Alton/Caledon Village Additional Water Supply

Municipal Class Environmental Assessment

Phase 1 and 2 Report

Regional Municipality of Peel

Issue and Revision Record

Rev	Date	Originator	Checker	Approver	Description
00	06/07/2013	G. Harris	W. Andrews	W. Andrews	Initial Draft for Review
01	08/23/2013	G. Harris	W. Andrews	W. Andrews	Revised Draft for Review

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

1.1 Background

The Town of Caledon is completing a Village Study for Alton to determine the future growth of the Village. A Water and Wastewater Servicing Class EA for the Villages of Alton and Caledon was initiated by the Region of Peel in conjunction with the Village Study. XCG Consultants assessed the water and wastewater servicing needs for Alton and Caledon Village up to 2021, and completed up to Phase 2 of the Municipal Class EA process[1].

Subsequently, updated proposed population growth forecasts from the Town of Caledon indicated that a water servicing analysis should consider the area's proposed population growth to 2031. As such, The Regional Municipality of Peel retained Hatch Mott MacDonald to complete a Schedule "C" Municipal Class Environmental Assessment to identify and evaluate water servicing solutions for Alton and Caledon Village to 2031.

This report presents the findings from Phases 1 and 2 of the Municipal Class Environmental Assessment.

1.2 Existing Facilities

The Alton-Caledon Village system is currently serviced by four (4) production wells: Caledon Village Well No. 3 (CV3), Caledon Village Well No. 4 (CV4), Alton Village Well No. 3 (AV3) and Alton Village Well No. 4 (AV4) (although the Region is only able to operate one of AV3 or AV4 at a time). In addition, a new production well, Caledon Village Well No. 3B has been constructed and is scheduled to be in service by the end of 2013.

1.3 Purpose of Project

To ensure that the Region can provide municipal servicing to the population increase being proposed by the Town of Caledon for Alton a reliable water servicing solution needs to be identified prior to the approval of this growth. This study will examine a range of alternative solutions for providing a sustainable water supply for the village of Alton and Caledon Village through 2031.

1.4 Project Team

The Region of Peel retained a team of experts, led by Hatch Mott MacDonald, to complete this Municipal Class Environmental Assessment. This study was conducted from January 2011 to April 2015 and principal members involved were:

[1] Alton Village Study, Phase 2 Report, Final Draft August 2009.

Regional Municipality of Peel	Heather McGinnity, P.Eng. and Luis Lasso, B.SC., P.Geo.
Hatch Mott MacDonald	Bill Andrews, P.Eng. BDS, PMP Gillian Harris, P.Eng. CAPM
GeoKamp Limited	Bruce Hietkamp, P.Geo.
Azimuth Environmental Consulting Inc.	Drew West, A.Sc.T.
Hardy Stevenson and Associates Limited	Andrzej Schreyer

2 ENVIRONMENTAL ASSESSMENT PROCESS

This undertaking combines the processes of the Ontario Environmental Assessment Act and the Canadian Environmental Assessment Act for the completion of a Harmonized Federal/Provincial Class EA. These processes are outlined in the following section.

2.1 Ontario Environmental Assessment Act

Major capital works for municipal sewage systems, such as expansions of waste water treatment plants, are subject to the requirements of the Ontario Environmental Assessment Act (EA Act). The EA Act identifies two types of environmental assessment planning and approval processes including Individual Environmental Assessments (Part 2 of the EA Act) and Class EA (Part 2.1 of the EA Act). The requirements of a Class EA are discussed below.

2.2 Class Environmental Assessment Process

This project was initiated as a Class EA, to be completed in compliance with the Municipal Engineers Association Class Environmental Assessment for municipal projects, October 2000, as amended in 2007. Generally, the Class EA process is applicable to sewage projects where either a new water pollution control facility is to be established or where an existing facility requires modification beyond what would be considered to be maintenance or operational improvements. Under the Class EA, projects are subject to varying levels of environmental review depending on the extent of their potential impact.

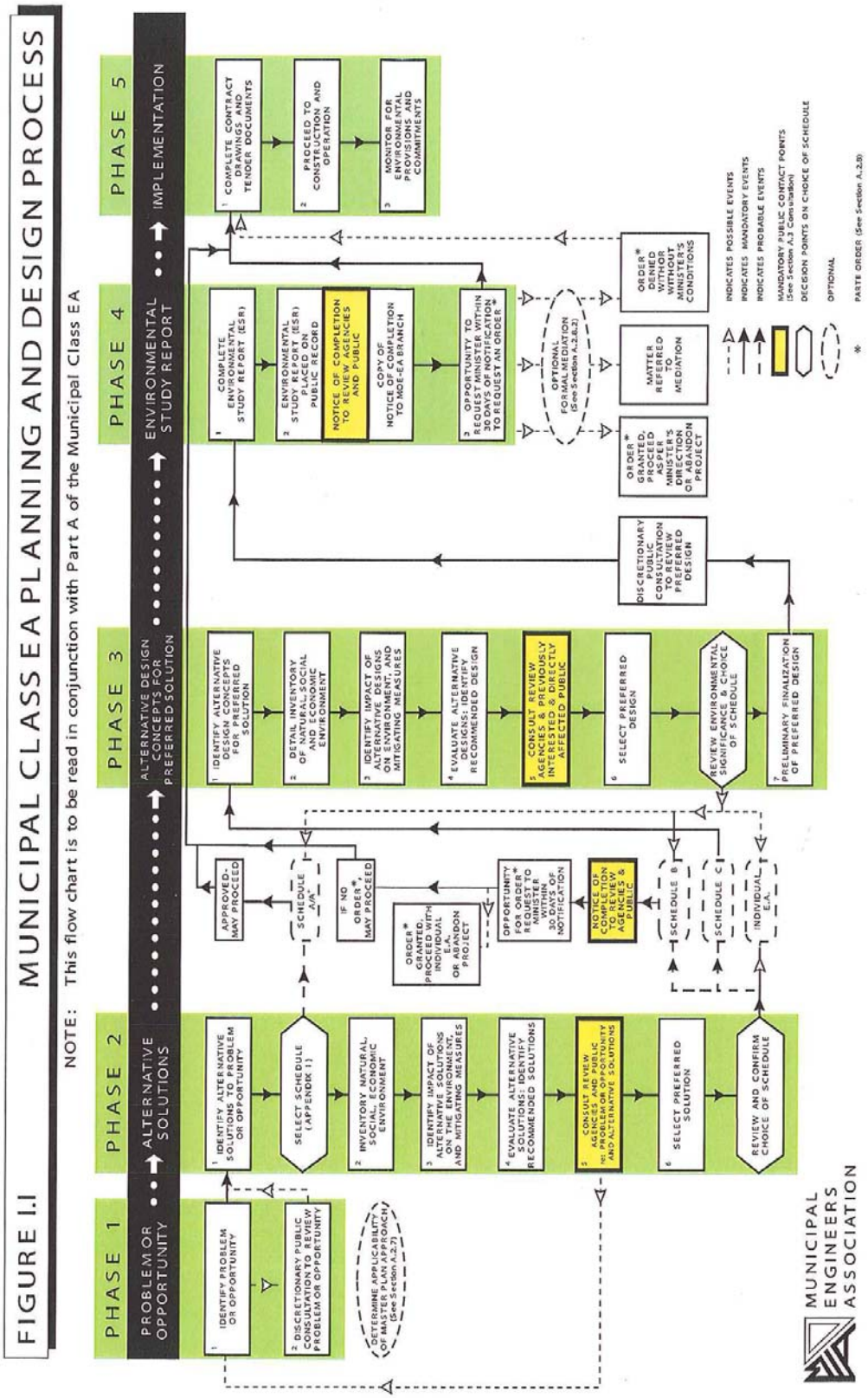
Projects fall into four schedules of undertakings including Schedule A projects which are essentially pre-approved and exempt from the Class EA procedures. Schedule A+ projects are also considered to be pre-approved; however, they require that the public be advised prior to their project implementation. Schedule B projects are those considered to potentially have some adverse environmental effects. In the case of Schedule B projects, proponents are required to undertake a screening process, involving mandatory contact with directly affected public or relevant review agencies, to ensure that they are aware of the project and that their concerns are addressed. If there are no outstanding concerns, then the proponent may proceed to implementation. Schedule B projects generally include improvements such as minor expansions or upgrades to existing facilities. Schedule C projects are those that have the potential for significant environmental effects and must proceed through the full planning and documentation procedures specified in the Municipal Class EA document. Schedule C projects require that an ESR be prepared and filed for review by the public and review agencies. Schedule C projects generally include the construction of new facilities and major expansions to existing facilities. Provided that the approved Class EA planning process is followed, a proponent has complied with Section 13 (3)(a) of the EA Act.

There are five phases of the Schedule C Class EA process as follows: Phase 1 – identify the problem (deficiency) or opportunity. Phase 2 – identify alternative solutions

to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution taking into account public and review agency input. Phase 3 – examine alternative methods of implementing the preferred solution, based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects. Phase 4 – document, in an ESR a summary of the rationale, and the planning, design and consultation process of the project as established through the above phases, and make such a document available for scrutiny for at least 30 calendar days by review agencies and the public. At the time of filing the ESR, the public and review agencies must be notified. During the minimum 30-day review period, no work shall be undertaken that will adversely affect the matter under review. Provided no significant impacts are identified during this review period and no Part II Order requests are received from the public and review agencies, the Schedule C EA process is completed and the proponent is free to proceed with implementation and construction. Phase 5 – complete contract drawings and documents, and proceed to construction and operation; monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facilities.

The Class EA flow chart is included as a figure on the following page. A full description of the Class EA procedure is contained in the document entitled “Municipal Class Environmental Assessment, Municipal Engineers Association, October 2000, as amended in 2007”.

Figure 2-1: Municipal Class EA



3 PROJECT NEEDS ASSESSMENT

3.1 Demand Projections

Previously completed work on the Water and Wastewater Servicing Class Environmental Assessment (EA) had assessed the servicing needs for the Village of Alton until 2021. However, updated proposed population growth forecasts obtained from the Town of Caledon indicated that a water servicing analysis should consider the area's proposed population growth to 2031.

Equivalent service populations are based on projected population growth for Caledon Village, Mcleodville and Skywood Park, residential population projections from the "Alton Village Study, Phase 2 Report, Final Draft August 2009" prepared by the Town of Caledon and employment (equivalent residential persons) based on projections provided by Peel Region (GIS Data - SGU08). These projections result in an Equivalent Service Population (ESP) of approximately 5,274 (approximately 4,680 residential, 594 employment or ICI) for 2021 and 6,404 (approximately 5,880 residential, 524 employment or ICI) for 2031.

Table 3-1: Projected Maximum Day System Demands

Year	Residential ESP	Employment/ICI* ESP	Total ESP
2011	3,648	574	4,042
2021	4,680	594	5,274
2031	5,880	524	6,404

**ICI – Industrial/Commercial/Institutional*

Based on these projections, the system demands for 2011, 2021 and 2031 are as follows:

Table 3-2: Projected Maximum Day System Demands

Year	Per Capita Demands – Residential (l/cap./day)	Per Capita Demands – Employment (l/cap./day)	Average Day Demands (ADD)	Maximum Day Demand (MDD) Factor	Projected Maximum Day Demand*
2011	*338*	222	1,361 m^3/day	3.30	4,513 m^3/day
2021	*338*	222	1,741 m^3/day	3.30	5,605 m^3/day
2031	*338*	222	2,105 m^3/day	3.30	6,879 m^3/day

**MDD is equivalent to ADD x MDD Factor*

Historical water consumption and demand/storage projections are included in Appendix D.

3.2 Water Supply

By the end of 2013, the Alton-Caledon Village water supply system will have a total maximum permitted capacity of 7,593 m^3/day with four (4) production wells in operation (Table 3-3). The Region's objective is to provide **firm capacity** for Alton-Caledon Village as this would significantly increase the systems' reliability by eliminating an over-reliance on any one production well that, if inoperable under certain operating/demand conditions, could prevent the Region from meeting system demands and could result in reduced pressures and potentially water outages.

Typically, firm capacity is calculated as the maximum capacity that can be achieved with the largest component of the system out of service. Production well CV4 with a permitted capacity of 3,273 m^3/day (2,273 l/min*)* is the largest well; therefore the current firm capacity of the system (i.e. capacity when well CV4 is not in service) **is 4,319 m^3/day.**

Table 3-3: Summary of Permitted Production Well Capacities

Well	Permit To Take Water - Permitted Capacity		Included in Total Capacity	Included in Firm Capacity
CV3	*1,364 l/min.*	1,964 m^3/day	Yes	Yes
CV3B	*909 l/min.*	1,309 m^3/day	Yes	Yes
CV4	*2,273 l/min.*	3,273 m^3/day	Yes	No
AV3/AV4*	*727 l/min.*	1,047 m^3/day	Yes	Yes

**Only one of AV3 or AV4 may be operated at any given time.*

Based on the projected equivalent service population (residential and employment equivalent) and historical per capita water consumption for the Alton-Caledon Village system, the projected maximum day demand for 2031 is 6,879 m3/day. To meet this projected water demand, **approximately 2,626 m^3/day** of additional water supply capacity will be required, as summarized in Table 3-4 below.

There are also significant concerns related to the long-term reliability of Wells AV3 and AV4 due to an increasing trend in the levels of nitrates in the raw water, which has already caused Wells AV1 and AV2 to be removed from service. Consideration must be given to the potential impact of these wells being unavailable as part of the long-term water supply.

Demand Projections vs Total Well Capacity (with and without AV3/AV4 in operation) are shown in
Figure 3-1 and Demand Projections vs Firm Well Capacity (with and without AV3/AV4 in operation) are shown in
Figure 3-2.

Table 3-4: Additional Well Capacity Required to Provide Firm Capacity

Year	Total ESP	Maximum Day Demands	Current Firm Well Capacity*	Additional Well Capacity Required
2011	4,042	4,513 m^3/day	4,319 m^3/day	172 m^3/day
2021	5,274	5,605 m^3/day		1,338 m^3/day
2031	6,404	6,879 m^3/day		2,626 m^3/day

**Includes Well AV3 or AV4*

3.3 Problem and Opportunity Statement

Through this Municipal Class EA, the Region will identify a preferred solution to provide a reliable water supply (firm capacity) to the villages of Alton and Caledon to satisfy the projected water demands through the year 2031.

