

**ENVIRONMENTAL IMPACT STATEMENT  
EXECUTIVE SUMMARY**

**Town of Shelburne Long-Term  
Well for Additional Water  
Supply Project**



**February 2013**



## EXECUTIVE SUMMARY

### Introduction

### Project Summary

In order to accommodate future growth in the Town of Shelburne, a new water supply source must be identified in or adjacent to the Town. This source of water must result in a safe, secure, and sustainable water supply system for the Town that meets Ontario Drinking Water Quality Standards, including anticipated new Provincial arsenic standards. The Town of Shelburne carried out the following environmental assessment (EA) under both the federal and provincial environmental assessment processes to identify the preferred alternative for developing additional municipal groundwater supply and to assess the potential environmental effects associated with the Project's activities. As a result of the EA, the preferred alternative for developing the additional municipal groundwater supply consists of the installation of a new production well with a backup well, located approximately 3 km west of the Town's municipal boundary on 2<sup>nd</sup> Line Southwest in the Township of Melancthon.

As part of the environmental assessment field studies, a test production well ("TW7-10") was installed to a total depth of 86.5 metres below ground surface and performance tested. Future operation of this well would draw water from a regionally extensive bedrock formation (the Gasport Formation), which is encountered from approximately 61 to 89 metres below ground surface. Groundwater will be pumped from TW7-10 at a rate of 1,635 m<sup>3</sup>/d. This pumping rate would result in an additional 568 m<sup>3</sup>/d beyond the required 1,067 m<sup>3</sup>/d (J. Graham, P.Eng. Genivar-Town Engineer, personal communication, September 2012). This additional supply will result in a greater overall water supply security for Town of Shelburne by reducing demand from existing production wells, as the supply from some of these wells is not considered "firm", as no backup well or generator is present.

Pumped groundwater will be conveyed from the well site along an existing right-of-way to a connection point with the Shelburne water supply system. The proposed watermain route is approximately 4 km in length and follows 2<sup>nd</sup> Line southwest to Provincial Highway 89, then proceeds eastward along Highway 89 to the connection point with the existing Shelburne water supply system.

### Federal Regulatory Context

As indicated under section 5 of the *Canadian Environmental Assessment Act* (CEAA), an environmental assessment is required before a Federal authority can provide funding for the purposes of enabling a Project to be carried out in whole or in part. Since the provision of funding is being considered by Infrastructure Canada, the Canadian Environmental Assessment Agency determined that CEAA is triggered for the proposed Project. In addition, part III, section 10 of the schedule within the Comprehensive Study List Regulations under the CEAA states:



*“The proposed construction, decommissioning or abandonment of a facility for the extraction of 200,000 m<sup>3</sup>/year or more of groundwater or an expansion of such a facility that would result in an increase in production capacity of more than 35 percent.”*

Since, the Town anticipates that an additional 1,067 m<sup>3</sup>/d of water supply capacity will be required by the year 2032 (J. Graham, P.Eng. Genivar-Town Engineer, personal communication, September 2012), the Comprehensive Study List Regulations apply to the Project, and comprehensive study, detailed in an environmental impact statement (EIS), is required.

### **Provincial Regulatory Context**

As a municipal undertaking, the Town is subject to the requirements of the Ontario *Environmental Assessment Act* (EAA) as set out in part I, section 3. The Town is fulfilling the requirements of the EAA through the Municipal Class EA process, which applies to municipal water, wastewater and traffic projects.

The Municipal Class EA has been completed as a Schedule B process, which requires the completion of Phase 1 and Phase 2 of the Municipal Class EA process. The Municipal Class EA planning process is a proponent led process that places emphasis on project assessment and public input rather than on agency review and approvals.

The Municipal Class EA process requires the identification of a problem/opportunity statement for the project, which has been identified as follows:

In order to accommodate future growth in the Town of Shelburne, a new water supply source must be identified in or adjacent to the Town. This source of water must result in a safe, secure, and sustainable water supply system for the Town that meets Ontario Drinking Water Quality Standards, including anticipated new Provincial arsenic standards. An increase of 1,067 m<sup>3</sup>/d is required to supply the projected increase in the Town's population by 2032 (J. Graham, P.Eng. Genivar-Town Engineer, personal communication, September 2012).

