CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water Division
And
PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT
Planning Division

TO:	Chair and Members Planning Committee
COMMITTEE DATE:	March 21, 2023
SUBJECT/REPORT NO:	Tertiary Septic Systems and Rural Development (PW20082(a)/PED23047) (Wards 9,10,11,12,13 and 15) **(Outstanding Business List Item)**
WARD(S) AFFECTED:	Wards 9, 10, 11, 12, 13 and 15
PREPARED BY:	Mike Christie (905) 546-2424 Ext. 6194
SUBMITTED BY: **SIGNATURE:**	Cari Vanderperk Director, Watershed Management Public Works Department
SUBMITTED BY: **SIGNATURE:**	Steve Robichaud Director, Planning and Chief Planner Planning and Economic Development Department

RECOMMENDATIONS

(a) The revisions to the City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services, attached as Appendix “A” to Report PW20082(a)/PED23047 be approved to reflect the City of Hamilton’s interim policy and position on the use of tertiary treatment systems until such time as the Province comprehensively regulates the use of tertiary treatment systems;

(b) That City of Hamilton staff be directed and authorized to continue to engage the Ministry of Environment, Conservation and Parks and the Ministry of Municipal Affairs and Housing to seek regulatory guidance on the municipal enforcement of the performance of tertiary septic systems;

(c) That the matter respecting the “Use of Tertiary Septic Systems in Hamilton and Update re: Local Planning Appeal Tribunal Case No. PL170858

(PW20082/LS20032)" be removed from the Planning Committee Outstanding Business List.

EXECUTIVE SUMMARY

At the December 8, 2020, Planning Committee Meeting, Report PW20082/LS20032 was approved with the recommendation that staff be directed to review and report back to Committee on options, if any, for the establishment of City of Hamilton (City) policies or by-laws for the regulation, monitoring and enforcement of tertiary septic systems for residential developments and ICI developments.

Development proposals located outside the urban boundary typically rely on a private well and septic system to manage their water and wastewater. The City is the approval authority for private septic systems where the daily flow rate is less than 10,000 litres per day (which is typically for residential and small scale institutional, commercial or industrial uses). If not appropriately sited, operated and maintained, septic systems can pose risks to human health and the environment. Microbial pathogens (i.e. bacteria, viruses, protozoa) and nutrients such as nitrates and phosphorus are the most common contaminants in septic system effluent and can degrade groundwater quality which can impact private drinking water wells nearby.

Nitrate is the "indicator" contaminant used in the Ministry of Environment, Conservation, and Parks (MECP) Guideline D-5-4 and in the technical review of privately serviced developments in Ontario. In recent years there has been an increase in development proposals in Hamilton's rural areas that have included the use of tertiary septic systems for the reduction of nitrates in order to justify development based on existing site characteristics and/or smaller lots.

Part 8 of the Ontario Building Code (OBC) does not regulate nitrate or other pollutants from septic system effluent. Based on staff's regulatory and technical review, staff do not recommend pursuing a municipal policy or by-law at this point in time that accepts tertiary septic systems to justify development approvals based on site characteristics (lot size, fractured bedrock, soil conditions) due primarily to concerns over the long-term performance of tertiary systems and legal enforcement associated with the performance, including the following issues:

- From a legal perspective, a number of issues arise when considering tertiary systems. Municipalities have no legislated standards against which to enforce performance of these systems. Under the *Municipal Act*, municipalities can enter into long-term monitoring agreements with property owners for private sewage systems but the authority to monitor construction, operation and maintenance of private sewage systems is tied to a site plan or subdivision agreement. These

agreements cannot directly regulate system performance but rather are limited to requiring monitoring and remedial action if the system is not performing as anticipated. The City would be required to seek a Court order to enforce the agreement. As such, and based on the current regulatory environment, the use of tertiary septic systems with advanced treatment transfers unacceptable risks and costs from the developer to the City;

- Tertiary systems are typically more expensive to install, operate and maintain. Once a development is approved that relies on tertiary septic system technology, the City has no legal means to ensure that type of system remains on the property in perpetuity. At any point in the future after the approval, property owners could apply for a building permit to install a conventional septic system that requires less maintenance and long-term obligations. The City would have to rely on a development agreement (i.e. Consent, Site Plan, Subdivision or Condominium) to deny the permit, even if the permit meets the OBC standards; and,

- Under s.35 of the *Building Code Act,* municipalities cannot enact policies or by-laws where construction standards are more restrictive than the OBC. This restricts the creation of a municipal by-law that addresses regulatory gaps as it relates to enforcing performance of tertiary septic systems.

