
For Information

REPORT TITLE: Servicing Update of Groundwater-Based Drinking Water Systems

FROM: Andrew Farr, Interim Commissioner of Public Works

OBJECTIVE

To provide an update on the status of the Groundwater-based system analysis, including information related to water and wastewater capacity to support the existing population and future potential growth in the Town of Caledon's villages, hamlets and rural service centres. The findings and associated future work will inform the *Peel 2041: Regional Official Plan Review*.

REPORT HIGHLIGHTS

- Region staff undertook a comprehensive review of the municipal water and wastewater systems in Caledon to understand the unique needs of each community, confirm the continued ability to service current population within each system, and to assess the capacity to service future population as these communities grow.
 - The assessment was completed using historical water consumption trends, population projections, system capacities, and permitted water taking by the Ministry of Environment, Conservation and Parks (Ministry).
 - The review also included a risk assessment of system reliability, current ongoing planning reviews, development pressures and system capacity.
 - Results show that the current and projected growth can be serviced by municipal drinking water systems, however additional capital works are required in some systems to mitigate risk.
 - Staff have commenced an action plan to mitigate identified risks including a master servicing plan for the groundwater-based systems and a study to evaluate the financial and technical feasibility of implementing new private communal systems in areas where there is interest in new development.
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DISCUSSION

1. Background

Currently, the Town of Caledon's villages, hamlets and rural service centres are serviced by four distinct groundwater-based municipal drinking water systems. The study area for this review includes the following communities grouped by water system (see Appendix I for map).

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Alton-Caledon Village-Mono Mills System

- Alton
- Caledon Village (McLeodville, Skywood Park)
- Mono Mills

Caledon East-Palgrave System

- Albion
- Caledon East
- Mono Road
- Palgrave (Cedar Mills, Centreville)

Cheltenham-Terra Cotta System

- Cheltenham
- Terra Cotta

Inglewood System

- Inglewood

Of these service areas, only Inglewood and Caledon East have a municipal wastewater system. In Inglewood only a portion of the community is serviced by the municipal wastewater system. Areas which are not serviced by municipal water or wastewater systems are dependent on individual septic systems or individual private wells.

The mandate of the Region's program is to consistently produce and deliver drinking water that meets or exceeds legislative requirements. However, in recent years evolving technical and planning information have surfaced in the study area:

- The efficiency of some wells in the groundwater systems have been declining over the years due to changes in the aquifer pressure or due to aging infrastructure
- Although work has been completed to interconnect many of the groundwater municipal systems, some limited system redundancy continues to be identified as a potential risk in some areas.
- The Town of Caledon is currently undergoing its Official Plan Review. At this point in time, the Town does not contemplate significant growth in any of the villages, however, the Village Studies and the Town's Official Plan have not been formalized
- The Region is also currently undertaking its Official Plan Review which includes a Settlement Boundary Expansion Study. Although the main focus of the Settlement Boundary Expansion Study is to identify future residential and employment in the southern portion of Caledon, outside of the Greenbelt, there have been a number of requests submitted by private landowners or developers to consider expansions to some of the villages and hamlets.
- In many cases, water or wastewater servicing is not available in these areas and staff have received requests to permit subdivisions utilizing private communal water systems.
- The current Provincial Policy Statement (PPS) permits communal servicing and this does not align with the Region's existing or planned policy direction which could potentially expose municipalities to significant financial, public health and safety risks over the lifetime of the services.

In order to address these issues in a comprehensive manner, a detailed analysis of each individual municipal groundwater-based system was undertaken to understand the unique needs of each community, confirm the ability to service current population within each system, and assess the capacity to service future population as these communities grow in accordance with Official Plan Amendments (OPA).

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2. Study Approach

Regional staff consulted with Town of Caledon to determine servicing requirements and confirm population projections and approach. Also, the provincial Growth Plan has given the Region a more active role in determining allocation of growth through the Municipal Comprehensive Review process and as such information available was considered. Steps taken include:

- Population information was gathered from different sources, including the Town of Caledon's OPA 226 which allocates forecasted growth up to 2031 in addition to development applications/inquiries that could add further growth beyond 2031.
- Historical drinking water supply and demand data was evaluated and summarized to develop an accurate per capita consumption rate and to establish a baseline.
- Current supply capacities for each system were determined using Permit to Take Water, pumping capacity and actual municipal well capacity assessments.
- Several risk scenarios were also considered, including declining municipal well capacity over time, a potential loss of one or more municipal wells, and interrupted supply.

Each system was evaluated separately to understand the needs of each community, identify deficiencies and highlight their ability to address growth as a result of the planning process, while remaining flexible as information becomes available for these areas.

3. Groundwater-Based Drinking Water Systems Analysis

The analysis was completed by determining the water demand requirements in each community using the per capita consumption baseline and comparing it with the achievable capacity in each system. In most communities, a slight decreasing trend in per capita consumption has been noted over the last 20+ years. The reduction in consumption provides some potential capacity for growth.

With regards to overall system capacity, several factors were considered in identifying capacity limitations for each municipal well, including the rate at which water may be drawn from a well which may decrease with age, the provincial Permit to Take Water, maximum pumping capacity, aquifer sustainability, and other restrictions which may be imposed by the Ministry.

Results from the analysis show that the existing groundwater systems in Caledon have the ability to service potential growth as per details presented above, however additional capital works are required in some systems to mitigate risk. A high-level summary of each system is provided in the next paragraphs, and details of this analysis can be found in Appendix II.