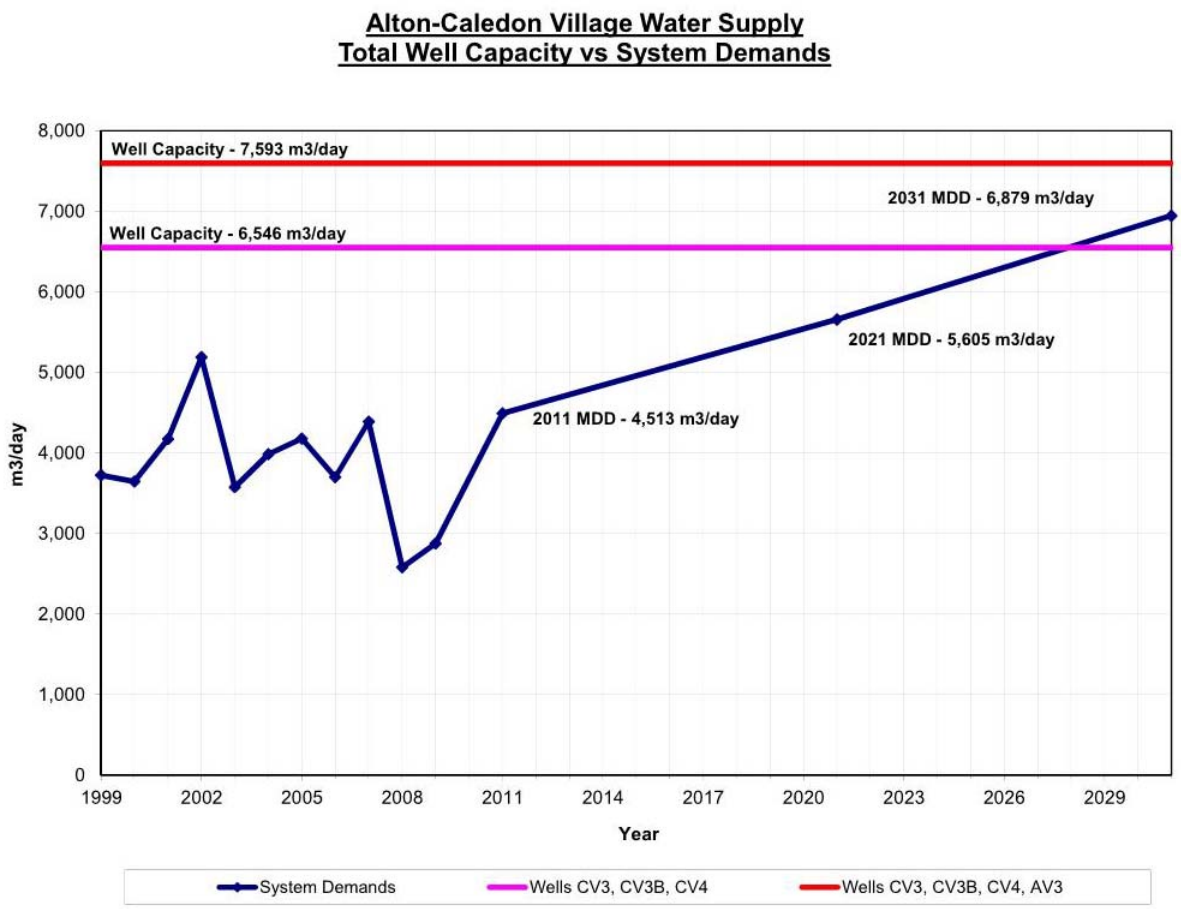


Figure 3-1 Existing Well Capacity and Projected Demands

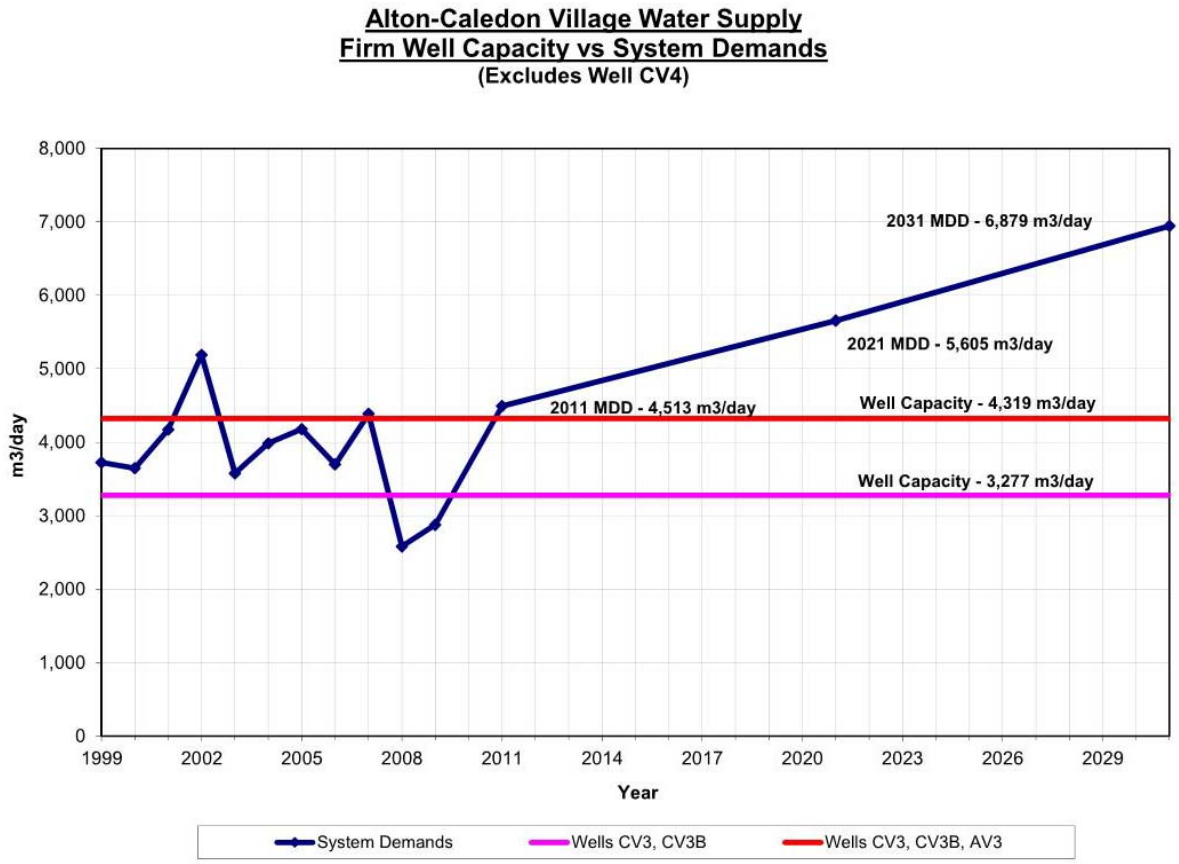


Figure 3-2 Existing Firm Well Capacity and Projected Demands

4 DESCRIPTION OF STUDY AREA

The Alton-Caledon Village Additional Water Supply study area was developed by the Project Team based on the following rationale:

- Include the existing water service area;
- Include the major existing infrastructure associated with the water system (i.e., reservoir, etc.); and
- Include areas immediately adjacent to the water service area with potential for groundwater exploration.

The Study Area, as shown in Figure 4.1, is located between Highpoint Side Road and The Grange Side Road and Mississauga Road and Horseshoe Hill Road.

4.1 Hydrogeological Context

The Alton water distribution system consists of an interconnection of the Communities of McLeodville, Skywood Park, Mono Mills, Caledon Village and Alton Village. The Communities of McLeodville, Skywood Park and Mono Mills have been taken out of service due to water quality and quantity issues and as such water is supplied to this water distribution system through the two community production wells systems located near Caledon and Alton Villages.

The Caledon Village water supply consists of two municipal well systems (Production Well #3/#3B and Production Well #4). Caledon PW#3 and Caledon PW#3B, (upgraded in 2010), have a combined capacity of approximately 2268 L/min. Caledon PW#4 was completed in 1993 and has a rated capacity of 2274 L/min.

The Alton Village water supply consists of one municipal well system referred to as Alton PW#3 and PW#4. The Alton wells are permitted to pump at 726 L/min each for a combined capacity of 1452 L/min.

An additional water supply(ies) is required to ensure enhanced system reliability and to satisfy future water requirements, to support future water demands and to provide sufficient system redundancy in case the Caledon PW#3, Caledon PW#3B, Caledon PW#4 or Alton PW#3/PW#4 were temporarily out of service. It is estimated that by the year 2031*, the Alton/Caledon Village systems will have an additional maximum daily water demand of approximately 1824 L/min to supply a population of 6404.

In the vicinity of Caledon and Alton Villages, it is known that larger well yields are available from two sand and gravel aquifers, which occur within (1) buried bedrock valleys and (2) from sand and gravel outwash deposits.

4.1.1 Outwash Sand and Gravel Aquifer Complex

- Significant aggregate resources are associated with this formation, thus the development of extensive aggregate extraction in the area.

- The aquifer is inferred to be unconfined (less aquifer protection) and could potentially be considered to be Ground Water Under the Direct Influence of surface water (GUDI).
- The water quality is typically very good with a low iron concentration.
- Well depths are expected to be 40 metres (125 feet)
- CV#3/CV#3B are completed within this aquifer complex near Caledon Village

4.1.2 Buried Bedrock Valley Aquifer Complex

- Previous geologic studies have deduced that a pre-glacial river network (referred to as the Laurentian Valley) formed a series of bedrock valleys that were subsequently buried through erosional processes and numerous glacial activities. The regional bedrock topography indicates the main Laurentian Valley as a broad depression extending from Georgian Bay to Lake Ontario. It is a network of tributaries to the main Laurentian Valley in the Alton Study Area that is of interest with regard to the Alton Study Area groundwater exploration program. The preference is to encounter coarse sediments within the deeper parts of the Buried Bedrock Valley Aquifer Complex, at accessible areas.
- The aquifer is narrow but quite long extending from Orangeville to Inglewood.
- This aquifer is considered to be confined (relatively well protected aquifer) and may not be determined to be a GUDI. The water quality is good except the iron concentration could be high and could require treatment.
- The aquifer depth is possibly up to 175 metres (575 feet) deep in the Alton study area.
- Caledon PW#4 is completed (to lower depths) within this aquifer.
- Alton PW#3 and PW#4 are completed to shallower within this aquifer complex near Alton Village

Further to the recommendations put forward by previous groundwater exploration programs, the focus of this groundwater exploration program was to primarily concentrate on the two above identified aquifers. The main steps in selecting test drilling locations included:

1) An assessment of background data within the study area, undertake geophysics and develop a “long list” of six potential drilling locations;
2) Preparation of a site selection matrix;
3) Assign professional judgment criteria scores to each “long-listed” location and;
4) Arrive to a “short list” of four test drilling sites.

Selection of test drilling locations depended on road or trails that cut across the aquifer targets. This site selection process was completed as an office study utilizing available existing information, with minimal need for field data, other than a final site visit to confirm accessibility, current land uses and existing utilities. An examination area of 600 metres surrounding the proposed test well location was suggested. For water main routes, an examination distance of ten metres from both sides of the road allowance was utilized.

For the purpose of planning, it was estimated that four test holes could be completed in the order of preference with two test wells constructed. (Observation well nests consisting of a deep, intermediate and shallow monitoring well would only be completed at two locations if the test well location exhibited a significant water supply.) The site selection project team consisted of:

- The Regional Municipality of Peel (Technical, Source Water Protection and Real Estate)
- Hatch Mott Macdonald (Project Engineer);
- Geo Kamp Limited (Hydrogeologist);
- Azimuth Environmental Consulting Limited (Biologist) and;
- Hardy Stevenson and Associates Limited (Socioeconomic and Technical)

The project team provided initial input regarding the matrix. A list of the pros, cons and neutral characteristics of the sites as a form of documentation and back-up for scoring was assembled and prepared for each site. As a result, six scoring sheets were filled one for each target location. Based on the project team assessment, the following rankings were concluded as per the proposed six locations:

Site Reference	Site Description	Ranking
E	Off Hurontario Street, northwest of Escarpment Side Road	1
~~D~~	~~Between McLaren Road and Willoughby Road at the end of Northridge Trail~~	~~2~~
~~B~~	~~Northwest of McLaren Road and Charleston Side Road (near Charles Sauriol Conservation Area)~~	~~3~~
A	Northwest of Porterfield Road and Beechgrove Side Road	4
F	Off Heart Lake Road, between Charleston Side Road and Escarpment Side Road	5
~~C~~	~~Between McLaren Road and Willoughby Road southeast of Green Lake~~	~~6~~

Although six sites were prioritized above, it was subsequently determined that Sites D and B were not available because the servicing costs (pipeline) were prohibitive for Site D and the Town of Caledon sold the property (right-of-way) on which Site B was located, respectively. Site C was eventually deemed as not viable because the site was located on/near an active gravel pit and adjacent to Green Lake which was reportedly experiencing low water level difficulties (which could make the additional proposed taking of water difficult). Therefore, Sites D, B and C are struck through (indicating unavailable) in the above table.

In August 2011, Alton Test Well #E (Alton TWE) was drilled south of PW3/PW3A adjacent to the Graham Bros. Construction Limited entrance. The test hole was advanced to bedrock at a depth of 67.06 metres below grade a depth. The best soil samples were found from 25.91 to 27.43 metres and from 30.48 to 44.20 metres. Assuming that 6 metres of screen could be set at depth of 44.20 metres, the top of the screen would be 38.2 metres below ground level. Assuming the generalized static water level is 30 metres below ground level (inferred from a nearby Graham Pit monitoring well), this suggests there could be 8.2 metres of available drawdown. The available drawdown was considered too low to warrant the construction of a test well and the test hole was abandoned.

In February 2012 Alton Test Well F (Alton TWF) was drilled on the west side of Heart Lake Road approximately 1800 metres south of Charleston Sideroad. Alton TWF encountered bedrock at a depth of 23.8 metres and the log indicated stratified clay deposits, except for a sand and gravel layer from 1.5 to 11.3 metres. In summary, there were no overburden deposits worth screening and the test hole was abandoned.

In June and July 2012 two test wells were advanced at the Alton Site A location and are referred to as Alton TWA1 and Alton TWA2. Alton TWA1 was drilled on the east side of Porterfield Road south of the railway tracks and north of the entrance to the Upper Credit Conservation Area. The driller reported bedrock at a depth of 72.85 metres and the log indicated that the upper portion of the test hole (depth of 30 metres) was primarily sands and gravels with two layers of silty sands. The lower portion of the test hole reported primarily silty sands with a few layers of sand and gravel. A 40 slot screen was installed from 67.97 to 70.10 metres. The yield of the well was estimated to be approximately 450 L/min but no detailed testing of the TWA1 was undertaken because it was surmised that bedrock was deeper in this area. As such, it was decided that a second test well should be advanced at an location slightly more north and west in an effort to encounter better conditions.

Alton TWA2 was drilled on the west side of Porterfield Road south of the railway tracks (other side of road, west of TWA1). Bedrock was encountered at a depth of 103.32 metres which is approximately 10 metres deeper than the expected depth to bedrock and 30 meters deeper than initially reported at TWA1. The driller reported material that drilled like bedrock from 67.05 to 74.06 metres which is coincidently the same depth as bedrock was reported at TWA1. Based on the grain size curves, the samples from both holes at these depths appears similar, thus it is conceivable that bedrock was not encountered at TWA1 and is deeper than reported. According to grain size analyses concerning TWA2, a 50 slot screen was selected for TWA2 and installed from 94.48 to 101.19 metres (6.71 in length).

Based on air lift well development, the yield of TWA2 was estimated to be in excess of 1500 L/min so two observation wells at shallower depths were completed next to TWA2 (within eight metres) to facilitate with the aquifer performance testing. The observation well depths were selected on the basis of coursed grained shallower water zones taken from the TWA2 well log. OWA2-Intermediate was screened to a depth of 45.72 to 48.78 metres below ground level with a sand pack installed from 44.50 to 49.07 metres. OWA2-Shallow was screened to a depth of 18.29 to 21.33 metres below ground level with a sand pack installed from 17.07 to 21.64 metres below ground level.

An aquifer performance test of TWA2 was undertaken from November 26 to December 20, 2012 (24 days at 1325 L/min) to obtain factual aquifer performance information. The TWA2 aquifer test was conducted concurrently with the Caledon Village Well #4 (CV4) stress test (supervised by Genivar Inc.) in which CV4 was pumped continuously for 85 days from November 5, 2012 to January 29, 2013. During the time of the aquifer testing Alton Wells #3 and #4 were in service as the lead wells for the Alton/Caledon Village water supply.