It is also recommended that revisions be adopted within the City's Guidelines for Hydrogeological Studies and Technical Standards for Private Services to reflect the policy recommendations herein, as outlined in Appendix "A" attached to Report PW20082(a)/PED23047.

Further, staff note that should the Province provide updated guidance and/or changes to the OBC in the future to address the regulation and enforcement of tertiary septic systems, staff will revisit this issue and will provide updated policy recommendations, if required, at that time for Council's consideration.

Alternatives for Consideration – See Page 12

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: N/A

Staffing: N/A

Legal: Legal and Risk Management Services has been consulted and can provide advice with respect to these issues as required.

HISTORICAL BACKGROUND

Conventional and Tertiary Septic Systems:

Conventional septic systems have two (2) basic components: a septic tank to manage solids and floatables, as well as a leaching bed which allows effluent to percolate into the underlying soil.

A tertiary septic system (also referred to as a Level IV Treatment Unit under the OBC) is an alternative septic system that can improve some characteristics of the effluent and is regulated through OBC table 8.6.2.2.A. Given that this system offers an additional level of treatment, the size of the system's leaching bed can be reduced. This has become attractive for property owners who have limitations with siting a large leaching bed (i.e. due to pools, landscaping, decks, etc.) or to allow for a smaller lot size where new development is proposed by way of Consent or Plan of Subdivision. Given that tertiary systems have greater operational complexity than a conventional septic system, there are often increased costs for owners primarily related to ongoing service/maintenance contracts, testing and energy consumption. It should be noted that meeting OBC requirements does not address all factors in ensuring sustainable rural development and other planning policies.

The Effluent Quality Criteria as per the OBC imposes treatment standards for tertiary systems for CBOD5 (5-day carbonaceous biological oxygen demand) and total suspended solids. Outside of the OBC regulations, a number of septic system manufacturers developed "advanced treatment units" that can reduce nitrates in the wastewater effluent. Because nitrate is the indicator parameter when assessing risks and calculating a minimum sustainable lot size, development applicants propose the use of tertiary systems to justify the scale and scope of the proposal compared to traditional septic systems.

In 2022, the Building Division completed an analysis of tertiary treatment systems within the City of Hamilton. While Building Division staff are continuing to make efforts to find older legacy septic systems to add to their database, 145 tertiary treatment systems were found. Approximately 50 out of the 145 systems have records of enforcement actions due to failing systems, failure of submitting annual sampling results, or lack of a maintenance contract. The Building Division works with the property owners to resolve the enforcement action in an attempt to resolve any potential risk to health and safety because in some cases, the property owners were unaware of their obligations.

City of Hamilton Background - Policy and Development Review:

In 1996, the Region of Hamilton-Wentworth and the Province of Ontario signed a Memorandum of Understanding (MOU) which transferred the review of privately serviced development to the municipality. Within that MOU, key municipal responsibilities were enacted that pertain to sustainable water/wastewater servicing in rural development, such as the requirement to:

- Identify potential soil and groundwater contamination, and identify need for and conduct technical review of soil and groundwater contamination for reviews of *Planning Act* applications;
- Provide comments and monitor water supply capacity and sewage treatment capacity for *Planning Act* applications;
- Identify need for and conduct technical review of reports on individual drinking water quality and quantity for all development proposals; and,
- Identify need for, conduct technical review, and issue permits for individual inground wastewater discharge systems that are not subject to s.53 of the *Ontario Water Resources Act* (large septic systems approved by MECP).

