

## 11 CONCLUSIONS AND RECOMMENDATIONS

### 11.1 General

The City of Hamilton initiated this study for the Greenville Rural Settlement Area (RSA) and surrounding Mid-Spencer Creek Subwatershed.

The Greenville RSA and Mid-Spencer Subwatershed are located in the former Town of Flamborough and the City of Hamilton. Residents in the Greenville RSA and the subwatershed area are currently serviced by private septic systems and groundwater sourced municipal communal, private communal or individual wells.

A Secondary Plan was prepared for Greenville in 1992 and the land use policies and guidelines for development are outlined in Official Plan Amendment 13 (OPA 13) to the Official Plan for the Town of Flamborough. The Secondary Plan sets out requirements for stormwater drainage and hydrogeology studies to be completed prior to new development within the Greenville Settlement Area. **Figure 3.3.1** and **Figure 3.3.2** illustrate the areas designated for development and the land use designations for the RSA respectively.

The Secondary Plan outlines the requirement for a Comprehensive Servicing Study that is to be undertaken to “provide guidelines to determine the extent and density of residential development that can be sustained without degradation of the quality or quantity of ground or surface waters within and outside the Secondary Plan Boundary”. One of the objectives of this study is to define existing environmental conditions and to determine the potential impact of proposed development within the Greenville RSA.

This study was completed as a Master Plan (Approach 1) under the Class Environmental process and will therefore address Phases 1 and 2 of the EA process for any Schedule ‘B’ projects that are identified and outline additional work that will be required to implement Schedule ‘C’ projects.

For this study there are two components which are to be addressed as part of the EA process. These include the Stormwater Management and Domestic Water Supply components.

### 11.2 Study Area

There are two distinct study areas for this project, the Greenville RSA and the Mid-Spencer Creek Subwatershed. Both are located within the Spencer Creek watershed, a majority of which is located within the western portion of the City of Hamilton (**Figure 1.2.1**).

The Mid-Spencer Creek is generally bounded by Governor's Road to the south, Westover Road to the west, Sixth Concession Road to the north and Brock Road to the east. The Mid-Spencer Creek drains an area of approximately 56.4km<sup>2</sup>. The dominant land use is rural, with the exception of the Greensville RSA and the former Town of Dundas which is located in the southern part of the Subwatershed.

The Greensville RSA is generally bounded by CN Railway to the south, Middletown Road to the west, Dundas Street East (Highway 5) to the north and Ofield Road South to the east. Presently, there are approximately 900 residences located within the RSA. The Greensville RSA covers an area of approximately 655 ha.

*It should be noted that the level of effort, in order to respond to the Secondary Plan requirements was more considerable for the Rural Settlement Area. Work in this area included review of background information together with detailed field assessments to confirm the existing natural features. For the Subwatershed area the focus was to use existing information and augment the findings with a more limited degree of technical and field assessments.*

### **11.3 Study Components – Rural Settlement Area (RSA)**

The recommended works and measures which comprise the Subwatershed Strategy for the RSA can be classified into three general categories:

- Stormwater Management
- Groundwater
- Natural Heritage

Chapter 9 of this document describes the physical measures that comprise the Recommended Plan for the RSA while Chapter 10 defines the steps that are required to implement the Recommended Plan.

As noted above, the purpose of the Implementation Plan is to guide the future work required to implement successfully the components of the recommended solutions and strategies developed earlier (**Chapters 7 and 9**). Key objectives include:

- Review of the key Subwatershed Strategy components;
- Identify responsibilities and roles for each of the Subwatershed Strategy components;
- Provide direction as to the types of future studies required for the successful implementation of the Subwatersheds Strategy;
- Provide recommendations with respect to the phasing of proposed works;

- Provide additional design guidance and policy considerations for key Subwatershed Strategy components
- Review of approvals considerations

Details of the implementation may be found in Chapter 10. Provided below is a summary of the proposed measures.

### Stormwater Management Strategy

There are nine new development areas to be constructed within the Rural Settlement Area. The preferred strategy involves a combination of Low Impact Development (LID) measures together with traditional stormwater measures (stormwater ponds) to address issues related to flooding, erosion and water balance. The LID measures will address potential groundwater deficits by promoting the infiltration of 127m<sup>3</sup>/ac/year on a residential lots while the stormwater ponds will maintain impacts associated with erosion and flooding for the 2-100 year storms. The general location of stormwater facilities is shown on **Figure 9.2.1**.