### **Alternatives Considered**

The EA/EIS has evaluated alternatives to the Project as a means of addressing the Municipal Class EA problem/opportunity statement and as a requirement of a Comprehensive Study. The project alternatives considered included:

- Do nothing;
- Implement water conservation;
- Limit community growth;
- Develop a new well; and



- Implement arsenic treatment at existing water sources.

The assessment documented in this EA/EIS concluded that the development of a new well was the project alternative that best addressed the problem/opportunity statement.

The EA/EIS also considered alternative means of delivering the project. Five separate well locations were considered. With the exception of the well located at existing wells 5 and 6, the remaining 4 well locations were assessed including a watermain terminating at existing wells 5 and 6.

Based on the assessment documented in this EA/EIS, well location D was the project alternative that best addressed the problem/opportunity statement. The well site is located approximately 3 km west of the Town of Shelburne Ontario, on 2<sup>nd</sup> Line Southwest.

### **Scope of the Project**

The scope of the project refers to the components of the proposed undertaking that are considered as part of the Project for the purpose of the EA/EIS. This includes all works and activities required for the construction and operation of the well site, pumphouse and watermain. Major project components include the installation of the production well, a new pumphouse housing equipment to extract and convey raw water to the existing water supply system and a new watermain, covering a distance of approximately 4 km along existing right-of-ways (2<sup>nd</sup> Line southeast and east along Highway 89).

The scope of works and activities identified for the Town of Shelburne Long Term Well for Additional Water Supply (the Project) includes the following:

- Construction phase:
  - Stripping of topsoil at the well site and along the watermain route (if not installed by directional drilling);
  - Construction equipment delivery and laydown areas;
  - Installation of concrete foundation and construction of well house;
  - Construction of a new well and back-up well;
  - Installation of fencing (as warranted);
  - Installation of pump systems and components;
  - Excavation and backfilling for watermain installation;
  - Inspection and testing of project components;
  - Site restoration including topsoil cover and re-vegetation; and



- Installation of a backup generator.
- Operations phase:
  - Routine operations and maintenance at the well site and along the watermain route.

### **Description of Existing Environment**

The test production well is located on elevated terrain (approximately 500 metres above sea level), in proximity to a regional drainage divide between the Nottawasaga and Grand River watersheds. Overburden soils within the vicinity of the test production well are thin (i.e., less than 10 m) and predominantly comprised of glacial till. Overburden soils are underlain by Silurian dolostones of the Paleozoic Era (Guelph, Eramosa, Goat Island and Gasport Formations). These Silurian dolostones form a regionally extensive aquifer system that supplies water to many domestic and municipal water supply wells.

The majority of the study area is used for agriculture. The proposed well location is located on a privately-owned property that is zoned as rural. The main natural feature in the vicinity of the well site is a wetland complex, a non-Provincially Significant Wetland complex made up of the former Willow Brook Swamp and Melancthon #38 wetlands.

### **Assessment of Likely Environmental Effects and Mitigation Measures**

#### ***Groundwater Quality and Quantity***

Production pumping from TW7-10 will effect groundwater levels in the vicinity of the production well. Performance testing results indicate that future operation of TW7-10 (at 1,635 m<sup>3</sup>/d) is not likely to adversely affect the operation of local domestic wells or adversely affect flow conditions in nearby surface water courses. Potentially adverse effects to groundwater quality during construction of the well house and watermain will be temporary.

In order to minimize adverse effects, the following mitigation measures will be employed:

- Standard construction best management practices, including:
  - Refuelling and maintenance;
  - Disposal;
  - Drainage and water control;
  - Dust control;
  - Site clearing;
  - Sedimentation and erosion control, including:



- Silt fencing along watercourses to avoid sedimentation;
  - Culverts and sediment traps or straw bails to filter runoff;
  - Covering stockpiles to avoid erosion and runoff into watercourses;
  - Erosion blankets;
  - Dust control measures including sprinkling water on stockpiles;
- Emergency response and spills contingency plan; and
  - Operations and contingency plan.

With the implementation of mitigation measures identified above, including monitoring, follow-up and any necessary adaptive management, the implementation of the Project is not likely to have an adverse effect on groundwater quality and quantity.

### ***Surface Water Quality and Quantity***

The construction activities listed above may cause degradation to surface water quality as a result of increased suspended solids loading from soil erosion, as well as the potential for accidental spills of hazardous materials (i.e., oil, gas, lubricants, etc.).