Policies within the Rural Hamilton Official Plan (RHOP) and the Provincial Policy Statement also mandate that *Planning Act* applications demonstrate sustainable water use and wastewater management. The Watershed Management section in Hamilton Water supports Planning and Economic Development to ensure *Planning Act* applications in the rural area conform to the sustainable servicing policies of the RHOP (C.5.1) and fulfil the City's obligations under the MOU. When assessing and reviewing development applications (i.e., Rezoning, Consent, Site Plan), conformity of these sustainable servicing policies is demonstrated through a satisfactory Hydrogeological Study that characterizes the potential impacts that developments could pose to the local groundwater system and nearby residents that use a private well for their water supply.

The City relies on the MECP Guideline D-5-4 (1996) to assess risks associated with privately serviced developments that rely on septic systems to manage their wastewater. Nitrate is the "indicator" contaminant used in Guideline D-5-4 and in the technical review of privately serviced development in Ontario.

In 2011, the Ministry of Municipal Affairs and Housing (MMAH) issued a proposed change to the OBC (S-B-08-06-06) that specifically addressed tertiary septic systems and provided performance standards for the three (3) most common septic system pollutants - nitrogen, phosphorus, and coliform bacteria. However, this proposed amendment on tertiary systems was not incorporated into the 2012 OBC. Inquiries with the MMAH to understand the rationale for not proceeding with implementing the proposed changes to the OBC have not been successful.

Ontario Land Tribunal:

Over the last number of years, Hydrogeological Studies that show high daily sewage flows, poor soil conditions, and/or small rural lots propose tertiary septic systems with nitrate-reducing treatment units to mitigate the risks have been submitted in support of development applications as part of the applicant's submission to the Ontario Land Tribunal (OLT) as to why the application(s) should be approved. This was most recently observed in the OLT (formerly Local Planning Appeal Tribunal) decision to approve a rural subdivision in Flamborough.

The City did not support the use of tertiary treatment systems to justify the size of the proposed residential lots. The OLT decision concluded that "the proposed on-site sewage system will achieve the appropriate nitrate levels at the property boundaries" and that a condition of approval requiring mandatory testing of the system "will be enforceable" without specifying what the basis for that enforcement would be.

It is inferred that the OLT decision contemplates private agreements between developer/owner and the City that would establish enforcement remedies. However, such contractual remedies would likely require judicial intervention - that is, to enforce a development agreement the City would be required to take the property owner to court, whereas under the OBC, the City can levy a charge and mandate remedial actions. As previously noted, these private agreements would not provide the same enforcement powers found in the OBC.

As a result of this OLT decision and subsequent appeals, on December 8, 2020, the Planning Committee directed staff to review and report back to Committee on options for the establishment of City policies or by-laws for the regulation, monitoring and enforcement of tertiary septic systems for rural development.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Rural Hamilton Official Plan:

When considering requirements for sustainable private servicing and minimum sustainable lot size, the Rural Hamilton Official Plan Policy C.5.1.1 states the following:

"C.5.1.1 No draft, conditional, or final approval of development proposals shall be granted by the City for any development in Rural Hamilton that could impact existing private services or involves proposed private services until the development proposal has complied with all of the following:

a) Prior to or at the time of application for a proposal that could impact existing private services or involves proposed private services, development proponents shall submit complete information regarding existing or proposed private water and wastewater services. This information shall be complete to the satisfaction of the City. Where sufficient information is not available to enable a full assessment of on-site and off-site water supply and/or sewage disposal impacts or if the proponent does not agree with the City's calculations, the proponent shall be required to submit a hydrogeological study report completed in accordance with Section F.3.2.5 – Hydrogeological Studies of Plan and Hydrogeological Study Guidelines as may be approved or amended from time to time.

b) Any information submitted or study required in Policy C.5.1.1 a) shall be completed to the satisfaction of the City in accordance with Section F.3.2.5 of this Plan and Hydrogeological Study Guidelines as may be amended from time to time. The City may request or conduct a peer review of the study or servicing information, which shall be completed by an agency or professional consultant acceptable to the City and retained by the City at the applicant's expense.

