstable under cultivation or even pasture. On the gentler hillsides and the sandy outwash aprons the soils are more useful (Chapman & Putnam, 1984).

In terms of archaeological potential, potable water is arguably the single most important resource necessary for any extended human occupation or settlement. As water sources have remained relatively stable in southern Ontario since post-glacial times, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location. In fact, the Ministry of Tourism, Culture and Recreation (now the Ministry of Culture) primer on archaeology, land use planning and development in Ontario stipulates that undisturbed lands within 300 metres of a primary water source, and undisturbed lands within 200 metres of a secondary water source, are considered to be of high archaeological potential (1997: pp.12-13). With the East Holland River and its tributaries bisecting the proposed force main route in several places and within very close proximity to the proposed elevated water tank sites, we find high potential for the location and recovery of Aboriginal archaeological resources within undisturbed portions of the study area (see Figure 2).
Figure 2: Archaeological Potential Zones* within the Study Area

*Archaeological Potential Zones are defined as lands within 300 metres of a primary water source, within 200 metres of a secondary water source and within close proximity (i.e.: 100 metres or less) to a former or existing 18th or 19th century structure and/or historic cultural village.
3) Review of Historical Land Use and Potential

To assess a study area’s potential for the recovery of historic remains, several documents are reviewed in order to gain an understanding of the land-use history. These specifically include the *Illustrated Historical Atlases* for the Counties of Ontario.

![Figure 3: 1878 Historical Map of Study Area](image)

A review of the 1878 *Illustrated Historical Atlas of York County*, Township of East Gwillimbury (see Figure 3) indicates that the study area was inhabited by the following:

<table>
<thead>
<tr>
<th>Township of East Gwillimbury</th>
<th>Lot</th>
<th>Concession</th>
<th>Inhabitant/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>1W</td>
<td></td>
<td>Passes through the historic village of Holland Landing.</td>
</tr>
<tr>
<td>107</td>
<td>1W</td>
<td></td>
<td>Passes through the historic village of Holland Landing.</td>
</tr>
<tr>
<td>b/w 106 &amp; 107</td>
<td>1E</td>
<td></td>
<td>Passes through the historic village of Holland Landing.</td>
</tr>
<tr>
<td>4W</td>
<td>2E</td>
<td></td>
<td>Brooks Howard. No structures within study corridor limits.</td>
</tr>
</tbody>
</table>
Thus, the study corridor passes through the historic villages of Queensville and Holland Landing (including mills, post offices, churches and other structures). One school and several historic homesteads fall within or just outside the study area limits. The Northern Railroad bisects the study area in two places. Elevated tank sites #1 and #3 are located within close proximity to a historic homestead while site #4 is located just east of a former historic mill site. Taking into account all of this information, high potential for encountering significant historical remains can be established within close proximity to the location of the former (and any extant) historic structures mentioned above and specifically within the boundaries of the historic Queensville and Holland Landing villages (see Figures 2&3).

4) Field Review

A non-intrusive field review of the areas to be impacted by construction activities was conducted on November 30th, 2006. The purpose of the field review was to identify and describe high potential areas requiring additional archaeological research and low potential areas not warranting further archaeological concern.

The general study area is composed of a mixture of undisturbed agricultural fields, sloping terrain, tributaries of the Holland River, and rural residential areas. Typical
disturbances include paved and gravel roads, wet ditches, driveways, utilities and sidewalks.

The Queensville portion of the study area extends westward from Highway 404 to 2nd Concession, passing through the historic village of Queensville, as illustrated in the 1878 Atlas and presently located at the intersection of Leslie Street and Queensville Sideroad, and then travels south along 2nd Concession to Green Lane, east on Green Lane and south to the Newmarket Pumping Station. Along Queensville Sideroad, 2nd Concession and Green Lane, the study corridor is mainly bordered by undisturbed agricultural/fallow fields and rural residential frontages (Plates 1-4). Minor disturbances include the paved roads (Queensville Sideroad, 2nd Concession, Green Lane) and their associated gravel shoulders, wet drainage ditches, driveways, sidewalks, parking lots, utilities, and a GO train line and station on the south side of Green Lane (Plates 5-7). Identified areas of disturbance are low in archaeological potential and do not require further archaeological concern. Also low in potential are steeply sloping areas, particularly along Queensville Sideroad and 2nd Concession (Plate 8-9). Areas which are high in archaeological potential include any undisturbed grass margins within the existing right-of-way, rural residential frontages and agricultural fields. These undisturbed, high potential areas will require further Stage 2 testing.

