

**CITY OF HAMILTON**

**PUBLIC WORKS DEPARTMENT**  
**Environment and Sustainable Infrastructure Division**

<b>TO:</b> Mayor and Members General Issues Committee	<b>WARD(S) AFFECTED:</b> WARD 15
<b>COMMITTEE DATE:</b> April 18, 2012	
<b>SUBJECT/REPORT NO:</b> Carlisle Rural Settlement Area Water Supply - Property Purchase for Well Site Investigation for New Well and Elevated Water Storage Tower (PW12029) - (Ward 15)	
<b>SUBMITTED BY:</b> Gerry Davis, CMA General Manager Public Works Department	<b>PREPARED BY:</b> Sharon MacPherson-Németh (905) 546-2424, Extension 2087  Chris Shrive (905) 546-2424, Extension 7209
<b>SIGNATURE:</b>	

**RECOMMENDATION**

- (a) That the Real Estate Section of the Planning and Economic Development Department be authorized and directed to negotiate the acquisition of land required to site and establish a new well and elevated water storage tower, for the Carlisle Rural Settlement Area Municipal Communal Water System;
- (b) That the cost and disbursements for the property purchase be charged to account number 5141195152 identified in the 2012 budget as having a total budget of \$800,000 for the purposes of securing the property, and for the planning and conceptual design of the new well and elevated water storage tower.

**EXECUTIVE SUMMARY**

The City of Hamilton commissioned a Master Plan and Class Environmental Assessment for the Carlisle Rural Settlement Area (RSA) Water Supply System which was completed in April 2004. The Water Supply Master Plan (Phases I and II of the Municipal Class Environmental Assessment process) identified problems and opportunities for water quality and quantity in the Carlisle system. A long-term plan including supply, treatment, pumping, storage and distribution is needed for the Carlisle Water System to meet the future Maximum Day demands.

The recommended and preferred long term supply alternatives include:

- Water Conservation Program - implemented in the spring and summer of 2004 and was tentative in wholly addressing supply and demand; was carried forward as a component of any future water supply programs.
- Additional Lake Supply from the City Lake-Based System via the Waterdown Distribution System - relatively costly and contrary to the *Greenbelt Plan*, the *Provincial Policy Statement*, and the *City of Hamilton's Rural Official Plan* (attached as Appendix "B").
- Groundwater Supply from an Alternate Well Field - requires property purchase to which this Committee Report recommendation is directed.

The 2004 Master Plan also examined preliminary locations for groundwater supply from alternative well fields. In 2006, the City commissioned a specific siting study to independently identify potential locations for a new well. The 2006 study independently identified the same three (3) potential sites for future production wells, with one (1) site being the most preferred (designated as 1a-A, 1b-B and 2-B on the map attached as Appendix "A"). One (1) of these sites is in proximity to the existing production well sites (1a-A) and two (2) sites are located south of Bronte Creek (1b-B and 2-B). Location 1b-B was determined to be the most preferred site as it is located on a drumlin, a landform where elevated surficial till extends to the bedrock surface, greatly increasing the probability that the location will be classified as a non-GUDI water source. GUDI is an acronym for *Groundwater Under the Direct Influence* of surface water, groundwater sources where microbial pathogens are able to travel from nearby surface water to the groundwater source, thus greatly increasing source risk and treatment costs. The GUDI factor is heavily weighted in the overall assessment.

Confirmed access to, and possession of, the proposed well site is required to continue the process of meeting the recommendations of the Master Plan Phase I and II, and to complete Phases III, IV, and V of the Class Environmental Assessment process. Property access will enable the undertaking of the required hydrogeological investigations to confirm source supply. Subsequent possession will enable the City to establish a new well, construct a pumphouse, elevated water storage tower and supporting appurtenances. This will fully realize the ultimate objectives of water quality and quantity improvement and longer-term security of supply for Carlisle Rural Settlement Area residents.

**Alternatives for Consideration - See Page 6**

## **FINANCIAL / STAFFING / LEGAL IMPLICATIONS**

### **Financial:**

Based upon operation and management of the existing Carlisle well and pumphouse site, at a minimum, a one (1) acre (4046.9 m<sup>2</sup>) footprint is required to site a well, pumphouse, elevated water storage tower and associated appurtenances.

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Account number 5141195152 was identified in the 2012 budget as having a total budget of \$800,000 for the purposes of securing the property and completing the planning and conceptual design of the new well and elevated water storage tower.