During the 24-day pumping test of TWA2, the discharge water was piped to the Credit River located approximately 500 metres south of TWA2. A total of 61 ground water and surface water stations were monitored during the well testing, including the pumped well (TWA2), two production wells, 17 monitoring well locations (test/observation wells and boreholes),13 shallow ground water stations (drive points), 6 surface water locations (staff gauges) and 22 local domestic wells to address potential shallow ground water and surface water concerns. The stations were monitored in order to assess the degree of connection between the aquifers developed by the wells and the aquifer being pumped.

A distance-drawdown curve, based on water levels near the end of the 24-day aquifer performance test suggests that the cone of influence is irregular in shape but may extend to a distance of 2800 metres, along the axis of the buried valley aquifer complex.

Based on the drawdown observed, interference generally depends on well depth and the horizontal distance from TWA2, with the exception of ALT EW 71 (located next to the Orpen Lake Tributary spawning area). Generally, it appears that wells completed at higher overburden elevations experienced less interference as compared to wells completed to deeper depths, except for ALT EW 71. For example, the greatest interference was observed at the Dykes Well (drawdown of 4.54 metres at a distance of 95 metres) whereas OWA2-shallow exhibited a drawdown of 0.24 metres (depth of 21.3 metres) at a lesser distance of 11 metres from TWA2. The drawdown of 0.85 metres observed at ALT EW71 (depth of 29.6 metres) at a distance of 845 metres from the pumped well is considered abnormal because drawdown is expected to decrease with distance from the pumped well. The strong hydraulic connection to ALT EW71 suggests there could be a buried channel or branch of the buried bedrock valley aquifer complex extending from area of ALT EW71 that directly connects to the main branch of the buried bedrock valley aquifer complex.

No water disruptions were observed at the local domestic wells during the 24 day pumping test except for the well located at 1748 Queen Street (Dash Well) and as such a temporary water tank was supplied on December 7, 2012 so that aquifer performance testing could continue. The well at 1748 Queen Street (Dash Well) is a 6.51meter deep dug well. There are two casings set in this well. The outer casing extends to a depth of 5.92 metres and the inner casing telescopes to a depth of 6.51 metres. The available drawdown in the Dash well is approximately 0.7 metres (based on the static water level at the start of the aquifer test on November 26, 2012 and 0.3 metres from the bottom of the well). It appears that the zone of influence from the pumping TWA2 did extend to the Dash Well and interfered with this well by 0.11 metres. The Dash Well does not have a lot of available drawdown so the 0.11 metres of interference was considered significant enough to cause a water disruption at this well. In view of the relatively shallow depth of the Dash Well, it is conceivable that these homeowners could experience future water disruptions.

Overall, there was no more than 0.25 metres of drawdown in the domestic wells monitored with the exception of 4.54 metres at the Dykes Well and 0.85 metres at ALT EW 71 (this is a private domestic well, next to the Orpen Lake Tributary Spawn Area 2.) The drawdown at the Dykes and ALT EW 71 are not considered serious because there is sufficient available drawdown in these wells to operate adequately with the observed

drawdown. In view of the available drawdown in the wells monitored, it is considered that no significant interference will occur within existing domestic wells as a consequence of the operation of a production well at TWA2 with the exception of 1748 Queen Street (Dash). Although the well at 1784 Queen Street (Rood) did not experience a water disruption, the well is of similar depth and construction as that of the 1748 Queen Street Well (Dash) and it is conceivable that water disruptions could occur, if a production well was established at the location of TWA2. It is recommended that the wells located at 1748 and 1784 Queen Street be replaced with deeper drilled wells or the residents be connected to the municipal water service, should a production well be established at the location of TWA2.

The CVC was concern about potential impacts on surface water features with regard to the TWA2 pumping test and as such four major CVC monitoring surface water features were established for monitoring:

1) Credit River Flow stations (two stations in total)
2) Spawning Areas (two locations in total):
    a) Credit River (Spawn Area 1)
    b) Orpen Lake Tributary (Spawn Area 2)
3) Organic Areas (three locations in total)
4) Shaw's Creek (two monitoring locations)

No observable interference was noticed at the above noted monitoring stations (after 24 days of continuous pumping), except for the Orpen Lake Tributary/Spawn Area 2 monitoring location. Based on the water levels observed at the Orpen Lake Tributary/Spawn Area 2, it was apparent that the pumping of TWA2 for 24 days had an observable response to water levels at ALT DP 9-04d. The interference at ALT DP 9-04d after the 24 days of pumping is estimated to be 0.17 metres which is consistent with the interference observed in the shallow groundwater/water table. Interference (drawdown) was not observed at ALT DP 9-04s (shallow drive point) or ALT SG 9-04 (creek).

Based on a cross-section from TWA2 to the Orpen Lake Tributary, there does not appear to be an obvious direct stratigraphic connection to shallow to EW71 in that TWA2 reported two thick fine grained zones (clay and/or silt) from 53.3 to 64.0 metres below ground level (10.7 metres thick) and from 74.7 to 89.9 metres below ground level (15.2 metres thick).

Although it seems counterintuitive, it is clear the cone of influence from the aquifer performance test extended to the Orpen Lake Tributary/Spawn Area 2 and appears to have a noticeable connection to ALT EW 71. The results of the TWA2 aquifer performance test were presented to the CVC in a technical memorandum dated April 19, 2013. The CVC subsequently indicated that they were not prepared to support the development of a production well at TWA2 because of the observed interference extending to the Orpen Lake Tributary Spawn Area 2.

There are a cluster of wells near Alton PW#3/PW#4 that appear to respond to daily fluctuations such ALT PS 3-1, 1748 Queen Street (Dash), 1784 Queen Street (Rood) and ALT EW71. An examination of the operational water level data obtained from the

Region of Peel SCADA system available for Alton PW#3/PW#4 suggests that these fluctuations are from the operation of Alton PW#3/PW#4. However, the frequency/accuracy of the water level readings regarding the operational data of PW#3/PW#4 (SCADA) is sporadic so the PW#3/PW#4 water levels and water takings do not match the data collected during the TWA2 aquifer testing. Although it appears that the operation of Alton PW#3/PW#4 could influence water levels at ALT PS 3-1, 1748 Queen Street, 1784 Queen Street and ALT EW71A, a more detailed examination (such as controlled aquifer testing and synchronized monitoring) is required to accurately assess the interference arising for the operation of Alton PW#3/PW#4Wells (if this assessment is required).

The start and stop dates of the CV4 stress tests were examined in the TWA2 hydrographs. Based on the stop/start times of the CV4 stress test, there did not appear to be any observable fluctuation in water levels associated with the stop/start times CV4 stress test.

Water samples were collected during well development as well as after 10 minutes, one hour, one day, eight days and 14 days of pumping during the 24 day aquifer test and submitted for general water quality plus total suspended solids. Water samples were also collected from TWA2 at the end of the 24 day test and submitted for the entire suite of the Ontario Drinking Water Standards (ODWS - Ont. Reg. 169/03), except for radionuclides, chloramines, dioxins and furans, microcystin-LR, and monochlorobenzene. Based on the samples collected, the overall raw water quality of the TWA2 is generally excellent and meets the ODWS except for hardness and iron. The gross beta concentration of 0.2 Bq/L exceeded the gross beta screening criteria of 0.1 Bq/L. This does not mean that the radionuclide quality of the water fails the ODWS in that gross beta is a screening tool. A gross alpha or beta exceedance is considered unusual so additional testing is suggested to confirm the radionuclide quality of TWA2.

Water samples were collected from 17 local wells near Site A over the period of August to October 2012 and submitted for generalized water quality analyses and sulphide. All the wells sampled are completed within overburden deposits except for the well located at 20247 Porterfield Road which is bedrock well completed to a depth of 84.4 metres within the shale bedrock. The groundwater from the shale bedrock is noticeably different than the overburden water quality in that the bedrock contains elevated salts, sulphide and hardness. The concentrations of all parameters for which testing was carried out meet the Ontario Drinking Water Standards (Ont. Reg. 160/03) with the exception of hardness, total dissolved solids, chloride, sulphate, sodium, boron, iron, manganese, colour, turbidity and total coliform.

To ensure the microbiological safety of drinking water of communal water systems, the MOE has specified minimum treatment requirements for water works with treatment requirements depending on whether the source is a ground water or surface water supply. If a ground water supply is determined to be “under the direct influence of surface water”, water treatment requirements for a surface water supply would be required, unless adequate in-situ filtration is confirmed by a Hydrogeologist and agreed to by the MOE’s Hydrogeologist. To assess in-situ filtration for TWA2, Geo Kamp Limited, installed a particle counter for the duration of 24 day pumping test which

allowed the collection of particle count data during storm, seasonal or other environmental changes as required by the MOE terms of reference for GUDI studies. Overall, the particle count data collected from TWA2 indicates that the water clarity of TWA2 is acceptable and satisfies the MOE particle count criteria. Based on the TWA2 data collected, the aquifer at TWA2 provides effective in situ filtration as per the MOE terms of reference, over the 24 day monitoring period.

4.2 Natural Environment

4.2.1 Core Area Woodlands

The Region of Peel has developed a Greenlands System to support and express the Region's vision for the protection of the natural environment. The Greenlands System consists of areas identified as Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors.

Core Areas are comprised of a variety of elements including core woodlands, wetlands, ESAs, ANSIs, habitats of Vulnerable, Threatened and Endangered Species, valley and stream corridors, shorelines and fish and wildlife habitats (Region of Peel, 2005)2.

Core Woodland areas under the Regional Greenland System are defined as woodlands that are a minimum of 30 hectares (75 acres) in area (Region of Peel, 2005)2. Essential servicing is exempt from the prohibition of development within Core Areas (Section 2.3.2.5 (c) (Region of Peel, 2005)2.

A large portion of the study area is classified under the Greenlands System as Core Areas, the notable exception being the southwestern corner of the study area, which contains little to no Core Areas.

While the other two elements of the Greenlands System (i.e., Natural Areas and Corridors, and Potential Natural Areas and Corridors) may provide important ecological functions, they are generally considered to be supporting features (Region of Peel, 2005)2 and represent a lesser constraint to development than Core Areas and, therefore, were not included in this report.

4.2.2 Watercourses

Most of the study area falls within the Credit River watershed (jurisdiction of the CVC), the only exception being a small portion in the Northeastern corner of the study area which falls within the Humber River watershed (jurisdiction of TRCA).

Regulatory agencies, most notably the OMNR and local Conservation Authorities, characterize the quality of fish habitat in a watercourse by classifying its thermal regime. Cold water features are fed by groundwater sources, which typically result in permanent flow, well oxygenated conditions and good water quality throughout the year. As a result, these cold water features are able to support sensitive fish species such as trout

[2] Regional Municipality of Peel (Peel), 2005. Official Plan Office Consolidation

and salmon and are often provided enhanced protection (e.g., buffer widths of 30m on either side of the watercourse). In contrast, warm water drainage features, although may have some limited groundwater contributions, are generally supported by overland runoff.

All watercourses within the study limits have been classified by the OMNR or the respective Conservation Authority as cold water habitats. Several reaches of the Credit River are managed for Brook Trout a coldwater species that is sensitive to disturbance.

4.2.3 Species at Risk

The Ontario Endangered Species Act (ESA) (OMNR, 2007) and Federal Species at Risk Act (SARA) (CMOE, 2002) provide protection for listed species and/or their habitats. The Natural Heritage Information Centre (NHIC) of the MNR, houses a database of known locations of 'Species at Risk' (i.e., those classified as Endangered, Extirpated, Threatened, and Special Concern) as well as other species that are believed to be regionally or locally rare. We acquired data from the NHIC's online database (NHIC, 2010), which displays known locations of 'Species at Risk' and 'rare' species as 2km x 2km squares. In addition the Region of Peel staff provided geo-referenced 'Element of Occurrence' (EO) circles supplied by the OMNR's Aurora District for species protected under the ESA. These circles represent known occurrences and potential habitats of 'Endangered' or 'Threatened' species.

Our assessment of the NHIC database and the MNR's Aurora District ESA species mapping revealed that the 'Element of Occurrence' boundaries for three species of conservation concern (i.e., Redside Dace, Milksnake, Woodland Pinedrops) were found within, or intersected by the study limits (Figure 5).

The only 'Endangered' or 'Threatened' species that is protected under the ESA and shown to have potential habitat within the study area is the Redside Dace – a small fish, listed as 'Endangered' (OMNR, 2009) that inhabits small cold-cool water streams (Scott and Crossman, 1973). Based on DFO mapping produced in 2012 Redside Dace occurs in several tributaries of Caledon Creek in the study area (Figures 5 and 6). Any activities that have the potential to adversely affect Redside Dace are prohibited under Section 9 (species protection) and/or Section 10 (habitat protection) of the Endangered Species Act, 2007 (ESA 2007). A permit will be required under ESA from MNR for water taking or any other project activities in Redside Dace Regulated habitat.

The NHIC website (NHIC, 2010) revealed two additional recent (i.e., within 20 years) 'Element of Occurrence' records; one for Milksnake (1990) and one for Woodland Pinedrops (date unavailable).

The Milksnake, is a medium sized snake that inhabits a variety of habitats including old fields and farm buildings (OMNR, 2009). This record corresponds to a location north of the intersection of Centreville Road and Old Church Road. The Milksnake is listed as 'Special Concern' (OMNR, 2009) and is not covered under the ESA or SARA.

The record for the Woodland Pinedrops (a small plant that grows in coniferous forests) corresponds to a location in the area between the Gore Road east to Duffy's Lane and

from Castlederg Road north to Old Church Road. Woodland Pinedrops is not considered a 'Species at Risk', but rather locally rare.

Neither the Milksnake or the Woodland Pinedrops, or their habitats, are protected under the ESA or SARA.

4.3 Policies and Legislation

The Alton-Caledon Area has a rich blend of overlapping Provincial, Regional and Municipal land-use planning policies which will need to be taken into consideration when reviewing various alternatives for the Alton-Caledon water supply.

4.3.1 Provincial Policy

At the Provincial level, the study area is subject to policies put forth in the *Provincial Policy Statement (PPS), Places to Grow: Growth Plan for the Greater Golden Horseshoe (GGH), The Greenbelt Plan (GP), The Oak Ridges Moraine Conservation Plan (ORMCP) and the Niagara Escarpment Plan (NEP).*

4.3.1.1 Provincial Policy Statement

The Ministry of Municipal Affairs and Housing (MMAH) issued the PPS under Section 3 of the Planning Act. The PPS came into effect on March 1st, 2005. The PPS provides direction on matters of provincial interest regarding land use planning and development, promoting the provincial "policy-led" planning system. The PPS includes policies pertaining to efficient land use and infrastructure management, protection of the environment and resources, and the provision of employment and residential development opportunities.

All municipalities within the Province of Ontario are subject to the PPS, including the Town of Caledon within which Alton-Caledon is located. As such, any work relative to the siting or construction of wells and/or a reservoir and associated infrastructure will have to conform to a number of policies set out in the PPS. The key implications of the PPS for this project are as follows:

- The provision of water services infrastructure will need to be dictated by appropriate water reserves destined for consumption. As such, the Alton-Caledon Water Supply study will need to understand existing water levels and predicted volumes of consumption so as to protect the quantity of ground water reserves.
- The provision of water services infrastructure will need to consider alternative routes, materials, construction methods and timelines so as to minimize costs.
- The provision of water services infrastructure will need to be done in such a manner as to protect the natural environment and human health by adhering to the relevant regulatory requirements provided herein.
- Wherever possible, water services infrastructure should avoid sensitive water features.
- The provision of water services infrastructure will need to be integrated with existing and future land uses and patterns as well as growth projections. The Region of Peel Planning Department and the Town of Caledon Planning

Department should be consulted throughout the project to ensure that potential well sites and associated infrastructure, as well as any other construction activities associated with the provision of water infrastructure is compatible with current and future land uses.