c) The minimum size for a new lot proposed in an application for a severance, lot addition or draft plan of subdivision with an existing or proposed private water system and/or existing or proposed private sewage disposal system shall: i) be the size required to accommodate the water system and sewage disposal system with acceptable on-site and off-site impacts; ii) shall include sufficient land for a reserve discharge site or leaching bed, as determined by the requirements in Policies C.5.1.1 a) and b); and, iii) not be less than 0.4 hectare (one acre) in size. The maximum lot size shall be in accordance with Policy F.1.14.2.1 f). (OPA 26).

d) Development of a new land use or a new or replacement building on an existing lot that require(s) water and/or sewage servicing, may only be permitted where it has been determined by the requirements of Policies C.5.1.1 a) and b) that the soils and size of the lot are sufficient to accommodate the water system and sewage disposal system within acceptable levels of on-site or off-site impacts including nitrate impact, and shall include sufficient land for a reserve discharge site or leaching bed. The maximum lot size shall be in accordance with F.1.14.2.1 f).

e) The private water supply and sewage disposal systems shall be capable of sustaining the proposed and existing uses within acceptable levels of on-site and off-site water quantity and quality impacts, including nitrate impact".

Further, Policy F.1.14.2.1 f) states:

"f) The maximum lot size for all proposed severances and lot additions outside of designated Rural Settlement Areas, except severances or lot additions for agricultural purposes where both the severed and retained lots are proposed to contain agricultural uses, shall be restricted to the minimum size required for the use and to meet the land area requirements of Section C.5.1, with as little acreage as possible taken out of agricultural use."

The Rural Hamilton Official Plan requires proponents to demonstrate that there will be no off-site impacts of the proposed servicing regime through the submission of a Hydrogeological Study. The study must be prepared in accordance with the City's guidelines (see below). To avoid confusion and provide clarification, it may be necessary to amend the RHOP to prohibit the use of tertiary systems. This will be reviewed as part of Phase 3 of the Growth-Related Integrated Development Strategy/ Municipal Comprehensive Review (GRIDS 2/MCR) exercise in 2023.

City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services:

The City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services were approved in 2014 to provide technical standards and minimum requirements for hydrogeological studies that support planning applications in the rural area.

The revised City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services, attached as Appendix "A" to Report PW20082(a)/PED23047 will provide greater clarity for rural development proponents and their agents when completing Hydrogeological Studies.

Other Legislation:

Other policy implications and legislated requirements related to the *Building Code Act* and *Municipal Act* are outlined in other sections within this report.

RELEVANT CONSULTATION

Engagement has been initiated with the MECP and the MMAH through a letter signed by the Mayor within Appendix "A" to Report PW20082/LS20032. In April 2021, the Minister provided a response, but this letter did not directly address the City's concerns. City staff have had an initial consultation with MMAH staff and will continue to consult with provincial partners to seek regulatory clarity on these issues.

Hamilton Water also consulted several other municipalities regarding tertiary septic systems and their subsequent impact on lot sizing and planning approvals. Of the 18 municipalities contacted, six (6) do not support tertiary systems guiding lot sizing decisions, three (3) municipalities accept them, four (4) had no knowledge of these systems, and five (5) have yet to respond. The results of this outreach are found in Appendix "B" attached to Report PW20082(a)/PED23047. The councillors of the affected wards have been consulted.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

1. The use of tertiary treatment systems as a basis for the approval of 'undersized' lots based on conventional septic systems for proposed developments in all rural areas across the City is a significant issue. Sustainable lot sizing as per RHOP Policy C.5.1.1 allows for the proper dilution of septic system pollution subject to the proponent demonstrating that the groundwater quality and public health of neighbouring properties would not be impacted from this pollution.