Due to the proximity to the regional watershed divide, surface water courses in the vicinity of the well have limited catchment areas. As such, the water surpluses of local surface catchments are sensitive to seasonal weather trends. Relative to this seasonal variability, seepage losses from surface catchments (in response to TW7-10 pumping) should have no discernible effect on the variation of streamflow rate or temperature currently observed within local drainage features.

Local wetland areas are underlain by glacial till soils and drained by engineered trenches at surface. Water levels in these areas did not respond to groundwater pumping from TW7-10 (over a 72 hour period). Since wetland areas are located towards the edge of TW7-10 zone of influence, seepage losses will be insignificant.

Groundwater level drawdown in shallow and deep bedrock aquifers should not affect the operation of local private well owners. Further, based on water samples collected during performance testing of TW7-10, the quality of the groundwater is suitable for development of municipal supply.

Groundwater pumped from TW7-10 is interpreted to be not under the direct influence of surface water (i.e., non-GUDI).

In order to minimize adverse effects, mitigation measures identified above for groundwater quality and quantity will be employed. Due to the distance of the Amos Drainage Works from the proposed well site and the minimal drawdown that is expected during operation of the well, no



residual adverse effects on surface water quantity are expected during the construction and operations phases of the well.

### ***Soils and Terrain***

Construction activities may result in the temporary disturbance and/or removal of soils along the watermain route and in the vicinity of the well site. In addition, soil quality could be affected as a result of accidental spills or leaks during construction and operations.

In order to minimize adverse effects, the following mitigation measures will be employed:

- Standard construction best management practices, described above;
- Striping of topsoil and vegetation will be restricted to designated areas and along right-of-ways;
- All disturbed areas shall be restored with topsoil, hydroseeding or sod as soon as possible; and
- Monitoring and site checks of trenches at the end and start of each working day.

Due to the small footprint of the Project components, short-term duration of the construction activities and mitigation measures applied, no residual adverse effects on soils and terrain are expected during the construction and operations phase of the well.

### ***Fish, Fish Habitat and Aquatic Ecosystems***

The potential for effects on fish and fish habitat during construction specifically relate to the installation of the watermain under watercourses. For the purposes of this assessment, two methods of constructing these watercourse crossings are considered. The first method is the open cut method wherein the channel is dry or dewatered and the trench is excavated through the channel. The second crossing method is by tunnelling or directional drilling underneath the channel bed so as not to disturb the channel bed and banks and riparian vegetation,

The potential environmental effects to fish and fish habitat relate to the open cut watercourse crossing works and activities:

- Clearing of riparian vegetation and stripping of topsoil at the watercourse crossings;
- Disturbance of the channel bed and banks for the excavation of the watermain trench;
- Accidental spills of hazardous materials from the construction equipment.

The potential environmental effects to fish and fish habitat relate to the tunnelling method of watercourse crossing:





- Clearing of riparian vegetation and stripping of topsoil at the entrance and exit locations for the tunnelling equipment;
- Accidental spills of hazardous materials from the construction equipment.

The construction activities listed above have the potential to alter fish habitat and change the water quality as a result of disturbances to the banks and channels of watercourses at crossing locations or adjacent to watercourses, potential increase in suspended sediments from erosion of disturbed soils, as well as the potential for accidental spills of hazardous materials (i.e., oil, gas, lubricants, etc.).

During operation of the well, the radius of the predicted deep aquifer drawdown zone extends approximately 1.0 km. The predicted seepage losses from the surface catchments also correspond to the 1.0 km zone around TW7-10. The predicted drawdown zone encompasses Reaches 1, 2 and 3 of the Amos Drain. In Willow Brook wetland, near Reach 2, no measurable changes to shallow groundwater levels were observed from the steady state pumping of TW7-10 during the test period. On the basis of these results, long term operation of TW7-10 at a rate of 1,635 m<sup>3</sup>/d should not affect the normal variation in water levels in the wetland or fish bearing reaches of Amos Drain. The seepage losses may alter the flow regime in Amos Drain by extending the low flow period. However, the system contains intermittent flow (low to no flow in summer) and the seepage losses will not affect the seasonal habitat in these intermittent reaches. There is sufficient storage in the wetland to maintain the permanent aquatic habitat in Reach 2 of Amos Drain. Correspondingly, the productive capacity and habitat availability within Amos Drain are not expected to be adversely affected.