4.3.2 Places to Grow: Growth Plan for the Greater Golden Horseshoe (GGH)

The Growth Plan establishes a framework for accommodating growth and development to 2031. The Ministry of Public Infrastructure Renewal (PIR) issued the Growth Plan which came into effect June 16th, 2006. The key objectives of the GGH are to: (i) Revitalize downtowns to become vibrant and convenient centres; (ii) Create complete communities that offer more options for living, working, learning, shopping and playing; (iii) Provide housing options to meet the needs of people at any age; (iv) Curb sprawl and protect farmland and green spaces; and (iv) Reduce traffic gridlock by improving access to a greater range of transportation options.

The Alton-Caledon water supply needs to be in keeping with Growth Plan policies, namely meeting appropriate service levels to accommodate anticipated growth. Section 3.2.5 of the Growth Plan describes how plans to expand or construct new water and wastewater systems must ensure growth will achieve the residential and employment targets as set out in the Growth Plan.

4.3.3 The Greenbelt Plan

The Greenbelt Plan identifies where urbanization should not occur so as to protect, in perpetuity, the agricultural and base and the ecological features and functions on lands within the Greenbelt. The Greenbelt Plan was established under Section 3 of the Greenbelt Act, 2005 and took effect on December 16, 2004.

Alton-Caledon is entirely within the Protected Countryside portion of the Greenbelt Plan Area (See Appendix 1) and any water supply alternatives that may be proposed as part of this study will be subject to a number of policies under the Greenbelt Plan, namely:

- Due consideration must be given to identifying locations which minimize the potential impact on the natural environment and are in keeping with existing or future watershed plans and budgets. Once the preferred well site has been identified, appropriate construction measures must be put into place so as to minimize impact on the natural environment.
- Alton-Caledon is a settlement entirely within the Greenbelt Area and does not currently have Great Lake or Lake Simcoe based water. As such, extensions or expansions of new Great Lake, or Lake Simcoe water services will not be permitted. As such, alternative water sources are required to achieve adequate water supply for the projected population growth.
- When siting any new water supply and associated infrastructure, due consideration has to be given to designing the water servicing infrastructure in such a manner as to minimize surface and groundwater disruption.

4.3.4 The Oak Ridges Moraine Conservation Plan (ORMCP)

The Oak Ridges Moraine Protection Act was promulgated on May 17, 2001. On December 14, 2001 the ORMCP took effect. The purpose of the ORMCP is to provide

land use and resource management planning direction on how to protect the Moraine's ecological and hydrological features and functions.

Although the Study Area is out with the ORMCP area, the surface and ground water catchments may fall into the ORMCP area and therefore any work relative to the siting or construction of a new water supply and associated infrastructure within this boundary will have to be in conformity with a number of policies set out in the ORMC, namely:

- Water services infrastructure is permitted within the Oak Ridge Moraine Plan Area only if no adverse effects are created on the natural features and functions of the Moraine. Stringent review and approval standards will be required for any development plans within the Moraine, particularly in Natural Core and Natural Linkage areas. If possible, these areas should be avoided.
- Hydrogeological tests must demonstrate that any wells/new surface water supplies do not affect the function of the Moraine
- Water services infrastructure will only be allowed in Natural Core Areas and Natural Linkage Areas if they are shown to be necessary and there is no reasonable alternative. The construction of the infrastructure will have to meet stringent review and approval standards. If possible, these areas should be avoided.
- Water services infrastructure should avoid natural heritage features, hydrologically sensitive features and ANSIs.
- Landform conservation areas) are ubiquitous and subsection 30 (5-11)3 will need to be considered during development/construction of the water infrastructure services.
- Water services infrastructure should be located on the same side of environmentally sensitive or significant corridors such as river and stream valleys for instance, so as to avoid their disturbance by crossing the corridor.

4.3.5 The Niagara Escarpment Plan (NEP)

The NEP came into effect on June 1, 2005. The purpose of the NEP is to facilitate the maintenance of the Niagara Escarpment and associated lands in its vicinity as a continuous natural environment, and to ensure that only compatible development with the natural environment takes place.

The Study Area falls partially within the NEP area and as such, any work relative to the siting or construction of wells and/or a reservoir and associated infrastructure within this boundary will have to be in keeping with a number of policies. The implications of the NEP for this project are as follows:

- area provided that the impact on the Escarpment is minimized and that development and siting meets specific site design guidelines.

[3] Subsection 30 (5-11) outlines category 1 and category 2 planning, design and construction practices that minimize disturbance to landform character. It also requires that any major development submit a landform conservation plan and any development that does not constitute a major development be accompanied by a site plan.

- A Construction management plan will need to be developed to minimize impact on the Escarpment environment including visual impact.
- Water services infrastructure should avoid parks, open space and other recreational areas.
- The NEP polices will be most relevant to the siting of the reservoir due to favorable topography north of Caledon East where the Escarpment boundary is situated. If possible, the reservoir and/or well should be located outside of Escarpment Natural Areas.

4.3.6 REGIONAL POLICY

At the regional level, planning and development within the study area is subject to planning policies put forth in the Region of Peel Official Plan (OP).

4.3.6.1 Region of Peel Official Plan

The Region of Peel OP (OP) is currently undergoing review. The most current updates were made in July of 2009 and incorporated into the Office Consolidation 2008 OP. The OP directs how physical development within Peel Region should occur to meet the existing and future needs of its residents. The OP is also intended to clarify how regional services are to be provided over the long-term and what growth is allocated to the Town of Caledon and where. A number of infrastructure polices, namely contained in Section 2.2 of the OP will need to be considered when siting and constructing a well and/or reservoir and associated infrastructure.

4.3.6.2 Town of Caledon Official Plan

The Town of Caledon Official Plan was consolidated in December of 2008. The Plan is a statement of principles, goals, objectives and policies intended to guide future land use, physical development and change, and the effects on the social, economic, and natural environment within the Town of Caledon.

A wide range of land uses including agricultural, rural, rural estate residential, commercial, industrial, institutional, environmental policy area, open space and recreation, transportation and settlement uses are contained within the study area.

In addition, Caledon East has a Secondary Plan (Section 7.7 Town of Caledon Official Plan). The Environmental Policy Area should be considered (see Appendix 6). All new development and servicing shall address the relevant environmental recommendations and strategies contained in the Caledon East Comprehensive Environmental Impact Study and Mangement Plan to the satisfaction of the Town and othe relevant agencies.

4.3.7 The Clean Water Act: Source Water Protection Plans

The Clean Water Act is part of the Ontario government's commitment to implementing all of the recommendations of the Walkerton Inquiry. As a result of the Clean Water Act, Communities in Ontario are required to develop Source Water Protection Plans in order to protect their municipal sources of drinking water. These plans identify risks to local drinking water sources and develop strategies to reduce or eliminate these risks.

Source water protection areas, committee set up across Ontario. Assessment reports have been completed which look at the watershed in its entirety and seeks to understand the surface and groundwater characteristics and identify the areas that are vulnerable and require protection. Intake protection zones and wellhead protection zones have been developed for all municipal water supplies and possible threats to both the quantity of water available and the quality of the water have been identified.

Source Water Protection Plans builds on information from the Assessment Report, setting out policies and risk management strategies to address any significant threats to the municipal drinking water supply. The following tools have been utilized in the source protection plan policies:

- Utilizing the province's Planning Act to address significant threats to drinking water supplies through changes to a municipality's Official Plan.
- Utilizing a number of provincially Prescribed Instruments, such as the MOE's Certificate of Approval process (now known as the environmental compliance approvals), to address significant threats to drinking water supplies.
- Utilizing Part IV of the Clean Water Act, if required, which would include regulation of activities that are, or would be, significant threats through a Risk Management Plan.
- Utilizing Part IV of the Clean Water Act, if required, which would include prohibition of activities that are, or would be, significant threats to drinking water supplies particularly when other alternatives are not viable. Generally prohibition would only be used to address future threats.

The development of the Source Protection Plans includes pre-consultations with those who would be directly affected, as well as public commenting periods where the public, municipalities and other key stakeholders could review the report and provide their comments.

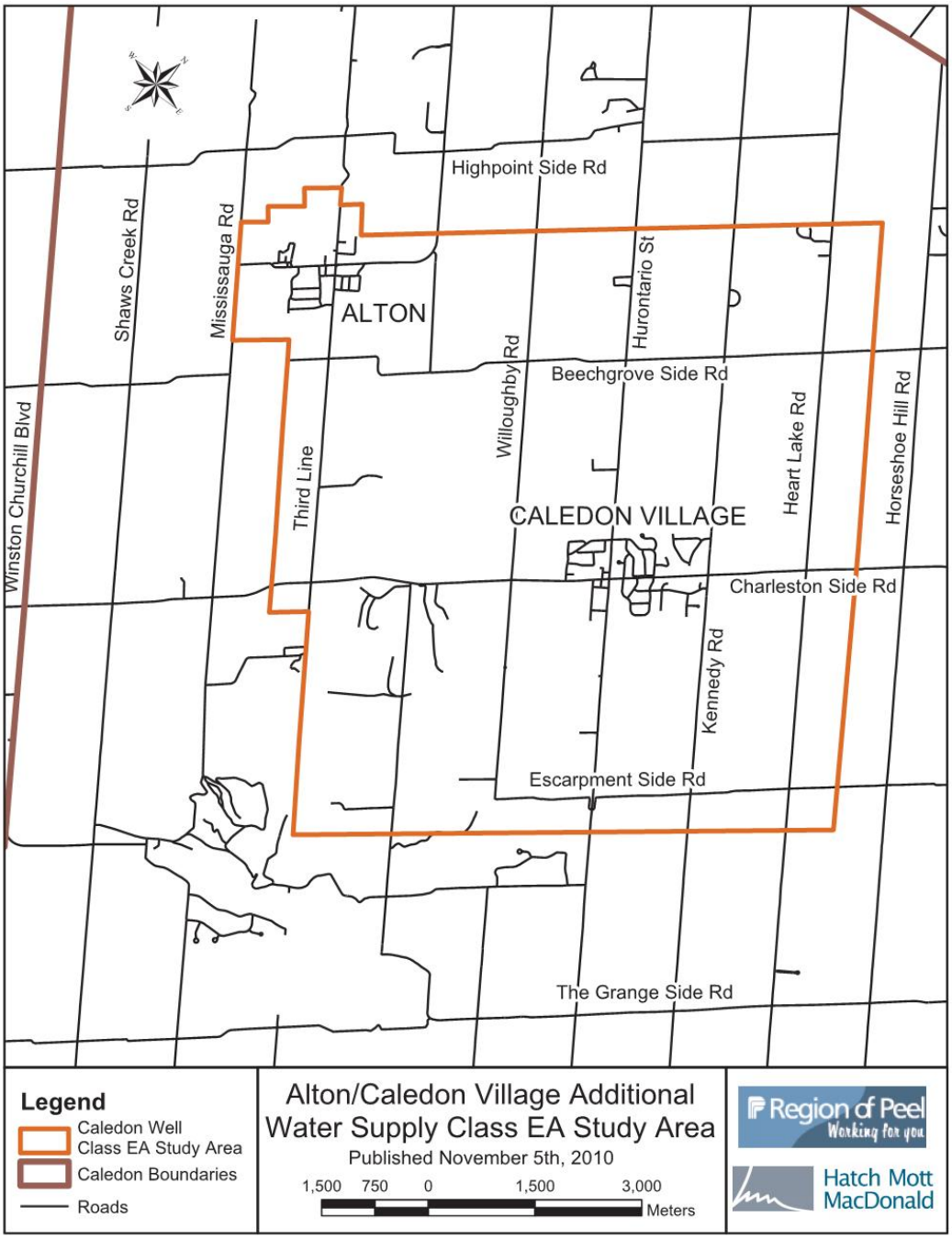


Figure 4-1 Alton-Caledon New Well Study Area

5 IDENTIFICATION AND SCREENING OF ALTERNATIVES

A two-stage process (screening and evaluation), as outlined in the MEA Municipal Class Environmental Assessment document (2007), was followed for this Municipal Class EA to ensure that all potential solutions are given equal consideration. This process allows for early elimination of alternatives that have little chance of becoming a viable solution. Only solutions that meet all of the screening criteria are carried forward for the detailed evaluation. The steps that are undertaken as part of this process are illustrated in Figure 5.1 below.

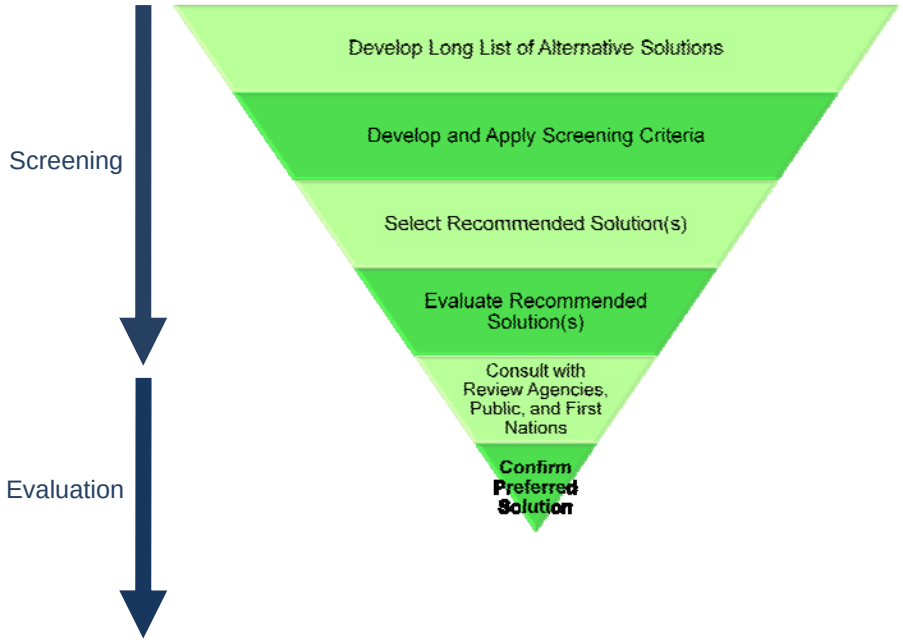


Figure 5-1 Decision Making Process

5.1 Identification of Long-List of Alternatives

The "Alton Village Study – Phase 2 Report Final Draft" completed in 2009 identified the preferred alternative of providing improvements to the well system and further refined to identify five (5) alternatives including providing additional water supply through new water supply wells.
These alternatives are as follows:

- **Alternative 1 - "Do Nothing"**

  The "Do Nothing' alternative has been added to the "long list" as a requirement of the municipal class EA process to examine what may happen if none of the alternatives under consideration are carried out.

  In the "Do Nothing" alternative, no improvements or changes to the Alton-Caledon water supply system would be undertaken except those already under construction or for which construction contracts have been let. Current water demand levels would continue to increase with approved population growth. The "Do Nothing"

alternative is included as one of the Alternatives in the Alton-Caledon EA because it provides a benchmark for considering the other alternatives.