   It should be noted that the MECP Guideline D-5-4 states that one (1) hectare (2.54 acres) commonly represents a minimum sustainable lot size for a single residential development's conventional septic system. The existing rural non-farm residential lot fabric in Hamilton can be as low as 0.1-0.2 hectares (0.25 - 0.5 acres). The RHOP requires a minimum lot area of 0.4 hectares (1.0 acre) as per policy C.5.1.1c) for new lots, subject to the proponent demonstrating through an approved Hydrogeological Study the long-term sustainability of the proposed private services. However, it should be noted that based on provincial and municipal hydrogeological guidelines, the minimum lot size for new single-family residential lots is typically 0.6 to 1.0 ha (1.5-2.5 acres).

2. The concerns related to the use and dependence on tertiary treatment systems that reduce nitrates primarily relates to their long-term performance of treating septic system pollution, the legal enforcement associated with this performance, and the implications of system failures and the financial costs to replace the system, as discussed below.

2.1 Long Term Performance of Tertiary Treatment Systems:

The proposed systems are nitrogen-reducing, in that they operate to reduce nitrate levels in the effluent. Nitrate is a key pollutant from sewage disposal systems that increases the risk to groundwater quality and public health. Nitrate-reducing technologies are not incorporated into the OBC, which makes monitoring and enforcement of proper functioning of these systems problematic.

Contaminants that may enter groundwater from septic systems include nitrate, bacteria, viruses, detergents, and household cleaners. Hamilton Water has concerns that if nitrate-reducing technologies become widely accepted to justify undersized lots in the rural area, the risks of poor septic system performance would lead to degraded groundwater quality for private well owners and increase acute and chronic health risks to these residents. The City's lack of effective enforcement powers under the OBC only increases that risk.

Based on data available to Hamilton Water, these nitrate-reducing systems often initially perform adequately but can quickly decline in performance, even with regular, comprehensive maintenance. A technical memorandum from MECP Source Protection Branch indicates that these nitrate-reducing systems increase the risk of groundwater contamination from pathogens (such as E. coli), which presents a more acute health risk to neighbouring private well owners. MECP cites that up to 35% of these systems do not perform as intended.

2.2 Long Term Legal Enforcement/Monitoring

A common measure that is proposed by developers to address performance and maintenance issues is to enter into a legal monitoring agreement of the private sewage works, with provisions for specific monitoring and reporting to the municipality. As a result of the changes to the *Planning Act* through Bill 23*,* the City can no longer utilize site plans controlled for residential buildings containing fewer than 10 units. As such, it is no longer possible to require a site plan agreement for low density residential uses (e.g. single detached dwellings) in the rural areas. Section 23 of the *Municipal Act* allows municipalities to enter into such agreements. However, the existing legislation speaks only to the construction, operation and maintenance of private water/sewage works but does not provide authority to effectively enforce system performance.

Another limitation staff have identified relates to planning approvals in that, if these advanced systems are proposed to justify the proposed development, any landowner who later decides to replace a nitrate-reducing septic system with a conventional system could then easily exceed the capacity of the lot to

sustainably manage pollution from the wastewater effluent. The City would not have any ability to prevent this if the new system met OBC requirements for a conventional system as private monitoring agreements cannot supersede applicable law. This would result in increased public health and water quality risks. Collectively, a specific septic system technology cannot be tied to a property in perpetuity. The best approach to reduce these risks is to ensure, at the planning application stage, that the proposed development can accommodate all septic system pollution within its property limits regardless of the proposed technology.

Furthermore, over time the lot may need to accommodate an increase in wastewater flow compared with the initial assessment as a result of the intensification of the land use (for example, the addition of an internal secondary dwelling unit). Having an undersized lot accompanied by increased wastewater flows may lead to public health impacts on surrounding residents and businesses who consume groundwater for drinking water purposes.

3. If these nitrate-reducing systems become more widespread and their performance deteriorates due to insufficient oversight/enforcement (particularly in a rural settlement area), long term risks can increase. Hamilton Water has concerns that groundwater quality could be degraded enough to warrant a provincial order from the MECP and Public Health to build new municipal water infrastructure to safely provide a rural community with a sustainable water supply. Ratepayers would bear the costs to plan, design, construct, operate and maintain this new infrastructure. Hamilton Water has municipal well systems in Freelton and Lynden that were created as a result of water quality and public health impacts associated with septic systems on undersized lots. Similar to the City's municipal well systems in Carlisle and Greensville, these drinking water systems represent extremely high per capita costs to build, operate, and upgrade infrastructure to deliver safe, clean municipal water, with limited ability to recover the costs from a small base of customers.