In order to minimize the adverse environmental effects of the Project on fish and fish habitat, the following mitigation measures will be employed at the open cut watercourse crossing:

- Limit the amount of clearing of riparian vegetation and where possible avoid grubbing the roots of woody vegetation to maintain bank stability;
- Re-stabilize and re-vegetate exposed surfaces as soon as possible, using native vegetation,
- Use the Fisheries and Oceans (DFO) operating statement for *Isolated or Dry Open Cut Stream Crossings*. Follow the *Measures to Protect Fish and Fish Habitat*.
- Time the crossings to coincide with the dry channel period. If the channel is not dry and it is necessary to isolate the section to be crossed, undertake a fish rescue operation;
- Protect sensitive fish life stages by adhering to fisheries timing windows;
- Re-instate the channel bed and banks to previous condition (channel profile) using stockpiled channel materials from the excavation;
- Site specific erosion and sediment control plans;





- Installation and maintenance of silt fences adjacent to watercourses throughout the construction period;
- Site specific waste management, spill prevention and emergency response plans (construction and operation phases); and
- In the event that a spill occurs, and containment and clean-up is not effective before spilled materials dissipate into the environment, a habitat quality assessment will be completed to evaluate the need for restoration activities.

In order to minimize the adverse environmental effects of the Project on fish and fish habitat, the following mitigation measures will be employed with the tunnelling method of watercourse crossing:

- Limit the amount of vegetation clearing and where possible avoid grubbing the roots of woody vegetation to maintain bank stability;
- Re-stabilize and re-vegetate exposed surfaces as soon as possible, using native vegetation,
- Use the Fisheries and Oceans (DFO) operating statement *Punch and Bore Crossing or High Pressured Directional Drilling*. Follow the *Measures to Protect Fish and Fish Habitat*.
- Site specific erosion and sediment control plans;
- Installation and maintenance of silt fences adjacent to watercourses throughout the construction period;
- Site specific waste management, spill prevention and emergency response plans (construction and operation phases); and
- In the event that a spill occurs, and containment and clean-up is not effective before spilled materials dissipate into the environment, a habitat quality assessment will be completed to evaluate the need for restoration activities.

A positive effect on fish and fish habitat may occur as a result of site restoration. Planting native vegetation along riparian areas will decrease erosion and sedimentation in nearby watercourse which will improve fish and fish habitat.

Due to the distance of the Amos Drainage Works from the proposed well site and the minimal drawdown that is expected during operation of the well, no residual adverse effects on fish and fish habitat are expected during the operation phase of the well.

### **Vegetation**

Construction activities will result in the removal of existing vegetation along the watermain route and in the vicinity of the well site. The construction of the watermain will result mainly in the disturbance of herbaceous vegetation within the road right-of-way which will be immediately re-vegetated upon construction completion. The watermain will also cross a few watercourses and as such may require the removal of bank vegetation. This vegetation is herbaceous and will be



immediately seeded and re-vegetated after construction disturbance. The construction of the wellhouse includes the permanent removal of 2,500 m<sup>2</sup> of herbaceous vegetation within a fallow field.

In addition, toxic effects to vegetation could occur as a result from accidental spills or leaks during construction and operations.

During operation of the well, the radius of the predicted deep aquifer drawdown zone extends approximately 1.0 km. The predicted drawdown zone encompasses portions of the Willow Brook wetland. During the pumping test, no measurable changes to shallow groundwater levels in the wetland were observed from the steady state pumping of TW7-10. On the basis of these results, long term operation of TW7-10 at a rate of 1,635 m<sup>3</sup>/d should not affect the normal variation in water levels in the wetland. Correspondingly, the plant species and wetland vegetation communities are not expected to be adversely affected.

In order to minimize the adverse environmental effects of the Project on vegetation, the following mitigation measures will be employed:

- Tree removal and vegetation clearing zones will be restricted to those identified on the contract drawings and delineated in the field;
- Vegetation retention zones will also be identified on contract drawings and delineated in the field;
- Employ appropriate vegetation clearing techniques;
- Striping of topsoil and vegetation will be restricted to designated areas and along right-of-ways;
- Excavated material stockpiles shall not be placed within driplines of trees not designated for removal;
- Damaged branches and roots of trees not designated for removal will be trimmed back properly and cleanly; and
- All disturbed areas shall be restored with topsoil, hydroseeding or sod as soon as possible.