In the future, additional capital budget will be recommended through the Capital Budget Planning process with Council for the detailed design and construction phases. Operating pressures will be identified as part of the future Capital Budget submissions.

**Staffing:** N/A

**Legal:**

The City is bound by the Municipal Act, 2001, to provide water of a quality meeting Ontario Drinking Water Standards to residents currently served by a municipal supply. This obligation remains even where the designated supply source and system may become unavailable due to operational malfunction or failure. There is no parallel back-up system. Other additional cost means of supply such as transporting water to the Rural Settlement Area user are necessary. The latter alternatives may be contrary to Provincial and City Official Plan Policy (attached as Appendix "B").

Establishing a source independent back-up well provides system security and is a best management practice under Ten State Standards protocols. These are recommended standards for water works for the review and approval of plans and specifications for public water supplies as adopted by the Ministry of Environment.

Legal Services will be required to assist in the preparation of the Option to Purchase document and will be required to complete the purchase transaction.

**HISTORICAL BACKGROUND**

The community of Carlisle is primarily serviced (73% of households) through four (4) communal groundwater production wells (FDC01, FDC02, FDC03R and FDC05) with the remainder being serviced by private wells (27% of households). Two (2) other groundwater production wells were previously used, FDC03 and FDC04, and have since been decommissioned. Storage is provided by an elevated tank with a capacity of 1,400 m<sup>3</sup>.

The Carlisle communal system has historically experienced high per capita water demands during the summer, exceeding the Ministry of Environment (MOE) Design Guidelines. In the summer of 2002, the well production system was unable to meet peak demands. This event resulted in a mandatory total outdoor watering ban. Further bans and restrictions have since been imposed and continue to be in place as required.

In 2004, as a result of identification of problems and opportunities for water quality and quantity in the Carlisle system, the City of Hamilton commissioned a Water Supply Master Plan and Municipal Class Environmental Assessment for the Carlisle Rural Settlement Area (RSA). The Plan examined a number of supply alternatives, including the implementation of a water conservation program (WCP), connection to an adjacent City water distribution system, and developing a new groundwater supply.

The WCP was offered to Carlisle residents in the spring and summer of 2004 and involved a number of different initiatives including public education, irrigation staggering, consumption reduction incentives and rewards for water conservation. Despite 2006 and 2008 being amongst some of the wettest years observed in the past two (2) decades, the per capita consumption rate in Carlisle has increased since the initiation of the 2004 WCP. Summer water use appears to be more directly correlated with precipitation levels. Conservation measures alone will not meet Carlisle's future water needs. The community requires additional storage capacity to meet water supply redundancy for fire flows and peak demands, increased demand to RSA build-out, and the gradual transfer of private well supply users to the municipal system.

Existing storage requirements for the Carlisle Water Supply System were assessed using the MOE Design Guidelines which include fire, emergency, and equalization storage. It was determined that additional supply capacity will be required in the long term assuming complete build-out and gradual transfer of all private well users (27% of households) to the municipal system.

Subsequent to an in-depth technical, environmental, and financial analysis, and public consultation with Carlisle residents on these issues, preferred water supply alternatives were identified. It was concluded that the construction of a new well and elevated water storage tower will ensure that Carlisle has sufficient water capacity to meet the future demands of the community.

In Phases III, IV, and V of the Class EA, alternative design concepts are examined based upon the location of the new well and elevated water storage tower, and then a preferred design is selected prior to proceeding to construction of the new well, pumphouse, elevated water storage tower, and supporting appurtenances.

The Master Plan (Class EA Phase I and II) identified three (3) potential well field sites for future production wells. These Sites are identified as 1a-A, 1b-B, and 2-B. One (1) of these sites is in proximity to the existing well sites and two (2) sites are located south of Bronte Creek. Site 1b-B was determined to be the most preferred location. In May 2006, the City hired a consultant to further evaluate these three (3) potential well field sites. Again, site 1b-B was documented as the most preferred site as it is located on a drumlin, a landform where elevated surficial till extends to the bedrock surface, greatly increasing the probability that the location will be classified as a non-GUDI water source. GUDI is an acronym for *Groundwater Under the Direct Influence* of surface water, groundwater sources where microbial pathogens are able to travel from nearby surface water to the groundwater source, thus greatly increasing source risk and treatment costs. The GUDI factor was heavily weighted in the overall assessment.