   'Alternative' treatment systems with monitoring requirements outside of those set forth in the Building Code create staffing and resource issues for the City in addition to the enforcement concerns set forth above. It also can leave future owners with ongoing responsibilities and costs for proper care and maintenance of these more complex systems. Effectively, the long-term operating and monitoring costs are transferred from the developer to the homebuyer with the City having to assume an oversight role funded through either the rates budget or the general levy.

4. Based on all of the above, staff do not recommend pursuing a municipal policy or by-law that would allow for the use of tertiary septic systems to justify development approvals based on site characteristics (lot size, fractured bedrock, soil conditions). As such, to fulfil this policy position, staff are proposing revisions to the City's Guidelines for Hydrogeological Studies and Technical Standards for Private Services attached as Appendix "A" to Report PW20082(a)/PED23047. These revisions will remove reference to tertiary treatment systems related to a development approval and state the City's policy position and clarification as to why these systems should not be proposed to justify approvals related to lot sizing (Page 63 of 67 in Appendix "A" to Report PW20082(a)/PED23047. This will provide greater clarity for applicants as they prepare their Hydrogeological Studies for approval.

   The effect of the proposed interim policy is to preclude the use of OBC approved tertiary septic systems as justification for applications of lot creation, change in zoning or redevelopment that would otherwise not comply with the City's policies for private servicing. This will provide clarity for property owners and their consultants when considering development proposals on private services in the rural area. If the MECP and the OBC provide additional guidance on tertiary septic system regulations, amendments to the policy, and associated Rural Hamilton Official Plan policies and implementing Zoning By-law regulations may be appropriate to regulate lot area provisions. If further regulations are brought forward by the Province, staff will review and provide updated policy recommendations for Committee and Council's consideration.

ALTERNATIVES FOR CONSIDERATION

Council may elect to allow developments to proceed using tertiary treatment systems for nitrate reduction, and the City assumes the risk that these systems may fail to perform as intended or get replaced with a conventional septic system and ultimately become a greater source of contamination to private wells nearby. The widespread adoption of these systems would require staffing increases to create site-specific monitoring agreements and provide ongoing oversight and enforcement on the terms of these agreements. The City could also face additional legal/financial risks if the water quality of neighbouring private well owners becomes compromised, where the provision of a safe water supply could be an ongoing obligation. Should Council direct staff to develop a program related to approval of tertiary systems for the purposes of *Planning Act* approvals, a subsequent report would discuss the following:

1. Proposed monitoring and enforcement program, along with their legal, financial, health and environmental implications;
2. Staffing requests; and,

3. Other potential costs, benefits, and risks for consideration prior to final implementation.

As mentioned previously, municipalities do not have the legal tools to enforce septic system performance due to limitations under the *Municipal Act*. A new by-law that relates to construction standards for septic systems is not permitted as per s.35 of the *Building Code Act.*

Due to groundwater quality risks, lack of enforcement powers, liability exposure for the City, and the requirement for more staffing and financial resources, staff do not recommend this alternative.

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: Alternative adoption of tertiary systems could lead to financial risks if the water quality of neighbouring private well owners becomes compromised, where the provision of a safe water supply could be an ongoing obligation.

Staffing: Alternative adoption of tertiary systems would require additional staffing to provide proper oversight of private monitoring agreements.

Legal: Legal and Risk Management Services has been consulted and can provide advice with respect to these issues as required.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Economic Prosperity and Growth
Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

Healthy and Safe Communities
Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW20082(a)/PED23047 -	Revisions to City of Hamilton Guidelines for Hydrogeological Studies and Technical Standards for Private Services
Appendix “B” to Report PW20082(a)/PED23047 -	Municipal Benchmarking Scan