The vegetation communities identified within proximity to the Project site during the field survey are not considered to be rare. With the implementation of the mitigation measures listed above, no residual effects are anticipated.

### ***Wildlife and Wildlife Habitat***

The removal of vegetation and topsoil during clearing and grubbing has the potential to alter wildlife habitat. The habitat along the watermain route consists of herbaceous plant communities that are regularly disturbed to maintain a right of way along the roadways. The disturbance created by the



clearing of vegetation and excavation and installation of the watermain will be temporary and will be restored to existing conditions. The culvert at Hwy 89 and 4<sup>th</sup> Line will not be altered and thus effects on Barn Swallow nests are not anticipated. The disturbance of the pumphouse will be a permanent 10 m by 10 m alteration of wildlife habitat, specifically habitat that was determined to be *Probably Breeding* habitat for Bobolink and Eastern meadowlark. The effect on this habitat removal are expected to be minor as the footprint is small compared to the amount of habitat available, the site is close to 2<sup>nd</sup> Line SW and a gravel road has already been installed at this location.

The installation of fencing may potentially fragment terrestrial wildlife habitat. Delivery of construction equipment may cause vehicular collisions with wildlife. In addition, there may be disturbance to wildlife, including SAR, due to noise, dust and the physical presence of construction equipment. Wildlife may also become trapped in unattended ditches or excavated areas, specifically outside of regular working or daylight hours.

In order to minimize or eliminate adverse environmental effects of the Project on wildlife and wildlife habitat, including nesting migratory birds in accordance with the *Migratory Birds Convention Act*, SAR in accordance with the ESA as well as wildlife generally, the following mitigation measures will be employed:

- Limiting clearing to only those areas absolutely necessary to safely install, maintain and operate the new well site and watermain;
- Where practical, retain riparian vegetation along watercourses;
- Avoid vegetation clearing and heavy construction works during the bird breeding season (May 1<sup>st</sup> to July 31<sup>st</sup>);
- In addition to the above, SAR species-specific mitigation for Bobolink, Eastern meadowlark and Barn swallow will be outlined in the *Information Gathering Form* and through negotiations with the MNR;
- Installing exclusion fences (e.g. silt fences) in advance of work to clearly mark sensitive areas (i.e., riparian areas) and to prevent wildlife from entering the Project site;
- Use of dust prevention measures (i.e., watering);
- The contractor will be advised that harassing or harming wildlife is prohibited;
- Wildlife incidentally encountered during construction will not be knowingly harmed;
- Restoring lands upon completion of the project with native vegetation, including re-seeding exposed areas; and
- Monitoring and site checks of trenches at the end and start of each working day.

Construction activities will be restricted to a footprint of approximately 2,500 m<sup>2</sup> for the well site and approximately 4,000 m<sup>2</sup> for the watermain route, which is only a small portion of the study area. In



addition, construction activities will be contained within existing right-of-ways; therefore, minimal vegetation removal will be required. The project footprint will not be located within rare vegetation communities as identified during the field survey. Based on the assessment above and the implementation of the mitigation measures listed above, no residual adverse effects on wildlife and wildlife habitat are expected.

### ***Air Quality***

There is potential for degradation of air quality as a result of increased emissions and dust from construction vehicles and activities. The increase in emissions and dust will be temporary as they will mainly occur during the construction phase of the Project.

Electricity is used to power the system. However, during emergencies, the system can be powered by a portable diesel generator. The potential effects would be temporary as they would only occur during the use of the emergency generator.

In order to minimize adverse effects, the following mitigation measures will be employed:

- Ensure all construction equipment is in good working condition;
- Ensure all staff are adequately trained in the proper use of the construction equipment;
- Use appropriate dust suppression materials and measures; and
- Minimize the use of the standby diesel generator.

The potential effects mentioned above will only be temporary during the construction and operation phases. In addition, with the implementation of the mitigation measures listed above, no residual adverse effects are expected on air quality as a result of project work and activities.

### ***Noise and Vibration Levels***

Effects on noise and vibration levels are a result of the use of construction vehicles and equipment. An increase in noise levels will be temporary and will only occur during the construction phase of the Project. The effects on noise levels are not expected to be substantially different from those currently generated by common agricultural practices and routine road maintenance. Under normal operating conditions, the well and watermain will not generate noise.