- **Alternative 2 - "Reduce consumption through water conservation measures"**

  Implement a series of water conservation measures to reduce water. Sufficient water savings could preclude the need for additional water supply capacity.

- **Alternative 3 – "Construct a new groundwater production well"**

  Locate a suitable groundwater supply source and construct a new groundwater production well within the study area with sufficient capacity to meet forecasted system demands in the Villages of Alton and Caledon.

- **Alternative 4 – "Construct a new surface water treatment facility"**

  Locate a suitable surface water supply source and construct a new surface water treatment facility with sufficient capacity to meet forecasted system demands in the Villages of Alton and Caledon.

- **Alternative 5 – "Connect to the South Peel Lake-Based Water System"**

  Construct a new interconnecting watermain between the existing Alton-Caledon Village water system and the South Peel lake-based water system with sufficient capacity to meet forecasted system demands in the Villages of Alton and Caledon.

5.2 Screening of Long-List of Alternatives

The Long List of Alternatives were screened based on whether the alternative would meet the requirements for additional water supply capacity to service current demand projections through 2031. The descriptions of the alternatives incorporating the screening rationale are outlined below.

5.2.1 Screening Criteria

Screening criteria were developed by the Project Team and applied to each of the alternatives on the Long List. The screening criteria are presented in Table 3-1 below.

Table 5-1 Screening Criteria

Screening Criteria	Rationale
Can the alternative provide a sustainable and reliable supply of water for Alton-Caledon to 2031?	Additional water supply requirement is projected from future approved growth as identified by the Peel Region W&W Master Plan, Official Plan, and Official Plan Amendments. The must be able to address the water demand requirements.
Is the alternative technically and financially feasible?	An alternative must be able to be reasonably implemented without significant technical, construction and/or operational constraints. An alternative and change it may cause to environment must justify itself from an economic point of view.
Can the alternative meet current and proposed legislation/regulations/policies of government agencies?	An alternative must be able to address the additional water supply requirements in full compliance with current and proposed legislation/regulations.

5.2.2 Applying the Screening Criteria to the Long List

- **Alternative 1 - "Do Nothing"**

  No improvements or enhancements would be made to any elements of the existing system to satisfy the additional water supply capacity requirement. The current firm capacity of the system is less than the 2031 demand forecast, although it is greater than the current maximum demand. For this alternative to be viable, future growth in the area would need to be constrained current available capacity. This alternative partially meets the screening criteria and will be kept on the short list for consideration only if the other shortlisted options are not viable.

- **Alternative 2 - "Reduce consumption through water conservation measures"**

  The Region of Peel strives to make conservation efforts in the areas of water, energy, earth and air through programs and services aimed at sustainability. This alternative is a combination of reducing the water consumption and water loss in the residential and industrial, commercial and institutional (IC&I) sectors.

  The Regional Council has endorsed a water efficiency strategy aimed at raising awareness and education about water efficiency "Water Smart Peel". The main elements of the "Water Smart Peel" are providing information on water use to residents and businesses, encouraging water efficient practices through incentives and reduction of individual daily water consumption.

  The current Region of Peel's Water Efficiency Plan outlines the Region's strategy to reduce water consumption in Peel by 10 percent by 2015. Reducing excessive water

use and loss makes good financial and environmental sense, and implementing the Region of Peel Water Efficiency Plan will reduce the unnecessary cost of water and wastewater infrastructure expansion.

Any activity, regulation, incentive, or practice that results in the cost- effective reduction of water consumption can be defined as a potential water efficiency measure. Therefore, the Alternative C "Implement water conservation measures" would examine possible measures that will go beyond those now being practiced in Peel Region.

It is unlikely that additional water conservation measures (beyond those already being Implemented by the Region of Peel) would be able to reduce demand to the level required for the 2031 scenario and therefore Alternative 2 as a standalone option is not viable. The Region of Peel will continue to implement water conservation measures and look for opportunities to reduce demand further, thus this alternative can be considered to be included in as part of any alternative that is taken forward.

- **Alternative 3 – "Construct a new groundwater production well"**

  Provided that a suitable production well location can be found that has sufficient yield to meet the projected water demand, this alternative would meet the screening criteria and is therefore being carried forward for further evaluation.

- **Alternative 4 – "Construct a new surface water treatment facility"**

  The Alton-Caledon area is rich in sand and gravel deposits and is designated as having 'high potential mineral aggregate areas." There are a number of aggregate operations in the area which extract sand and gravel from the shallow outwash aquifer. Water from this aquifer drains into ponds created by the operations which effectively act as large open wells.

  There are a number of such ponds in the Alton/Caledon area, with the largest being southeast of Caledon Village. Water could be abstracted directly from the ponds via a surface water intake, or a shallow well/infiltration gallery could be developed close to the gravel pits which would offer some insitu-filtration and protection from contamination and potential fluctuations in water quality.

  As part of the initial screening of this alternative a Technical Memorandum (Appendix C) was prepared on the feasibility of utilizing one of the local ponds created by the aggregate operations as a source of raw water for the system. The TM concluded the following:

  - It is expected that there is adequate recharge to these ponds to meet the water supply needs; however, this would need to be confirmed through a more detailed assessment.
  - Surface water treatment will be required which will have higher capital and operational costs than the existing well supplies.
  - The source water protection issues will be challenging, if not prohibitive, for this option.

- There will be an ongoing risk to the Region and its customer for having a drinking water supply located so close to active aggregate operations. The Region would need to purchase land in this area to develop the intake and WTP, and would also need to agree to measures with the pit owners to safeguard the water supply.

Developing a surface water source using water extracted from the aggregate ponds does not meet the screening criteria as it will be technically and financially challenging to implement, and would not (in all likelihood) meet the source water protection requirements.

- **Alternative 5 – "Connect to the South Peel Lake-Based Water System"**

  Construct a new interconnecting watermain between the existing Alton-Caledon Village water system and the South Peel lake-based water system with sufficient capacity to meet forecasted system demands in the Villages of Alton and Caledon. The existing South Peel water system services the urban areas in the southern portion of the Region, generally located south of Mayfield Sideroad, south of Caledon Village. The closest point of connection to the existing South Peel water system is in the general vicinity of Highway 10 (Hurontario Street) and Mayfield Sideroad, in the community of Snelgrove. The interconnecting watermain required would be in excess of 15 km in length and due to the elevation of the Alton-Caledon Village water system a booster station would also be required to transfer water from the South Peel system.

  Due to the significant distance between the systems and the restrictions on water takings and discharge locations relating to the Greenbelt police, this alternative is not considered practical at this time and will not be carried forward for further evaluation.

5.3 Screening Results

Based on the preliminary screening presented in Section 4.2, the following alternatives were carried forward for further evaluation as part of the short-list of alternatives:

- Do Nothing (Limit Growth)
- New Groundwater Well Supply

- **Alternative 1 - "Do Nothing"**
  The primary impact of implementing this alternative will be to limit or prevent growth in the Villages of Alton and Caledon Village to the current firm capacity of the water system. Based on current demand projections and the available firm well capacity (4,319 m3/day) a total Equivalent Service Population (ESP) of approximately 4,067 could be serviced by this system under this alternative. This alternative would only be considered if the other short-listed alternative (s) are not deemed viable following more detailed evaluation.
- **Alternative 3 - "Construct a new groundwater production well"**
  Implementing Alternative 3 would allow the Region to meet the objectives of providing firm capacity and servicing future growth in Alton and Caledon Villages. Alternative 3 therefore must be considered **the preferred alternative** at this time, providing that a location for a new production with sufficient production capacity can be found.

6 GROUNDWATER DEVELOPMENT PROGRAM

A comprehensive groundwater investigation to locate a site for a new production well was progressed by the Region: The investigation was staged as follows:

- Desk study to identify potential well locations;
- Develop a site selection matrix and scoring procedure to evaluate the different locations
- Evaluate, score and rank the locations for further investigation and test drilling
- Undertake further hydrogeological assessment and test drilling at the highest ranked locations.

The investigation is summarised below with full detail provided in Appendix X.

6.1 Identifying Potential Well Site Locations

Larger groundwater yields are expected to be found in the sand and gravel aquifers, which occur within Buried Bedrock Valley Aquifer Complex in the vicinity of Caledon Village (CV4) and from sand and gravel deposits in the Outwash Sand and Gravel Aquifer Complex (such as AV1 & 2 which are currently mothballed due to high nitrates, AV3 &4, CV3 & CV3B). The focus of the groundwater development program was to explore these two complexes since these aquifers were known to possibly yield sufficient water supplies for the development of production wells.

The preference was to encounter coarse sediments within the deeper parts of the Buried Bedrock Valley Aquifer Complex. The deepest valley sections suggested that this was the main river channel which in turn could infer higher water velocities resulting in the washing and depositing of courser material. The thickest sequence of material also provided the greatest opportunity to encounter sand and gravel deposits and to maximize drawdown. Identification of potential well locations would be targeted at roads or trails that cut across the deepest portions of the Buried Bedrock Valley Aquifer Complex.

Identifying potential well locations within the Buried Bedrock Valley was completed as a desk study utilizing available existing information and constraints maps that were produced for the project, with minimal additional field data other than to identify potential sites to confirm accessibility, current land uses and existing utilities. Six potential well sites were identified, and possible routes for new watermains connecting the new well to the existing water supply system were developed for each option. The six potential well locations are described in Table 0-1. The locations of the well sites within the study area are shown in Figure 0-1.

A radius of 600m surrounding the proposed well was used as a guide for evaluating any potential constraints to developing the well, and a buffer of 10m from both sides of the road allowance was used for the watermain (Figure 0-2).

Table 0-1: Potential Well Locations

Well Location	Description
Location A – Porterfield Road and Beechgrove Side Road	Location A is proposed near the intersection of Porterfield Road/Highway136 and Queen Street East (east of Alton Village). Successful drilling would require drilling to buried valley at depths of 100 meters. The suggested

	location of Site A could prove difficult for test drilling purposes in that the road ditch is steep on the south side of Queen Street and the overhead hydro electric wires on the north side of the street provide limited working room. There are opportunities to move the Site A location to the Patterson Road right-of-way or within the Highway #136 road allowance at the railway tracks.
Location B – McLaren Road Unopened Road Allowance	Location B is proposed within the McLaren Road unopened road allowance north of Highway #24/Charleston Side road. Successful drilling would require drilling to buried valley at depths of 125 meters. Site access is determined as quite excellent and requires no improvements. The Town of Caledon was subsequently contacted about access and it is understood that the right-of-way is currently in negotiations for sale to the neighbouring gravel pits. Thus this site is unavailable, unless the property sale is not completed.
Location C – McLaren Road Communications Tower	Site C is proposed at the southwest corner of McLaren Road and Highway #24/Charleston Side road at the communications tower which is the south end of Green Lake. The estimated drill depth could be up to 125 meters at this location. Although the potential to encounter significant groundwater resources at Site C is considered excellent, the potential for gravel pit expansion and the nearby landfill essential render this site as a poor location to develop a municipal groundwater supply.
Location D – Willoughby Road and North Ridge Trail	Site D is proposed at the west end of the North Ridge Trail cul-de-sac, west of Willowby Road. The road is a private road owned by the three residences as part of a condominium corporation. Based on water well records and underlying bedrock contacts, it is conceivable that there is a buried waterfall between Sites C and D. The estimated drilling depth is 180 meters. The gravel pits near Caledon Village cover an area from Mclaren Road in the west to Kennedy Road in the East. It is understood that the elevation of Willoughby Road could be cut down so that the elevation of the roads matches the altered topography of the gravel pits. Thus water main routes along Willoughby Road are rendered as not feasible. To develop a water source near Site D, the water main would have to travel south along Willoughby Road to Escarpment Side road, eastward along Escarpment Side road to Highway #10 and then northward along Highway #10. The Region of Peel has determined that the costs are prohibitive for this water main routing thus Site D is not a practical location.
Location E – Hurontario Street at Graham Brothers Pit	Site E is proposed north-east of Site D and south of Wells CV3 & CV3B on Hurontario Street. The site is approximately 600 meters south of Caledon Well #3 and well depths are expected to approximately 55 metres. Site access is determined as excellent and requires no improvements.
Location F – Heart Lake Road	This site is located along Heart Lake Road approximately 2 kilometers south of Highway #24/Charleston Side road. Well depths are expected to be 35 metres, the shallowest of all six targets. The road allowance is relatively narrow but considered accessible.