Findings from the impact assessment part of the study found that a variety of stewardship measures could be implemented within **existing properties** in order to improve groundwater quality or quantity. These measures which could include modifying the landscape to promote infiltration, installation of rain gardens or soakaway pits or redirection of downspouts were presented to the public for input. **Section 10.4.1** of the report provides further details.

### Groundwater Strategy

For new development there are two primary considerations. The first item was addressed above and relates to the preservation of groundwater quantity as a result of proposed development (impermeable surfaces associated with proposed development will reduce the quantity of infiltration into the groundwater system).

The target for new development is to maintain or enhance pre-development groundwater recharge both on-site and off-site. As noted above, the anticipated recharge deficit from future residential development in the RSA is 127 m<sup>3</sup>/ac/year, representing 32 mm precipitation that must be captured and infiltrated on an annual basis. This figure represents a post-development impervious coverage of 15%.

The predicted post-development infiltration shortfall of 127 m<sup>3</sup>/ac/year (or 32 mm precipitation) can be compensated by capturing and over-infiltrating precipitation, using LID methods described in **Section 10.4.1**. Infiltration of an additional 1.0 mm for every precipitation event onto pervious areas will make up for the post-development shortfall.

The second item relates to lot sizes and the concerns with respect to nitrate loadings from new homes and businesses. The City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services provide detail for undertaking On-Site Nitrate Impact

Calculations. The objective is to ensure that the estimated concentration of 10.0 mg/l of nitrate in the receiving groundwater at the site boundary is not exceeded. This study (**Figure 10.4.5**) defines the minimum lot size for each of the nine proposed development areas within the Greensville RSA. These lot sizes shall be used by the developer and should be increased subject to modifications for number of bedrooms and percent imperviousness according to the Hydrogeological Guidelines document. Should smaller lot sizes than those identified in Figure 10.4.5 be proposed, approval of applications under the *Planning Act* to permit the reduced lot sizes would be required.

A series of measures to reduce the impacts associated with existing septic systems as well as measures to monitor or replace existing private wells were presented at the second Public Open House. Collectively these measures would improve the quality of the groundwater or protect/improve the reliability for existing wells. **Section 10.4.6** of the report provides further details.

### Natural Heritage

The recommended Natural Heritage System strategy for the Greensville RSA presents recommendations for stewardship, monitoring, ecological rehabilitation and enhancement, as well as best management practices. The characterization of the Natural Heritage System and the related recommendations are presented as a means of maintaining or enhancing the Natural Heritage System. The NHS and natural hazards within the RSA are shown below in **Figure 9.2.3**. Per Section B.11.1.1.6 of the Greensville Secondary Plan and the provisions of the City of Hamilton's Rural Official Plan, the NHS for the Greensville RSA protects Key Natural Heritage Features, including Environmentally Significant Areas; identifies Linkages; and provides recommendations for minimum Vegetation Protection Zones (i.e. buffers) to Core Natural Heritage Features.

The Natural Heritage System Strategy presents an overview of the requirements of the City of Hamilton's Rural Official Plan. Requirements for future studies, including a list of applicable approval agencies, are also presented. Rehabilitation and enhancement recommendations follow the direction of the Mid-Spencer Creek Stewardship Action Plan.

## **11.4 Domestic Water Supply**

The Greensville Rural Settlement Area area encompasses 655 hectares and a population of approximately 2,500 persons who rely on groundwater wells for drinking water. There is one City owned municipal well (supplying 36 homes) and the Briencrest well which supplies 26 homes.

A number of alternatives to provide domestic water to existing and future residents and businesses within the rural settlement area were considered. The alternatives which were considered include:

- Do Nothing
- Control/Limit development
- Bring up Municipal water
- Provide more Communal wells
- Maintain Status Quo and add a Backup City Well

Each of the alternatives were then evaluated against a series of criteria which are broadly categorized as:

- Physical and Natural Environment
- Social, Economic and Cultural Environment
- Technical Factors
- Financial Factors
- Legal and Jurisdictional Factors

The Preferred Domestic water supply Alternative is to maintain individual services (wells and septic systems) on future lots and to add a backup well to the existing city well.

This alternative was selected based on the impact to the environment, capacity of groundwater resources, consistency with existing policy and the objective to provide a better level of service to the homes currently serviced by the municipal well.

The location, sizing and preliminary design of the necessary infrastructure (treatment plant, storage tank) will be subject to further assessment to be undertaken under Schedule C of the Municipal Class Environmental Assessment.