In order to minimize adverse effects, the following mitigation measures will be employed:

- Ensuring equipment is in good working condition and operating quietly prior to accessing the site;
- Regular maintenance of equipment during the construction phase;



- Minimize use of portable standby generator during power failures; and
- Only operate equipment during daylight hours to be in compliance with noise by-laws 45-2004, 43-2004 and 31-2002 from the Town of Shelburne, Township of Amaranth and Township of Melancthon, respectively.

Based on the above assessment of noise levels during the construction and operation phases of the Project and with the implementation of the mitigation measures listed in Section 7.4.2.2, no residual adverse effects are anticipated.

### ***Human Health***

Environmental effects to human health relate to potential effects on water quality, air quality and noise. An interaction is therefore identified from routine operations. However, because no residual adverse effects are identified in this EA/EIS on water quality, noise or air quality, no potential effect on human health should occur.

As noted in this EIS, the project will meet all Provincial Water Quality Objectives and Guidelines for Canadian Drinking Water Quality and Recreational Water Quality. All phases of the project will also adhere to relevant standards and guidelines for noise and air quality. Therefore no potential adverse effects on human health are identified.

Construction safety is regulated by the Ontario Ministry of Labour. All relevant standards and guidelines will be adhered to for the construction phase of this Project.

Mitigation measures described for effects on groundwater quality and quantity, noise and/or vibrations and air quality will be applied to ensure that effects on human health are minimized.

### **Assessment of Cumulative Effects**

Cumulative effects are those incremental effects caused by the Project when added to, or combined with effects from other projects or activities on both on-site and off-site. Certain or reasonably foreseeable projects and activities are considered in the cumulative effects assessment if they are likely to involve or represent one or more of the following:

- An activity that occurs immediately adjacent to the Project site;
- Additional sectoral projects and activities largely relating to groundwater extraction and municipal infrastructure and additional sources of drinking water consumption.

Well TW7-10 is located outside of the Town boundary, within a rural area with no known permitted groundwater users. No residual adverse effects are predicted for the biological environment and local wells as a result of the proposed Project. As such, there are no known cumulative effects identified within the TW7-10 pumping zone of influence.



## Public Consultation and Aboriginal Engagement

Stakeholder consultation and Aboriginal engagement is a two-way process by which the proponent and stakeholders/Aboriginal communities share information, with the intent of developing a Project that is environmentally sound and socially acceptable. Stakeholder consultation and Aboriginal engagement has been carried out to meet the requirements for both a Schedule B Municipal Class EA and the EIS Guidelines. Since the Provincial and Federal EA processes were carried out in parallel, some activities were combined.

The Municipal Class EA process identifies mandatory points of contact with the public for Phases 1 and 2 are as follows:

- Review and obtain input about the problem or opportunity, environmental issues, alternative solutions and preliminary determination of a preferred solution; and
- Notice of completion submitted to review agencies and the public, followed by a period of at least 30 calendar days.

The Federal comprehensive study process includes three mandatory points of contact with the public as follows:

- Public comment on Project and conduct of the comprehensive study;
- Public participation during conduct of the comprehensive study; and
- Public comment period on the comprehensive study report.

A public open house was held in the Town of Shelburne on October 22, 2012 to present and receive input on the problem or opportunity, environmental issues, alternative solutions and preliminary determination of a preferred solution.

Other consultation as part of the EA process included:

- Presentations to Town Council to describe the Project (December 2009);
- Letters presenting overview of the Project to Mayor and Council of Township of Amaranth, Mayor and Council of Township of Melancthon, and the Town of Shelburne Council (October 2009);
- Email correspondence with Ministry of Transportation Ontario to inform the agency of the Project and requested feedback on Ministry of Transportation Ontario right of way on Highway 89 (May 2011);
- Email correspondence with Ontario Geologic Society on the Town's investigation of the new OGS well "10A", which became the preferred well location for the Project (February 2010);



- Email correspondence with Ministry of Natural Resources, Grand River Conservation Authority and Nottawasaga Valley Conservation Authority to obtain biological information such as wetland habitat, and fish, invertebrate and terrestrial biota mapping (August 2009 to December 2011);
- Meeting with Ministry of the Environment to discuss intra-basin transfer from Grand River watershed to Nottawasaga River watershed (April 2011); and
- Meeting with Ministry of the Environment and Ministry of Natural Resources to discuss intra-basin transfer and water quality of the new well, particularly relating to concentrations of arsenic (November 2011).