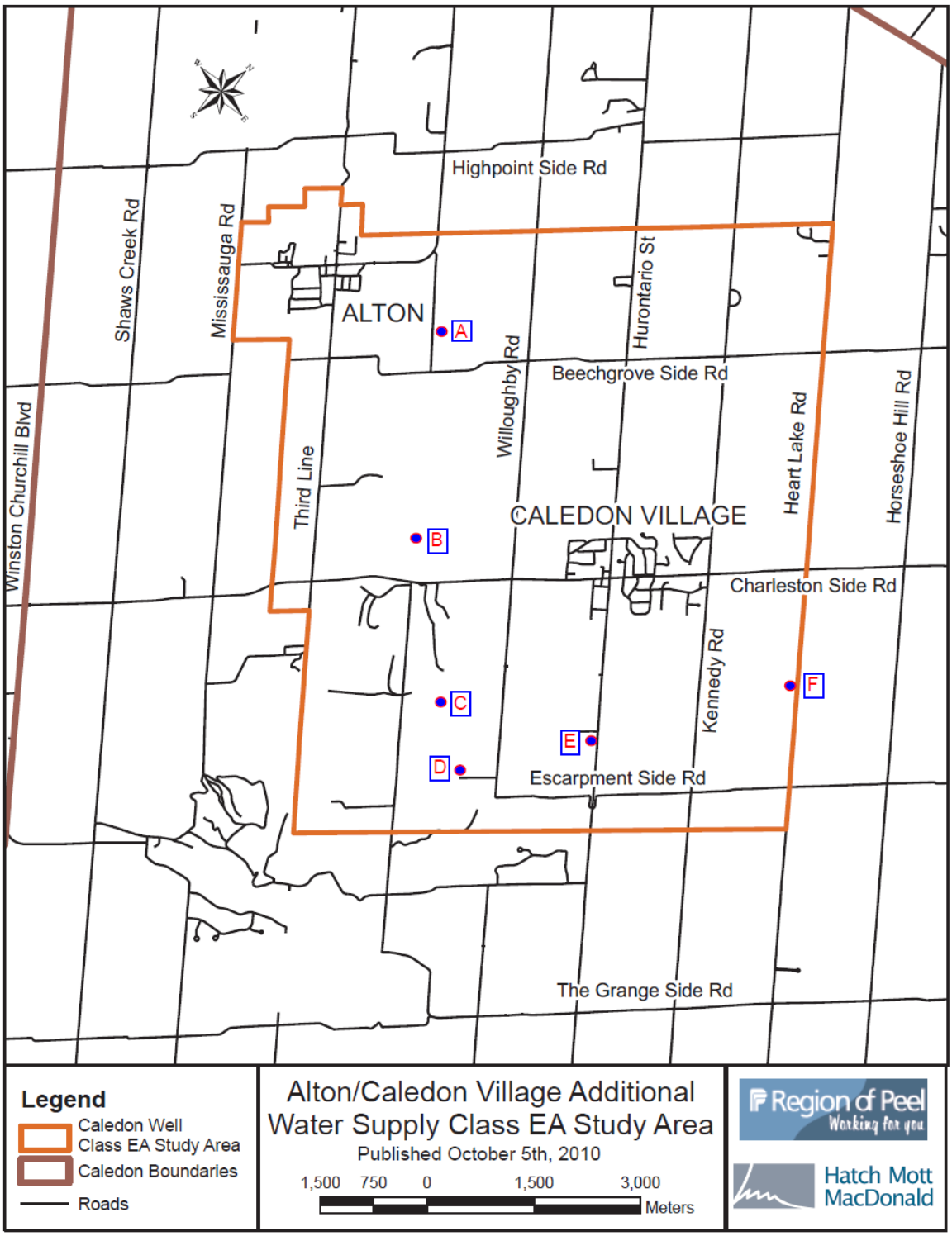


Figure 0-1: Alternate Test Well Locations

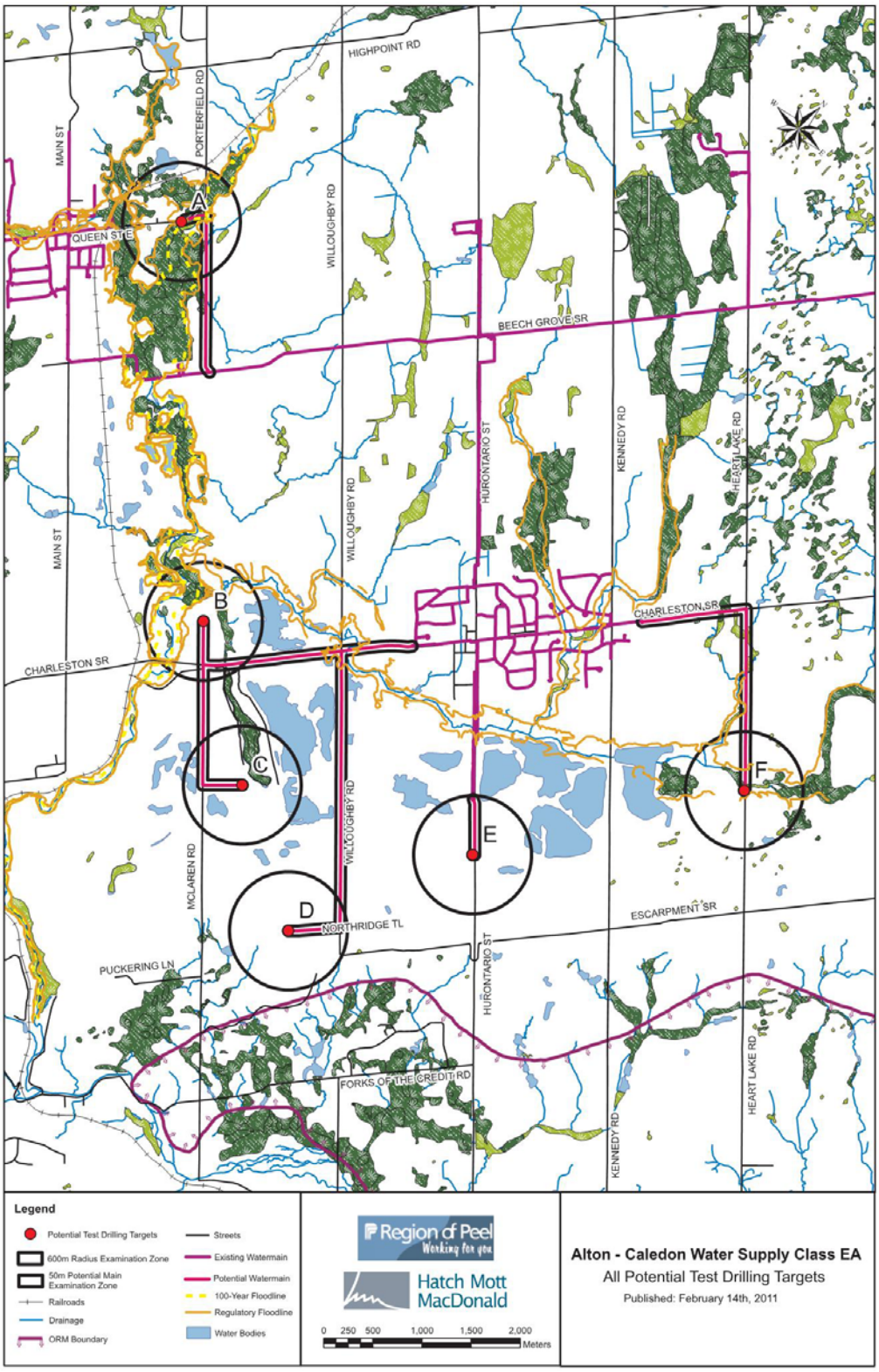


Figure 0-2: Evaluating Constraints

6.2 Evaluation Criteria and Scoring

A set of evaluation criteria for assessing the potential well locations was developed by the Project Team. Six broad based criteria were used which were broken down into subcategories to assist with the scoring process. It was agreed that the actual number of criteria would be kept to a minimum given the generalized level of detail of the data to be used in the process. Since there were six sites, it was suggested that the rating be kept as simple as possible and ranging from one to six to avoid ties:

- 1-Poor or Unacceptable
- 6-Excellent or Acceptable

The evaluation criteria and subcategories are shown in Table 0-2.

Table 0-2 Evaluation Criteria

Criteria	Rationale	Indicator
1 Water Supply		
1.1 Capacity	Potential of alternative to provide a reliable water supply to the year 2031..	Potential Aquifer Yield (review of existing hydrogeological studies and data).
1.2 GUDI	Potential for the location to be classified as Groundwater Under the Direct Impact of Surface Water (GUDI).	Potential water quality (review of available hydrogeology and water quality data) Likely well depth
1.3 Ground Water Interference	Potential for the location to impact existing groundwater supplies i.e. private well supplies, aggregate resources etc.	Proximity to existing ground water supplies/users (groundwater supplies within the 600m buffer zone)
1.4 Surface Water Interference	Potential for the location to impact the surface water resources i.e. surface water quantity and quality..	Proximity to surface water features (surface water features within the 600m buffer zone).
2 Technical		
2.1 Constructability	Assessment of how easily the option could be constructed i.e. design, approvals, construction of well and associated watermain.	Challenges associated with constructing the additional infrastructure • Site available for drilling well • Number of watercourse/wetland crossings • Additional treatment requirements etc.
2.2 Maximize Use of Existing Infrastructure	Ideally the new well will be easily integrated into the existing water supply system, with a minimal need	Proximity to existing water supply infrastructure Whether additional treatment,

Criteria	Rationale	Indicator
	for additional new infrastructure.	pumping, storage etc would be required.
2.3 Reliability	A new production well needs to be reliable minimize likely operation and maintenance costs and potential outages.	
2.2 Accessibility	The well location should be easily accessible both during construction (accessible for drilling rigs and other machinery, working room etc), and for the Region staff for routine operation and maintenance.	Available working space at the location • Access routes • Steepness of sites • Proximity to roads etc. Accessibility of final site for operations staff/machinery: • Working area • Road access etc.
3 Economical		
3.1 Costs Relating to Watermain and Waste Handling	The Solution must be cost effective from both a capital (initial) and life cycle (operation and maintenance) cost basis.	Net Present Value Analysis considering Capital and Operating/Life Cycle Costs
3.2 Property Acquisition	Acquiring additional land to accommodate proposed infrastructure can be costly and time consuming.	Potential costs (high, moderate or low) associated with the purchase of developed land or easement
4 Social Environment and Land Use		
4.1 Socioeconomic	The option should minimise socio-economic impacts both during construction and following operation. Socio-economic impacts include: • Noise, vibration and dust during construction and following operation. • Any restrictions to access to property or public space • Impact to traffic during construction • Aesthetic impacts	Land use at the current site Proximity to residential homes and commercial properties Proximity to local roads etc.
4.2 Archaeology and Cultural Heritage	The proposed project has the potential to impact archaeological resources and above ground cultural heritage resources.	Presence of known archaeological resources within the study area Potential of the alternative to impact archaeological resources
5 Policies and Legislation		
5.1 Oak Ridges Moraine and Greenbelt	The proposed project falls within the Oak Ridges Moraine and/or Greenbelt	The proposed project falls within the Oak Ridges Moraine and/or Greenbelt
5.2 Source Water Protection	The proposed project has the potential for source water	Potential to negatively impact source water protection.

Criteria	Rationale	Indicator
	protection concerns	Existing or planned operations near proposed location which may have an effect on source water protection.
5.3 Agricultural	The proposed project has the potential to impact existing agricultural operations.	Proximity to existing agricultural activities. Impacts to agricultural operations
6 Natural Environment		
6.1 ANSI and Environmentally Sensitive Areas/ Core Areas	Any work construction work planned in areas which have been designated, or any change to the operation of the raw water supply which has the potential to adversely impact a protected species, will make obtaining the required permits more difficult and could introduce constraints into the operation and maintenance of raw water supply	Presence of protected areas, wetlands and watercourses and Species at Risk within the 600m buffer area.
6.2 Wetlands and Watercourses		
6.3 Species at Risk		

6.3 Evaluation Results

The evaluation of the different well locations against the various criteria was completed by the Project Team, and then the scoring was completed jointly at a series of meetings with the Region staff. The results of the evaluation are summarized in following section, with the details for each site provided in Appendix A.

Location A – Northeast of Porterfield Road and Beechgrove Side Road

Category	Assessment
Water Supply	• Aquifer performance/drawdown data provided in the PW4 well construction report suggests that additional ground water resources could be available in the vicinity of PW4. It appears possible that additional water could be extracted from PW4 or additional wells could be completed within the Buried Bedrock Valley Aquifer Complex. • The aquifer in the vicinity of PW4 is relatively narrow and it is possible that an additional production well could interfere with existing water supplies. • There is a gravel pit and approximately 14 private well users within within 600 m of well. • Concerns have been identified with going too far north in that the well could be getting too close to the Orangeville wells. • The site is close to the Credit River. • Well depths are expected to be 80 metres, thus likely not GUDI.
Technical	• It would be possible to connect to 300 mm watermain approximately 1.9 km south east of test well along Beechgrove Side Rd. • Four creek crossings and one wetland. • There is very little working room on the south side of the road, and test well too close to road. • The appears to be relatively steep and may require some accessibility improvements.
Economical	• Relatively short watermain route which will have lower installation and capital costs and also decreased head loss in the pipe line, thereby reducing long-term system operation costs. • Acquisition of property may take between 9 to 12 months (perhaps longer).
Social Economic and Land Use	• Location of potential pump house is in proximity to (+/-200m) 5 residential homes. • Test drill location is within 300 m of a watercourse, in an area of well-drained soil, adjacent to a historic transportation corridor, and within 300 m of an early Euro-Canadian settlement (pioneer homestead). • Test drill location is also in close proximity to CHR #184.
Policies and Legislation	• Not within the Oak Ridges Moraine Planning Area or NEC Planning Area but located within the Greenbelt Planning Area - Protected Country Side.
Natural Environment	• Concerns have been raised by the CVC regarding the development of additional ground water supplies in the vicinity of the Credit River from Alton to Highway #24. The proposed drilling location is not within prime agricultural lands. • Site is located within Environmentally Sensitive Areas and Core Woodlands. • Site is also located within Provincially Significant Wetland (PSW) and adjacent to coldwater watercourses. • There are no known NHIC EO records and Redside Dace not known to occur in adjacent wetercourses.

Location B – Northwest of McLaren Road and Charleston Side Road (near Charles Sauriol Conservation Area)

Category	Assessment
Water Supply	• The Buried Bedrock Valley Aquifer Complex has been examined along Hwy 24/Charleston Rd, thus success is considered low. However, location B is in a stretch (300 meters east and west) where the Buried Valley Aquifer Complex has not been explored and is offset from Hwy 24 to the north by 500 meters. • Well depths are expected to be 120 meters, thus not GUDI. • Approximately 2 private well users within 600 m radius of well. • There are gravel pits adjacent on both sides of the site, the Charles Auriol Conservation Area and the Credit River is less than 100 meters from the site.
Technical	• One creek crossing east of Willoughby Rd. • Could connect to 200 mm watermain (approximately 3.8 km north of test well along Charleston Side Rd.) • The site is located approximately 450 meters off of McLaren Road at the Communications Tower. • Very flat and lots of working room
Economical	• Medium length new watermain required; more expensive than Site A. • Surrounded by two (2) gravel pits, each owned by a private estate therefore may be difficult/expensive to acquire the land due to the nature of the property use.
Social Economic and Land Use	• Watermain route construction may result in some delays in traffic but Charleston Side Road appears large enough to accommodate construction. • Location of potential drill site and pump house may have an economic impact on aggregate extraction activity. • Area characterized as having both Aboriginal and Euro-Canadian archaeological potential and there are two previously identified cultural heritage resources are located within a 500 meter radius. • The site is 300 m from a golf course and between two gravel pits. The pits appear active. Landfill located about 500 m to the south.
Policies and Legislation	• The site is not within the Oak Ridges Moraine Planning area or NEC planning area but is within the Greenbelt Planning area - Protected Country Side.
Natural Environment	• Concerns have been raised regarding the development of additional ground water supplies in the vicinity of the Credit River from Alton to Highway #24. Additional development (whether ground water resources or land use changes) could be become too concentrated and the increased development could be unacceptable to the CVC. • Site is located adjacent to Environmentally Sensitive Areas & Core Woodlands, within Provincially Significant Wetland (PSW) and adjacent to coldwater watercourses, within a 600m radius. • Site is located adjacent to a section of watercourse that is known to host populations of Redside Dace.

Location C – Between McLaren Road and Willoughby Road southeast of Green Lake

Category	Assessment
Water Supply	• Site is located along the western side of the axis of the Buried Bedrock Valley Aquifer Complex as well as within the Outwash Sand and Gravel Aquifer Complex (two aquifer targets at possibly one location) • Should a test well be completed at this location within the deeper Buried Bedrock Valley Aquifer Complex, the aquifer would be considered to be more protected and likely not GUDI. Depths of 120m are expected. • If a test well is completed in the Outwash Sand and Gravel Aquifer Complex, the aquifer would likely be unconfined (less aquifer protection) and possibly GUDI. • There are gravel pits adjacent to site. Green Lake is adjacent to the site and there are on-going interference concerns regarding the gravel pit. An extensive SW monitoring program would be required. • There are approximately twelve (12) private well users within a 600 m radius of the proposed location.
Technical	• There is one (1) creek crossing east of Willoughby Rd. • It would be possible to connect to the 200 mm watermain approximately 3.8 km north of test well along Charleston Side Rd and would require a relatively long length new watermain. • The site is located approximately 450 meters off of McLaren Road at the Communications Tower.
Economical	• It may be difficult to acquire property due to the nature of the property use. • There would also be high installation and capital costs due to length of new watermain
Social Economic and Land Use	• Location of potential pump house is in proximity to (+/-200m) four (4) residential homes as well as adjacent to an aggregate pit. • Location of potential drill site and pump house may have an economic impact on aggregate extraction activity. • Area characterized as having both Aboriginal and Euro-Canadian archaeological potential and there is one (1) previously identified cultural heritage resources is located within a 500 meter radius.
Policies and Legislation	• The site is not Within Oak Ridges Moraine Planning area or NEC planning area but is located within the Greenbelt Planning area - Protected Country Side • The Lafarge operated pit is adjacent to this location which could have an impact under source water protection legislation. There is also a Landfill located about 800 m to the NW.
Natural Environment	• There are no Environmentally Sensitive Areas in proximity but site is located adjacent to Core Woodlands. • The site is located within Provincially Significant Wetland (PSW) and adjacent to cold water pond/lake within a 600m radius. • There are no known NHIC EO records but Redside Dace known to occur upstream (north) of the site within adjacent watercourses.