Initial confirmed access and eventual possession of the proposed well site is required to continue the process of meeting the recommendations of the Master Plan Phases I and II, and to complete Phases III, IV, and V of the Municipal Class EA process. Property access and possession will enable the undertaking of the required hydrogeological investigations to confirm source supply, establish a new well, and construct a pumphouse and elevated water storage tower and supporting appurtenances. This will

realize the ultimate objectives of water quality improvement and longer-term security of supply for Carlisle RSA residents.

### **POLICY IMPLICATIONS**

This recommendation is consistent with the Public Works Business Plan, "Innovate Now": A compass for Public Works to 2017 that will guide Public Works in achieving the City's vision, which is, to be recognized as the centre of environmental and innovative excellence in Canada and an immediate priority identified as being a leader in "greening" and stewardship in the City. A new water supply will ensure that a safe and sustainable source of drinking water is available to the residents relying on Carlisle's municipal drinking water system.

The Provincial Policy Statement and Greenbelt Plan limit the extension of lake-based services into rural areas, with exceptions made only for health emergencies. The 2004 Master Plan and Municipal Class Environmental Assessment Phases I and II source alternative make recommendations with respect to upgrading the existing well supply and storage capacity which is in keeping with these policies (attached as Appendix "B").

The Municipal Act, 2001, provides for resident petitioning of connection to a municipal communal system where lands or lots are fronted by system distribution infrastructure.

Current Regional Official Plan servicing policies provide for a prioritized eligibility for connection to a municipal communal well system, including connection-paid but currently unconnected lots with the Rural Settlement Area (RSA), lots within the RSA boundaries, and lots abutting the RSA boundaries.

This recommendation is consistent with the Real Estate Management Portfolio Strategy Plan, as approved by City Council on November 24, 2004, to acquire property in support of municipal programs and needs with the probability that the purchase price will exceed the \$250,000 limit set by City Council under the Delegation of Authority approval process, authorization of City Council is required.

### **RELEVANT CONSULTATION**

Councillor Partridge has been consulted and supports this report.

Planning and Economic Development Department, Economic Development and Real Estate Division

- This Division is in agreement with, and supports, this report.

Planning and Economic Development Department, Development Engineering Division

- There is expressed interest by developers in Carlisle to submit plans of subdivisions to fill in lands within the RSA.
- An additional well supply and elevated reservoir will remove the development conditions on new developments related to Water Servicing.

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For the 2004 Water Supply Master Plan and Class EA Phases I and II, the following public consultation initiatives were undertaken:

- Two Public Information Centres
- One Community Advisory Committee
- Two mailings to Review Agencies

At the conclusion of the Master Plan Phases I and II and the provisions of its recommendations, City Council approved the Master Plan report (TOE02162b) and the report was filed for the mandatory thirty (30) day public review. There were no bump-up requests (i.e. Part II Orders) and the implementation of the recommendations of the Master Plan Phases I and II has commenced.

Further public and agency consultation on alternative design concepts will be undertaken through the Master Plan Class EA Phases III, IV and V Master Plan Class EA process.

#### **ANALYSIS / RATIONALE FOR RECOMMENDATION**

The recommendation contained within this report primarily affects Ward 15.

The recommendations of the 2004 Master Plan (Class Environmental Assessment Phases I and II) continue to be implemented. The findings of the well siting study provide a basis for focusing and locating the detailed hydrogeological and site construction investigations that must be implemented to confirm the site, continue implementation of the Phase I and II recommendations, and proceed with the Master Planning Phases III, IV, V of the Carlisle Class EA. Possession and access to the proposed site is required to facilitate these investigations.

The risk of purchasing the property and not finding a viable water supply is mitigated because a condition of the purchase includes the installation and testing of a well to the satisfaction of the General Manager of the Public Works Department.

#### **ALTERNATIVES FOR CONSIDERATION**

Alternative: Committee reject the recommendation to direct Real Estate to enter into negotiations.