The Canadian Environmental Assessment Agency (CEAA) and the Federal Economic Development Agency of Ontario met with representatives of the Six Nations of the Grand River Territory on February 9, 2012 to discuss the Town of Shelburne Long-Term Water Well Project, the associated environmental assessment process and proposed Aboriginal consultation activities.

#### **Follow-up Monitoring Program**

Several plans and procedures will be implemented as part of the Project as follows:

- Groundwater and surface water monitoring plan;
- Emergency response and spills contingency plan;
- Erosion and sediment control plan;
- Traffic management plan;
- Health and safety plan;
- Hydrostatic pressure testing plan;
- Operations plan, including well maintenance and pumphouse monitoring;
- Contingency plans, which will be implemented in case of disruptions to normal operating conditions.

To confirm the groundwater withdrawals at the proposed municipal well site have negligible effects on existing groundwater supplies and surface water resources and to confirm no additional mitigation measures are required, a groundwater and surface water level monitoring program will be implemented for the operations phase of the project. The monitoring program includes the development of a rating curve and stream flow monitoring at the Willow Brook crossing of Highway 89, and continuous groundwater elevation monitoring in nearby observation wells (MW6/10-9, OGS 10A). As standardized construction measures will be implemented, no additional monitoring is recommended during the construction phase.

This program would be initiated and funded by the Town in advance of the well operation to establish background levels. As a minimum, an on-site monitoring well, a second monitoring well in





the vicinity of existing municipal Wells 5/ 6, and Willow Brook wetland at Highway 89 will be included in this monitoring program (see Table 3 of Appendix D for recommended locations). Automated water level recorders will be installed at these locations so that a continuous record of data can be developed. Manual measures at these locations should be recorded on a monthly basis for the first full year of operation and then semi-annually for subsequent years. Water levels in the production well will also be recorded frequently as part of the operations monitoring program.

The Town will finalize the details of the follow-up monitoring program after designs for the project are completed. It is expected that the groundwater and surface water level monitoring program will be a condition of a PTTW for the proposed production well, and reporting on the status of the well and identified effects will be documented and submitted to the MOE. An annual report will be prepared by the Town's engineer and submitted to the Agency and INFC for a period of two years following the construction phase. The annual report will be posted on the CEA registry to provide an opportunity for stakeholders to review the outcome of the project and verify predicted effects.

### **Assessment Summary and Conclusions**

Table E-1 summarizes the potential environmental effects, mitigation measures and residual adverse effects from the Project, including malfunctions and accidents, effects of the environment on the Project and cumulative effects.

Taking into consideration the existing environmental conditions, the potential environmental effects, mitigation measures to minimize, reduce or eliminate potential adverse effects and the evaluation of significance of residual adverse effects, the EA/EIS does not identify any likely significant adverse environmental effects as a result of the Project.

Public consultation and Aboriginal engagement conducted for the Project did not identify any concerns that are not addressed and/or mitigated by measures presented in the EA/EIS.

A concordance table for the EIS guidelines is provided in Table E-2.



**Table E-1: Environmental effects summary Checklist**

Environmental Component	Potential Project Effects				Residual Adverse Effects	
	Potential effects?		Can it be mitigated?		Is it significant?	
	Yes	No	Yes	No	Yes	No
<i>Physical environment</i>						
Groundwater quantity and quality	✓		✓			✓
Surface water quantity and quality	✓		✓			✓
Terrain and soils	✓		✓			✓
<i>Biological environment</i>						
Fish and fish habitat, aquatic ecosystems	✓		✓			✓
Vegetation	✓		✓			✓
Wildlife and wildlife habitat	✓		✓			✓
<i>Atmospheric environment</i>						
Noise and/or vibration levels	✓		✓			✓
Air quality	✓		✓			✓
<i>Socio-economic environment</i>						
Human health	✓		✓			✓
Aboriginal land use and resource use	✓		✓			✓
Physical and cultural heritage (archaeological)	✓		✓			
<i>Malfunctions and accidents</i>						
Construction and operations phase malfunctions and accidents	✓		✓			✓



Town of Shelburne Long Term Well for Additional Water Supply Project  
Environmental Impact Statement

*Cumulative effects*

Cumulative effects	✓		✓			✓
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