Location D – Between McLaren Road and Willoughby Road at the end of Northridge Trail

Category	Assessment
Water Supply	• A domestic well was recently drilled (2006) in the target drilling Location #2 and based on a review of the well log (MOE Tag # A026039), a sand and gravel deposit was encountered from 157.0 to 167.3 meters (10.3 meters of formation). The specific capacity of this well is 33.75 L/min/m of drawdown and with 100 meters of available drawdown the theoretical yield is approximately 3175 L/min. • The site is located along the axis of the Buried Bedrock Valley Aquifer Complex. Well depths are expected to be 165 meters (very deep), thus not GUDI. • The site is remote to surface water features therefore surface water interference is not expected. However, the site is at the brow of the buried escarpment and springs located to the south may have to be addressed. • There are approximately twelve private well users within 600 m radius of well.
Technical	• There is one creek crossing on Charleston Side Rd. • It would be possible to connect to the 200 mm watermain approximately 3.8 km north of the test well along Charleston Side Rd, or the possible slightly longer route of approximately 4.1 km to the 200 mm watermain on Charleston Side Rd. • There is not much working room on the shoulders of the private road due to trees and berms. The drilling rig may partially block the roadway; however, there is not much traffic along this route.
Economical	• Since this is private road, negotiations with 3 landowners would be required. • This location requires the longest length of watermain and would result in increased installation and capital costs.
Social Economic and Land Use	• Location of potential pump house is in proximity (+/-200m) to one residential home as well as adjacent to agricultural land. • Location of potential drill site and pump house may limit the uses of the agricultural land. For instance livestock would be required to be sanitized and pesticide use may not be permitted. • The site location is at the terminus of a dead end street as such traffic volumes are limited to two residential properties located on Northridge Trail. • The watermain route runs along Wiloughby Road, a lightly travelled road by commuters. • No previously identified cultural heritage resources are located near the site but the area is characterized as having both Aboriginal and Euro-Canadian archaeological potential.
Policies and Legislation	• The site is not Within Oak Ridges Moraine Planning area but is located within the Greenbelt Planning area and NEC Protected planning area but not Protected Country Side. • There appears to be one farming operation with one active livestock farm within 600 meters of the site which could be an issue under source water protection legislation.
Natural Environment	• There are no Evaluated Wetlands and only one small branch of a coldwater watercourse located within the 600m radius area. • Site is adjacent to Core Woodlands. • There are no known NHIC EO records and Redside Dace not known to occur in adjacent watercourses.

Location E – Off Hurontario Street, northwest of Escarpment Side Road

Category	Assessment
Water Supply	• The site is located along Highway #10 at the southern boundary of the Outwash Sand and Gravel Aquifer Complex A review of well logs indicates fine sand to depth. No wells have been completed to bedrock so it is not known if there is courser material to anticipated depth. • Well depths are expected to be 60 meters, thus likely not GUDI but is part of the Outwash Sand and Gravel complex that is GUDI. • Previous experience at PW3 well field suggests no issues with surface water interference
Technical	• There are no watercourse crossings along the alignment and this location has the shortest length of watermain. • Since this is Graham Brothers' property, negotiations with Graham Brothers are likely required. We will likely need an agreement to enter to get to drill site.
Economical	• It may be difficult to acquire land due to the nature of the property use. There is a potential for higher acquisition costs.
Social Economic and Land Use	• The site is located within 300 m of a previously registered archaeological site, in an area of well-drained soil, adjacent to a historic transportation corridor, and within 300m of early Euro-Canadian settlement (two pioneer homesteads). • The site is located within 150 m of a previously identified cultural heritage resource (CHR #19). • The site location is adjacent to Hurontario Street (Hwy 10), a busy thoroughfare but the shoulder is large enough to accommodate required construction machinery. Major traffic delays are not anticipated. • Location of potential pump house is in proximity to (+/-200m) one (1) residential home as well as adjacent to agricultural land.
Policies and Legislation	• The site is not Within Oak Ridges Moraine Planning area but is located within the Greenbelt Planning area but not protected country side and NEC Escarpment Rural planning area. • The intermediate depth may provide more protection from surface contaminants as compared to the PW3 well field, but the close proximity gravel pits could be a threat.
Natural Environment	• There are no Evaluated Wetlands and only one small pond located within the 600m radius area. • There are no known NHIC EO records and Redside Dace not known to occur in adjacent pond feature.

Location F – Off Heart Lake Road, between Charleston Side Road and Escarpment Side Road

Category	Assessment
Water Supply	• The site is located along Heart Lake Road in the Outwash Sand and Gravel Aquifer Complex. Well depths are expected to be 32 meters, the shallowest of all 6 targets, thus the least available drawdown. According to MNR aggregate resource mapping, this formation narrows at Heart Lake Rd and pinches out to the east. • The aquifer at this location would likely be unconfined (less aquifer protection) and possibly GUDI. • The Star Wetland Complex is located approximately one kilometer to the west and Warnock Lake is located approximately 500 meters to the east. Potential ground water impacts with regard to these surface water features would have to be addressed.
Technical	• The watermain would require two (2) creek crossings going north on Heart Lake Rd and three (3) wetland crossings and would be of medium length.
Economical	• There would be potential dewatering and property acquisition costs.
Social Economic and Land Use	• Area is characterized as having both Aboriginal and Euro-Canadian archaeological potential. • The site is located within 300 m of a previously registered archaeological site, within 300 m of a watercourse, in an area of well-drained soil, and adjacent to a historic transportation corridor, and within 300 m of an early Euro-Canadian settlement (pioneer homestead). • There are three previously identified cultural heritage resources are located within a 500 meter radius. The site is located in close proximity to CHR #223 and #224. • The location of potential pump house is in proximity to (+/-200m) one (1) residential home as well as adjacent to agricultural land. The location of potential drill site and pump house may limit the uses of the agricultural land. For instance livestock would be required to be sanitized and pesticide use may not be permitted. • The watermain alignment is in proximity to a high school, therefore must take into consideration of safety for kids and patrons on the school
Policies and Legislation	• The site is not within the Oak Ridges Moraine Planning Area but is located within the Greenbelt Planning Area but not under protected country side or NEC Escarpment Rural Planning Area. • There appears to be two (2) farming operation with no active livestock farms within 600 meters of the site. • The relatively shallow depth may provide little protection from surface contaminants.
Natural Environment	• The site is located adjacent to Core Woodlands, within Provincially Significant Wetland (PSW) and adjacent to coldwater watercourses within the 600m radius. • There are no known NHIC EO records and Redside Dace are known to occur upstream (southwest) of the site within adjacent watercourses.

Figure 0-30-3 Evaluation of Alternative Solutions

CATEGORY	SITE	A	B	C	D	E	F
	SITE DESCRIPTION / FACTORS	Northeast of Porterfield Road and Beechgrove Side Road	Northwest of McLaren Road and Charleston Side Road (near Charles Sauriol Conservation Area)	Between McLaren Road and Willoughby Road southeast of Green Lake	Between McLaren Road and Willoughby Road at the end of Northridge Trail	Off Hurontario Street, northwest of Escarpment Side Road	Off Heart Lake Road, between Charleston Side Road and Escarpment Side Road
WATER SUPPLY	Capacity	4	4	5	6	3	1
	GUDI	4	5	2	6	3	1
	Groundwater Interference	1	6	2	2	5	3
	Surface Water Interference	3	3	2	6	5	1
TECHNICAL	Constructability	1	5	5	5	6	2
	Maximize Use of the Existing Infrastructure	5	4	2	1	6	3
	Reliability	5	4	2	1	6	3
	Accessibility	4	6	6	2	4	4
ECONOMIC	Cost Re Water Main and Waste Handling	4	3	2	1	6	2
	Property Acquisition	6	2	1	3	3	5
SOCIAL ENVIRONMENT AND LAND USE	Socio Economic	1	4	2	3	5	3
	Archaeology & Cultural Heritage	2	5	1	6	4	3
POLICIES AND LEGISLATION	Oak Ridges Moraine & Greenbelt	2	2	2	4	4	4
	Source Water Protection	1	4	2	6	5	3
	Agricultural	6	6	1	6	6	1
NATURAL ENVIRONMENT	ANSI & ESA/Core Areas	2	3	4	4	5	4
	Wetlands & Watercourses	2	2	3	6	6	4
	Species at Risk	5	1	3	5	5	3
	TOTALS	**58.00**	**69.00**	**47.00**	**73.00**	**87.00**	**50.00**
	RANKING	**4**	**3**	**6**	**2**	**1**	**5**

6.4 Test Drilling

The test drilling program was prioritised in the order of the ranked sites. The results are discussed below with further detail provided in Appendix X

6.4.1 Site E

A test well was drilled south of AV3/AV3A adjacent to the Graham Bros. Construction Limited entrance.

Bedrock was encountered at a depth of 67.06 metres below grade. The overburden consisted mainly of surficial stratified fine sands and gravels with a fine grained zone (clayey or silty material) from 22.86 to 30.48 meters below ground level mixture of gravel silt. (The fine grained zone from 22.86 to 30.48 meters contains a 1.52 meter thick course grained zone from 25.91 to 27.43.) Below the 22.86 to 30.48 meter fine grained zone is a sand and gravel zone from 30.48 to 44.20 meters below ground level that was underlain by fine grained material (clayey material) on top of the bedrock.

Grain size analyses of samples taken from Alton TWE were completed. The best soil samples were found from 25.91 to 27.43 metres and from 30.48 to 44.20 metres. These two zones (1.5 and 13.7 meter thick) contained approximately 18 to three percent silt material.

The 1.52 meter thick sand and gravel zone from 25.91 to 27.43 meters below ground level is above the generalized static water level of the area (dry) and too thin to warrant the installation of a well screen. Based on a forty percent retention of aquifer material, it appeared feasible to install a 12 to 80 slot well screen in the sand and gravel zone from 30.48 to 44.20 meters below ground level. Assuming that 6 meters of screen could be set at depth of 44.20 meters, the top of the screen would be 38.2 metres below ground level. Assuming the generalized static water level is 30 meters below ground level (inferred from nearby Graham Pit monitoring well 97-1); this suggests there could be approximately 8 meters of available drawdown. **The drawdown is considered too low to warrant the construction of a test well and the test hole was abandoned.**

6.4.2 Site D

This site was not selected as the works would be cost prohibitive.

6.4.3 Site B

This site was not selected as a right of way would not be available for the Region.

6.4.4 Test Wells at Site A.

Two test wells were advanced at the Alton Site A location (TWA1 and TWA2).
Alton TWA1 was drilled on the east side of Porterfield Road south of the railway tracks and north of the entrance to the Upper Credit Conservation Area. The driller reported bedrock at a depth of 72.85 meters and the log indicated that the upper portion of the test hole (depth of 30 meters) was primarily sands and gravels with two layers of silty sands. The lower portion of the test hole reported primarily silty sands with a few layers of sand and gravel.

Grain size analyses of samples taken from Alton TWA1 were completed. Based on 50 percent retention of the aquifer materials, a 40 slot screen was selected and installed from 67.97 to 70.10 metres. The yield of the well was estimated to be approximately 450 L/min but no detailed testing of the TWA1 was undertaken because it was surmised that bedrock was deeper in this area and as such it was decided that a second test well should be advanced at an location slightly more north and west in an effort to encounter better conditions.

Alton TWA2 was drilled on the west side of Porterfield Road south of the railway tracks. Bedrock was encountered at a depth of 103.32 metres which was approximately 10 meters deeper than the expected depth to bedrock. The driller reported material that drilled like bedrock from 67.05 to 74.06 meters which is coincidently the same depth as bedrock was reported at TWA1. Grain size analyses were completed on samples from TWA2.

The upper portion of TWA2 (to a depth of 53 meters) was primarily sands and gravels with two thin layers of silty sand. The lower portion of the test hole from 53 to 90 meters was primarily fine grained material (silts and clays) with a two thin layers sand and gravel. On top of the bedrock was a 13.4 meters thick sequence of sand and gravel. Based on 50 percent retention of the aquifer materials, a 50 slot screen was selected and installed from 94.48 to 101.19 metres (6.71 in length).

Based on air lift well development, the yield of TWA2 was estimated to be in excess of 1500 L/min and on this basis it was agreed to proceed with pump testing the aquifer at this site. Two observation wells at shallower depths were completed next to TW2A (within eight meters) to facilitate with the aquifer performance testing (see section X below)

6.4.5 Test Well at Site F

A test well at Site F was drilled on the west side of Heart Lake Road approximately 1800 meters south of Charleston Sideroad.

Alton TWF encountered bedrock at a depth of 23.8 metres and the log indicated stratified clay deposits, except for a sand and gravel layer from 1.5 to 11.3 meters. **In summary, there were no overburden deposits worth screening and the test hole was abandoned.**

6.4.6 Site C

This location was not selected due to not having access to the site.

6.5 Aquifer Performance Testing – Site A

An aquifer performance test of TWA2 was undertaken from November 26 to December 20, 2012 (24 days at 1325 L/min). The TW2A aquifer test was conducted concurrently

with the Caledon Village Well #4 (CV4) stress test (supervised by Genivar Inc.) in which CV4 was pumped continuously for 85 days from November 5, 2012 to January 29, 2013.

The following is a summary of the aquifer performance testing events:

Date	Event
Nov 5, 2012 to Jan 29, 2013	CV4 Stress Test (2220 L/min)
November 22, 2012	TWA2 Step Drawdown Test (up to 1579 L/min)
Nov 26 to Dec 20, 2012	TWA2 Aquifer Performance Test (1325 L/min)

6.5.1 Step Drawdown Test

On November 22, 2012, step-drawdown tests were carried out at rates of approximately 568, 946, 1325 and 1579 L/min at TWA2. Specific capacities at the end of each step were 389, 322, 284 and 265 L/min per metre of drawdown, indicating a decline in pumping at the last step and suggesting that the well was relatively inefficient.

Based on a specific capacity of 265 L/min per metre of drawdown (last step) and an available drawdown of 83 metres (from static water level to 3 metres above the top of screen), the theoretical well yield is 22,000 L/min. Even if the theoretical well yield is divided in half, this site has the potential to be one of the largest producing wells in Peel Region.

Based on the step-drawdown testing, the pump yield (performance test rate) was estimated to be approximately 1325 L/min which was close to the maximum output of the pump when the discharge was connected to the 500 meter water main (it is likely that the well yield is greater than 1325 L/min but it was not practical or possible to fit a bigger pump inside the six inch test well).

6.5.2 24 day Aquifer Performance Test

TWA2 was pumped at a rate of 1325 L/min starting on Monday November 26, 2012 at 12:20 and ending Thursday December 20, 2012 at 12:00. The pumping test was completed at a constant rate. The static water level at the start of the test was 1.39 metres below the top of the measuring point (1.21 meters below well casing or 0.66 meters below ground level). The final water level at the end of the test was 3.91 metres below the measuring point 22.29 meters for a total drawdown of 20.90 metres. The specific capacity at the end of the one day test was about 83.8 L/min per metre of drawdown.

The slope of the drawdown curve for the pumped well declined rapidly during the first minute of the test, remained at a relatively steady decline until 200 minutes and then increased in slope slightly after 200 minutes until the end of the test. TW2A recovered quickly, achieving 94 percent recovery within 1 minute. The recovery within 89 minutes was 99 percent.