In the Caledon East – Palgrave System, the efficiency of Caledon East Wells 4 and 4A has been declining over the last seven years due to changes in the aquifer pressure. The municipal wells in Palgrave have a greater combined supply capacity than those in Caledon East. The capacity of the Palgrave wells enhances the overall interconnected system, however based on current capacity and risk assessment of the system staff identified that additional works are required and have commenced an action plan to mitigate these risks. Details of this plan are provided in Appendix II.

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With regards to the Alton-Caledon Village Well System. There has been a recent decline in well production at Alton Well 4 due to high turbidity as a result of aging of the well casing. Staff have addressed this issue and no additional works have been identified. The system has sufficient capacity to meet current demands and growth projection as per work discussed in Section 2.

Municipal water servicing to Cheltenham and Terra Cotta is provided by two wells located in Cheltenham. Analysis shows there is a potential risk related to lack of redundancy in the system, however staff did not identify any additional works required in the near future.

The Village of Inglewood is serviced by two municipal wells. The existing system is already operating very close to its limiting water supply capacity and there is limited system redundancy. Therefore, budget for exploration works for an additional source of drinking water and the potential for a consolidated treatment facility was included in the approved 2020 capital budget.

4. Caledon Wastewater Systems Analysis

Most communities in Caledon are serviced through private septic systems. Inglewood and Caledon East are the only communities which have municipal wastewater systems.

The Caledon East wastewater collection system conveys sewage to the G.E. Booth wastewater treatment plant (WWTP) via a pumping station and gravity sewer along Airport Road.

A portion of the Village of Inglewood, including the village core area, is serviced by a municipal wastewater treatment plant. Resulting biosolids from the plant are transported to the Clarkson WWTP for additional treatment. The treated effluent from the Inglewood WWTP is discharged to the Credit River and the quality of the effluent is held to very stringent compliance requirements by the Ministry. Growth in Inglewood is limited by the wastewater system capacity. The facility was designed to service approximately 195 lots and there are no plans to expand the current service area.

Staff have recently completed studies related to wastewater servicing in some communities in Caledon which included new development proposals. These studies have concluded that municipal wastewater systems are prohibitively expensive in communities of this size and location. Connection of the proposed system to the existing community, construction and operations result in excessive high cost.

5. Technical Background Study on both Water and Wastewater Communal Systems

Communal systems are often proposed by private development in rural areas where water or wastewater services are not available. Typically, a specific lot size threshold and hydrogeological conditions create an inability to use septic systems (i.e. lot size proposed is too small for septic systems).

As interest in development has increased in rural communities, communal system proposals have become increasingly common. Communal systems are those designed, paid for, operated and maintained by private landowners in accordance with a Ministry licence. However, where such systems fail or private operators become insolvent, the systems become a liability which may typically trigger involvement from a local water and wastewater utility such as the Region based on the potential health implications.

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Due to the long-term operational and state of good repair costs many communal type systems, if operated and maintained privately, are often not sustainable. Where the Region has been a partner in the development and maintains ownership of communal systems, they have proven successful and have resulted in significant community and environmental benefit. Successfully implemented communal systems are typically those that are centred within growth nodes and designed to service new development in addition to the existing communities.

Where unsuccessful, the Region has often been forced to interconnect communal systems to existing communities and assume ownership to ensure their long-term viability.

The Region currently evaluates the financial and technical feasibility of proposed communal systems on a case by case basis. The Region has commenced a study to assess a standard regarding the development of communal systems in communities. The study will encompass the following:

1. Develop a procedure to assist the Region evaluate the financial and technical feasibility of implementing communal systems in areas where there is interest in new development and municipal services are not currently available.
2. Develop technical, financial and legal framework for acceptance of communal facilities so developers have criteria for consumption, if feasible.
3. Develop a policy-based approach for evaluating the potential implementation of communal based systems to ensure long-term viability.

6. North Peel Water and Wastewater Master Plan

Upon completion of the communal systems feasibility study staff will develop a water and wastewater master servicing plan for the groundwater-based system in Caledon. The plan will align to Town of Caledon's Official Plan, Peel's Settlement Area Boundary Expansion and Palgrave Estates Residential Community Official Plan. The plan will also provide input to the development of the Regional Official Plan Amendment (ROPA) as the technical background to support policies around the implementation of communal services.

CONCLUSION

The groundwater-based systems analysis was undertaken to evaluate existing municipal groundwater-based systems in the Town of Caledon and identify any servicing gaps and system improvements.

Results show that the existing groundwater-based systems in Caledon have the ability to service existing, and potential population growth. However, servicing of any growth must also consider the groundwater resources that may be impacted by the construction of new septic systems due to this growth. New drinking water sources and upgrades to water treatment facilities are required to support the future needs of the communities.

Growth pressures will continue to evolve, and the Region will continue to work with the local municipalities to ensure servicing is aligned with Official Plans and planned settlement boundaries. Given the ongoing pressures to permit communal water and wastewater alternatives the Region has commenced work on a study to investigate policies for the provision of municipal versus communal type servicing. The report will be integrated into an overall water and wastewater Master Plan for the groundwater-based system in the Town of Caledon.

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APPENDICES

Appendix I – Map of the Caledon Groundwater Systems

Appendix II – Groundwater – Based Drinking Water Systems Analysis

For further information regarding this report, please contact Miriam Polga, Acting Manager, Infrastructure Planning, Ext. 4149, miriam.polga@peelregion.ca.

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Final approval is by the Chief Administrative Officer.



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