This alternative is not recommended. *The Water Servicing Strategy of the 2004 Master Plan will not be fulfilled; subdivisions to complete RSA infill cannot be approved, and peak water use demands cannot be supplied to existing connected residents.*

**CORPORATE STRATEGIC PLAN**

Focus Areas: 1. Skilled, Innovative and Respectful Organization, 2. Financial Sustainability, 3. Intergovernmental Relationships, 4. Growing Our Economy, 5. Social Development, 6. Environmental Stewardship, 7. Healthy Community

***Skilled, Innovative & Respectful Organization***

- ◆ More innovation, greater teamwork, better client focus
- ◆ An enabling work environment - respectful culture, well-being and safety, effective communication
- ◆ Opportunity for employee input in management decision making
- ◆ Council and SMT are recognized for their leadership and integrity

This opportunity demonstrates the leadership and integrity of Staff and Council in engaging in projects aimed at improving the safety, sustainability and security of the City's groundwater based Municipal Drinking Water System.

***Financial Sustainability***

- ◆ Financially Sustainable City by 2020
- ◆ Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner
- ◆ Address infrastructure deficiencies and unfunded liabilities

***Intergovernmental Relationships***

- ◆ Maintain effective relationships with other public agencies, including the Ministry of the Environment

***Environmental Stewardship***

- ◆ Natural resources are protected and enhanced
- ◆ Aspiring to the highest environmental standards

The purchase is specifically aimed at enhancing the environmental well being in the area surrounding Municipal Drinking Water Systems, the outcome will be greater protection and improved security for the source of drinking water in Carlisle.

***Healthy Community***

- ◆ Plan and manage the built environment
- ◆ Adequate access to food, water, shelter and income, safety, work, recreation and support for all (Human Services)

The purchase will enhance the security of the source of drinking water and fire protection that is relied upon by the residents of the Rural Settlement Area of Carlisle.

**APPENDICES / SCHEDULES**

Appendix "A" - Location Map

Appendix "B" - Applicable Provincial and Municipal Servicing Policies



Appendix A - Location Map



## Applicable Provincial and Municipal Servicing Policies

The **Greenbelt Plan** contains infrastructure policies wherein (under Section 4.2.2), the provision of a lake based system water supply to areas outside the urban boundary is prohibited. Only broad health-related exceptions are permitted. The policy is as follows:

*Where settlements do not currently have Great Lake or Lake Simcoe based water and sewage services, extensions to or expansions of existing Great Lake or Lake Simcoe based services to such settlements is not permitted, unless such servicing is required to address failed individual on-site sewage or water services or to ensure the protection of public health where it has been determined by a medical officer of health (or health authority) that there is a public health concern associated with existing services within the settlement. The capacity of the services provided in these circumstances will be restricted to that required to service the affected existing settlement plus the capacity for potential development within the approved settlement boundary as it existed on the date this Plan came into effect.*

*The extension of municipal or private communal sewage or water services outside of a settlement boundary shall only be permitted in the case of health issues or to service existing uses and the expansion thereof adjacent to the settlement. Notwithstanding the above, where municipal water services exist outside of settlements areas, existing uses within the service area boundary as defined by the environmental assessment may be connected to such a service.*

A second policy stems from the **Provincial Policy Statement** most recently dated 2005) which directs land use planning across Ontario. Under Section 1.6 Infrastructure and Public Services Facilities, partial servicing i.e. municipal water supply without municipal sewage service, are not permitted except in very particular circumstances. The policy is as follows:

*Partial services shall only be permitted in the following circumstances:*

*where they are necessary to address failed individual on-site sewage services and individual on-site water services in existing development; and*

*within settlement areas, to allow for infilling and rounding out of existing development on partial services provided that: 1. the development is within the reserve sewage system capacity and reserve water system capacity; and 2. site conditions are suitable for the long-term provision of such services.*

The first policy is intended to preserve the rural nature of settlement areas by maintaining development densities accordant with private services (i.e. individual private wells and septic) and to discourage high development pressure in rural

areas along the water pipeline supply route. The second policy is intended to ensure that the provision of urban based water supplies to rural areas does not promote the overuse and failure of private septic systems, leading to the potential for broad scale health emergencies.

The **City of Hamilton's Rural Official Plan** reflects the servicing policy requirements of the Province in Chapter C - Lake-Based Municipal Water and Wastewater Systems. Section C-5.3.1 states:

*The Province requires municipalities to prohibit the extension of lake-based municipal services outside of Urban Area boundaries, except in response to public health emergencies. No extensions of or new connections to municipal-based water and wastewater systems shall be permitted by this plan in the Rural Area or designated Rural Settlement Areas unless the Medical Officer of Health declares an urgent public health emergency and there are no viable alternatives to rectify the emergency except by provision of municipal water and/or wastewater systems to the affected population.*