The transmissivity of the aquifer, based on a straight line analysis of the drawdown curve for the TW2A F from 200 minutes until the end of the test is estimated to be 595 square metres per day (m2/day). The projected pumping level in the Production Well after 10

years of continuous pumping at the tested rate (assuming no changes in hydrogeologic conditions were encountered) would be approximately 25.5 metres below the top of the well casing or 30 metres above the well screen. **This suggests that Well F is capable of yielding in excess of 1700 L/min for extended periods.**

6.5.3 Surface and Groundwater Interference

The following local governing agencies and gravel pits were contacted, prior to test drilling:

- Credit Valley Conservation Authority;
- Ministry of the Environment (water taking permit application);
- Town of Caledon, Planning Department
- James Dick Aggregates

A monitoring program was established to assess interference with regard to local wells, gravel pit operations and nearby environmental features of interest as identified by the CVC. As such, the potential for monitoring for interference was examined at 61 locations. The locations are shown on Figure X.

The stations were monitored in order to assess the degree of connection between the aquifers developed by the wells and the aquifer being pumped. If there was a hydraulic connection between the monitored zones and TWA2, fluctuations (decreasing and rebounding water levels) should have been observed during the 24-day testing period (drawdown and recovery), regardless of the season, rainfall events or hydraulic gradients.

The CVC was concerned about potential impacts on surface water features with regard to the TWA2 pumping test and as such a number of surface water features were established for monitoring.

Further to an August 13, 2012 site meeting and email correspondence dated September 21, 2012, four major CVC monitoring features were established:

- Credit River Flow stations (two stations in total)
- Spawning Areas (two locations in total)
- Organic Areas (three locations in total)
- Shaw's Creek (two monitoring locations)

Spawn Areas 1 and 2 were identified as the trigger locations with regard to possible water level declines from the TWA2 aquifer performance test.

The results from the monitoring program are summarised below and more detail of the monitoring program and results are presented in the report *'Groundwater Exploration Program, Alton Additional Water Supply Test Well A2 Technical Memorandum regarding CVC Spawning Area, Geo Kamp, April 2013*' which is provided in Appendix X.

Error! Bookmark not defined.**Groundwater**

No water disruptions were observed except the well located at 1748 Queen Street and as such a temporary water tank was supplied on December 7, 2012 so that aquifer performance testing could continue. The well at 1748 Queen Street is a 6.51 meter deep dug well. The available drawdown in the well is approximately 0.7 meters (based on the static water level at the start of the aquifer test on November 26, 2012 and 0.3 metres from the bottom of the well). Based on the hydrographs, it appears that the zone of influence from the pumping TWA2 did extend to the 1748 Queen Street well and interfered with this well by 0.11 meters. This well does not have a lot of available drawdown so the 0.11 meters of interference was considered significant enough to cause a water disruption at this well. In view of the relatively shallow depth of the well, it is conceivable that these homeowners could experience future water disruptions if a well was developed at TWA2.

Overall, there was no more than 0.25 meters of drawdown in the domestic wells monitored with the exception of 4.54 meters at the 19976 Portersfied Road Well and 0.85 meters at monitoring well ALT EW 71 (which is a private domestic well.) The drawdown at these wells was not considered serious because there is sufficient available drawdown in these wells to operate adequately with the observed drawdown. In view of the available drawdown in the wells monitored, it is considered that no significant interference will occur within existing domestic wells as a consequence of the operation of a production well at TW2A, with the exception of the well located at 1748 Queen Street.

Surface Water

The discharge and was monitored by Azimuth Environmental Consulting Inc. and Geo Kamp Limited and the results of the monitoring are summarized in a report prepared by Azimuth Environmental Consulting Inc. which is provided in Appendix X. The increase in flow to the Credit River was considered negligible. Azimuth Environmental Consulting Inc. concluded that the discharge water had no noticeable impact on water quality, turbidity or habitat.

Groundwater interference generally depended on the well depth and the horizontal distance from TW2A (with the exception of the monitoring well at ALT EW 71). Based on the results of the pumping test, it is apparent that shallow groundwater (water table) demonstrated a response to the aquifer performance test but the response was less than the deeper wells. This suggests that the aquifer in this area is semi-confined which could be inferred as GUDI (Groundwater Under the Direct Influence of surface water).

Based on the 24 day pumping test no interference was observed at:

- The Credit River Flow stations,
- Spawning Area 1 in the Credit River,
- Organic Areas (three locations in total) and,
- Shaw's Creek.

Since no observable interference was noticed at the above noted monitoring stations (after 24 days of continuous pumping), no impacts are anticipated on the fisheries resources at these locations. No cumulative impacts related to base flow reductions are

anticipated (loss of fish habitat space, water temperature fluctuations, reduced assimilative capacity to dilute pollutants and loss of water for other users). A mitigation plan regarding natural resources is not considered necessary with these locations.

However, interference was observed at the CVC location of the Orpen Lake Tributary/Spawn Area 2, and following detailed investigation it was clear the cone of influence from the performance test extended to the Orpen Lake Tributary/Spawn Area 2.

The results from the pump testing and monitoring at TWA2 were presented to the Credit Valley Conservation Authority (CVC). The CVC expressed concern about the observed connection from TWA2 to Orpen Lake Tributary/Spawn Area 2 and indicated that they **would not be prepared to support a well at the location of TWA2** that would reverse the hydraulic gradients at the Orpen Lake Tributary/Spawn Area 2.

6.6 Conclusion

The Region of Peel undertook a compressive Groundwater Investigation Program to locate a site for a new production well for Alton-Caledon. Test wells were drilled at 3 locations and a 30 day aquifer performance test was carried out at Site A. Unfortunately, for the reasons summarised in Table X below, none of the sites are viable for further development and the Region was forced to abandon the search for a new production well.

Site Reference	Site Description	Results
E	Off Hurontario Street, northwest of Escarpment Side Road	A test well was drilled but the available drawdown was too low to warrant the construction of a test well and the site was not progressed.
D	Between McLaren Road and Willoughby Road at the end of Northridge Trail	Test well not completed due to costs associated with well.
B	Northwest of McLaren Road and Charleston Side Road (near Charles Sauriol Conservation Area)	Test well not completed due to accessibility.
A	Northwest of Porterfield Road and Beechgrove Side Road	Test well drilled at two locations (TWA1 and TWA2). A 30 day pump test was carried out at TWA2 which confirmed that there is a good groundwater supply available. However, interference with the surface water was observed at the Orpen Lake tributary which could result in a reversal of gradient. The CVC indicated that they would not support a

		production well at this location.
F	Off Heart Lake Road, between Charleston Side Road and Escarpment Side Road	A test well was drilled but there were no overburden deposits and thus it is unlikely that this site would yield sufficient water to meet the project requirements. The test hole was abandoned.
C	Between McLaren Road and Willoughby Road southeast of Green Lake	Test well not completed due to accessibility.

7 PUBLIC AND AGENCY CONSULTATION

7.1 General

Public consultation is a key component of the Class Environmental Assessment process. The primary method for public consultation adopted for this study was to provided letters and notices to agencies and stakeholders.

Hardy Stevenson and Associates (HSAL) produced a Communications Plan for the Region of Peel Class EA projects at Alton-Caledon and Caledon East which outlined the approach that would be taken for public consultation throughout the project and also identified the stakeholders and agencies that should be consulted through the project. The Stakeholders and Agencies included:

- General Public in the Region of Peel (through web pages, advertising and other media).
- Residents Local to the Potential Well Sites
- Regional Councils and Political Representatives in the Region of Peel
- Town of Caledon Council and Staff
- Aboriginal and Metis
- Ratepayers and Environmental Interest Groups
- Regulators and Agencies
- Other Stakeholders

A project contact and stakeholder list was created based on existing lists held by local communities and the Region of Peel related to similar projects. Additional stakeholders, such as relevant agencies were identified by the Project Team. The

All questions and comments received at public events, electronic comments and those received directly via phone, mail or e-mail were documented by the Project Team.

7.2 Public and Agency/Stakeholder Notification

A listing of Agencies and Stakeholders that were identified as potentially having an interest in this project is provided in Appendix E. Each Stakeholder/Agency identified were provided updates on the project in regards to study areas, site locations and hydrogeological testing.

Two letters were issued to the Agencies and Stakeholders:

- *August 26, 2011* – Letter providing background to the project and outlining the Regions Plans for test drilling at the preferred drilling locations. A figure showing the proposed locations for drilling was included.

- *October 04, 2012* – Letter updating Agencies and Stakeholders on the status of the test drilling at Sites E and F, and the plans to undertake a one month pumping test at Test Well A2.

A summary of the responses received from the identified Stakeholders and Agencies is included in Appendix F.

Key concerns expressed by stakeholders (mostly local residents) through the project included:

- Concern with regard to the existing and future sources of water for the village and the perceived difficulty with obtaining unpolluted water;
- General queries from residents with regard to how various locations for test drilling were identified;
- Concern from residents about the impact of the test drilling (and potentially from a new production well) on their private water supply;
- Queries regarding whether an elevated storage tank will be built for the village;
- Concern from rural property owners as a result of the Source Water Protection Policies should a new production well be located close to their land;
- Concern about the impact of additional development in the village (local) area to the public water supply – perception that the existing water supply is insufficient for the current demand;
- Impact of climate change to the existing ground water resource.
- Agencies noted concerns with resources within jurisdiction.
- CVC

7.3 First Nations Consultation

The following First Nations and First Nations Agencies were included in the consultation process (Appendix G):

- Alderville First Nation
- Chippewas of Georgina Island
- Chippewas of Rama
- Curve Lake First Nation
- Hiawatha First Nation
- Huron Wendat First Nation
- Iroquois Confederacy
- Mississaugas of Scugog Island
- Mississaugas of the New Credit First Nation
- Moose Deer Point First Nation
- Mohawks of the Bay of Quinte
- Six Nations of the Grand River
- Mackenzie Lake Lawyers LLP
- Nicholas C. Tibollo Professional Corporation Barristers
- Gilberts LLP
- Chiefs of Ontario
- Environment and Community Relations, Metis Nation of Ontario
- Beausoleil First Nation

A copy of the Notice of Commencement and Notice of Public Information Centre were mailed directly to each of the First Nations listed above. In addition, a copy of the Notice of Completion will be mailed directly to the First Nations Stakeholders.

A summary of responses received for the identified First Nations Stakeholders are included in Appendix G.

8 IDENTIFICATION OF PREFERRED SOLUTION

Phase 2 of a Municipal Class EA includes the identification of alternative solutions for subsequent evaluation and the establishment of the preferred solution. This process was conducted by completing hydrogeological testing at the identified site location alternatives.

The Region, with HMM and GeoKamp completed hydrogeological assessments at three (3) of the six (6) alternative site locations: Site Locations A, E and F. Following the completion of the test well testing, it was determined that none of the alternatives provides satisfactory results for this project. As such, no alternative has been identified as the preferred solution for this project.

As the preferred alternative for this project is selected as “Do Nothing”, the study is being completed following Phases 1 and 2 and will be classified as a Schedule B study.

9 IMPLEMENTATION

9.1 Approvals Process

Following the completion of the test well testing, it was determined that none of the alternatives provides satisfactory results for this project. As such, no alternative has been identified as the preferred solution for this project. This report is for Phase 1 and 2 for the exploration, testing and construction of a new production well and associated watermains, and it documents the study carried out by the Region in satisfaction of the Class EA planning process.

This Project File will be placed on the public record for a thirty (30) day review period during which time, any objections or concerns that cannot be resolved through discussions with the Region may be forwarded to the Minister of the Environment by requesting a "Part II Order". The public will be notified of the publication of the Class EA Project File through a newspaper notice at the appropriate time, or through direct notification if requested.

The Region will be in compliance with the Municipal Class Environmental Assessment approvals process for the Alton/Caledon Village Supply once the specified public review process is completed without objection.

9.2 Class Environmental Assessment Requirements

In order to satisfy the Ontario Environmental Assessment Act (EA Act), the Region initiated this Class EA study in accordance with the Municipal Class Environmental Assessment process. This study addresses Phases 1 & 2 of the Municipal Class Environmental Assessment planning process for water projects as specified in the Notice of Completion.

9.3 Notice of Completion

For the purposes of this review, this report is being made available to the public and agencies for a specified review period. All potentially affected members of the public, stakeholders and those expressing an interest in the study, as well as relevant review agencies were notified by advertisements in the local newspaper and by letter where appropriate, that this study was complete and available for review. The Notice of Completion stated the date by which written comments and a Part II Order request must be submitted to the Ministry of Environment.

Written comments on this report should be submitted to:

Luis Lasso, B.Sc. – P.Geo.
Project Manager – Groundwater Management
Region of Peel
10 Peel Centre Dr. 3rd Floor, Suite A
Brampton, ON, L6T 4B9
Tel: 905-791-7800, Ext. 4646
Luis.lasso@peelregion.ca

Part II Order requests must be received by the Minister before the end of the specified review period. Part II Order requests received after the specified review period will not be considered. Part II Order requests should be directed to:

Minister of Environment and Climate Change
135 St. Clair Avenue West
15th Floor
Toronto, Ontario
M4V 1P5

A copy of the letter requesting a Part II Order must be sent to the Regional Municipality of Peel's Clerk. If no concerns are expressed by the conclusion of the specified review period, the Regional Municipality of Peel may proceed with the design and construction of the project as described in this Project File.

9.4 Objections to the Project

If a party objects to this project, then the objector should discuss their concerns within the public review period with the Regional Municipality of Peel directly. Within the specified public review period, if a resolution to the concerns cannot be achieved in consultation with the Regional Municipality of Peel, an objector may request that the Minister of the Environment consider issuing a Part II Order which may require the Regional Municipality of Peel to undertake an additional study. Alternatively, the public can request that the Region voluntarily elevate the project to a Schedule 'C' undertaking.

For any party with a concern that they feel has not been adequately addressed, the opportunity exists for a party to request that the Ontario Minister of the Environment review the status of the project. This is called a Request for a Part II Order. This request must be in writing providing reasons for the request and copied to the Clerk of the Regional Municipality of Peel.

The Minister will consider the request and make one of the following decisions, with the Minister's decision being final:

- Deny the request, stating the reason for the decision;
- Deny the request with conditions, such as requiring that the proponent prepare additional work related to a potential environmental impact of the project;
- Refer the matter to mediation, whereby a mediator will be appointed to endeavour to resolve the concern; or
- Issue what is referred to as a Part II Order, which requires that the proponent comply with Part II of the Environmental Assessment Act and undertake the planning and design for the project and documenting it in an "Individual Environmental Assessment". An Individual Environmental Assessment once completed, must be submitted to the Minister of the Environment for government review and approval prior to carrying out the project.

Members of the public are responsible for bringing any concerns to the attention of the Regional Municipality of Peel early in the planning process. In considering the acceptance or denial of a request for a Part II Order, the Minister shall consider the following issues:

- Extent and nature of public concern;
- Potential for significant adverse environmental effects;
- Need for broader consideration of alternatives;
- Consideration of urgency;
- Frivolous or vexatious nature of the request; and
- Degree to which public consultation and dispute resolution has taken place.

If in the opinion of the Minister, a request is made with the intent of delaying the planning or implementation of a project, or which does not contain a reasonable amount of supporting information, that request may be denied by the Minister on the basis of being unsubstantiated.

The resolution of concerns in consultation with the Regional Municipality of Peel is preferable to having the Minister intervene later in the decision-making process. Upon receiving a request for a Part II Order it is likely that the Minister will encourage continued opportunities for an amicable resolution to be reached by ensuring direct consultation between the proponent and the person or party raising the concern. It is best to consult directly with the proponent first.