The segment extending westward from 2nd Concession to connect with Holland Landing first travels west along Mount Albert Road to Olive Street, is then diverted north on Olive Street to Bradford Street to connect with the Bradford Street Pumping Station (Plate 10). This section contains steeply sloping areas which are low in archaeological potential, as well as minor disturbances including gravel shoulders, wet drainage ditches, sidewalks and driveways. High potential areas again include any undisturbed grass margins, rural residential frontages and agricultural fields which border the study corridor, all of which will require further Stage 2 testing.

The final section of the study area is the Sharon portion which extends eastward along the northern border of Rogers Reservoir from 2nd Concession to the Sharon Community at the hydro line. This area is predominantly undisturbed and high in archaeological potential due to its proximity to the East Branch of the Holland River (Plate 11). The only visible disturbances include gravel driveways off 2nd Concession. The remainder of the segment will require further Stage 2 testing.

The four proposed elevated water storage tank sites, located in the Queensville Community are all located within agricultural fields, with the exception of Site #3 which is partially within woodlot (see Figure 4). Thus, due to the undisturbed and high potential classification of all four sites, further Stage 2 testing will be required at the chosen elevated tank site location.
Figure 4: Preliminary Site Plan – Proposed Elevated Water Storage Tank Sites
5) Conclusions & Recommendations

The Stage 1 archaeological assessment of the Holland Landing Queensville Sharon Wastewater Infrastructure Study Area, in the Town of East Gwillimbury, Regional Municipality of York, has indicated that there are 19 registered archaeological sites within 2000 metres or less to the study area. Based on the visual documentation of suitable topography, historical documentation and the immediate proximity of the Holland River and its tributaries, sub-surface prehistoric Aboriginal and 19th century Aboriginal and Euro-Canadian sites may be discovered at any undisturbed location within the study area boundaries. In light of these results, the following recommendations are presented:

1. A Stage 2 archaeological field assessment of the undisturbed areas listed above should be undertaken, prior to construction activities, to minimize impacts to heritage resources. Should significant archaeological resources be encountered, additional background research or fieldwork may be required by the Ministry of Culture.

2. In the event that deeply buried archaeological remains are encountered during construction activities, the office of the Regulatory & Operations Group, Ministry of Culture (416-314-7146) should be contacted immediately.

3. In the event that human remains are encountered during construction activities, both the Ministry of Culture (416-314-7146) and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Business Services (416-326-8404) should be contacted immediately.

Under Section 6 of Regulation 881 of the Ontario Heritage Act, Archeoworks Inc. will, “keep in safekeeping all objects of archaeological significance that are found and all field records that are made.”

6) Bibliography

Archaeological Services Inc.

Chapman, L. J. and Putnam, D. F.

Miles & Co.
1878  Illustrated Historical Atlas of York County. Toronto.

Ontario Ministry of Citizenship, Culture and Recreation (MCzCR)
APPENDIX A: Plates

Plate 1: Looking east along Queensville Sideroad, at undisturbed agricultural fields
Plate 2: Looking south along 2nd Concession, at residential rural frontages

Plate 3: Looking north along 2nd Concession at residential rural frontages
Plate 4: Looking south across Green Lane to connecting point

Plate 5: Looking west along Queensville Sideroad at gravel shoulders, wet ditches, utilities, driveways (and rural frontages)
Plate 6: Looking south along 2nd Concession at wet ditches
Plate 7: Looking south along 2nd Concession at gravel shoulders and wet ditches
Plate 8: Looking south along 2nd Concession at steeply sloping terrain
Plate 9: Looking east along Queensville Sideroad at steeply sloping terrain
Plate 10: Looking west along Bradford Street at road, sidewalk and utility disturbances, testable grass margins/residential rural frontages
Plate 11: East Branch of Holland River, just north of Green Lane