CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF NOVEMBER 17, 2020

Item 2, Report No. 51, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on November 17, 2020.

2. BACKFLOW PREVENTION BY-LAW AMENDMENT

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Deputy City Manager, Public Works, dated November 3, 2020:

Recommendations

1. That Council approve an amendment to the Backflow Prevention By-law (By-law No. 004-2018), with the proposed modifications as substantially summarized in Attachment 2.

Committee of the Whole (1) Report

DATE: Tuesday, November 03, 2020 **WARD(S):** ALL

TITLE: BACKFLOW PREVENTION BY-LAW AMENDMENT

FROM:
Zoran Postic, Deputy City Manager, Public Works

ACTION: DECISION

Purpose

To request Council approval to amend the Backflow Prevention By-law (By-law No. 004-2018). These amendments will improve protection of the City's drinking water system.

Report Highlights

- Council, as the water system owners are responsible to protect its water system from contamination to ensure that safe drinking water is provided to the City's citizens and businesses.
- The proposed amendments introduce property classifications and associated requirements based on risk and make administrative adjustments to assist in ensuring compliance.

Recommendations

1. That Council approve an amendment to the Backflow Prevention By-law (By-law No. 004-2018), with the proposed modifications as substantially summarized in Attachment 2.

Background

Ontario's Ministry of the Environment, Conservation and Parks regulates the City's drinking water

Drinking water and drinking water systems are regulated by the Province through the Ministry of Environment, Conservation and Parks (MECP). The *Safe Drinking Water Act, 2002*, mandates that owners and operating authorities of the municipal drinking water systems follow specific requirements with regards to operation and maintenance of drinking water systems including activities such as: management; sampling; testing; certification of operators; water quantity and, of the utmost importance, water quality and safety.

In Chapter 7 of the MECP Report of the Walkerton Inquiry, A Strategy for Safe Drinking Water, it notes water providers should have programs to detect and deter risks of backflow. In addition, a recent MECP drinking water inspection report recommends the development of a program, policy or by-law related to backflow prevention as a measure to increase protection of the City's drinking water system.

Backflow prevention devices are mechanical valves that can prevent water from unauthorized sources from entering the City's water system

Under normal conditions, water flows from the City's pressurized distribution system into the property owner's plumbing system and normal water pressures prevent water from flowing back into the water distribution system. In rare circumstances, the flow of water can reverse, such as the following:

- When there is a demand for water resulting from an abnormal activity such as a firefighting event or a large watermain break. The lower pressure in the watermain can draw water back into the watermain from private plumbing systems.
- When the water pressure in private plumbing is greater than the municipal water supply pressure. Private water systems incorporating booster pumps, thermal expansion in boilers, elevated piping systems, etc. can cause water to reverse flow and enter the City's watermain as system pressures fluctuate.

The installation of backflow prevention devices can provide an added level of protection, mitigating risks associated with unauthorized sources of water entering the City's system. An example of how a backflow prevention device is installed on a private plumbing system can be seen in Attachment 1. Promotional materials released to the public as part of the education campaign, explaining the benefits/purpose of backflow prevention devices can be viewed here.

Controlling sources of water entering the drinking water system is one of the ways the City ensures safe, clean drinking water

Staff developed a Backflow Prevention By-law ("the by-law"), enacted by Council in 2017. The by-law is focused on properties that pose the greatest risk to the system, including existing and new construction of industrial, commercial and institutional properties as well as mixed-use and multi-residential properties. Preventing water from flowing into the drinking water system from these sources, help to ensure, safe drinking water.

The by-law addresses the type, installation and field testing of backflow prevention devices which align with current Canadian Standards Association (CSA-B64) and American Water Works Association (AWWA) Standards.

Implementation of the Backflow Prevention Program is moving from an education phase to requiring affected property owners to take action

Working closely with the Corporate and Strategic Communications, the initial phase of the Backflow Prevention Program, informing businesses, as well as industrial, commercial and institutional (ICI) property owners about the by-law, was completed. Various communication tools such as fact sheets, videos, introductory letters, an enhanced website and presentations were completed to engage key stakeholders.

The next phase of the program involves property owners working with qualified companies to assess the need for backflow devices based on the risk of a potential backflow event. Environmental Services staff will review the assessment and notify the property owner on the backflow device to be installed and requirements for annual testing.

Staff have identified opportunities for improvement to the by-law as it has been implemented over the last two years

Through the development of the program, staff identified potential opportunities for improvement to clarify program requirements and ensure the program is administered fairly and consistently. The proposed amendments clarify requirements for property owners, enforcement and provide flexibility to ensure the level of protection required corresponds appropriately with the level of risk that a property poses to the drinking water system.

To address the identified opportunities for improvement, staff propose integrating 15 amendments into the by-law, which are considered to have minor and moderate impacts. Each of the proposed changes are summarized in Attachment 2. Some of the most significant proposed changes are noted in the following paragraphs.

Property owners are required to take immediate corrective action to ensure backflow prevention devices function properly

The corrective actions that the property owner is required to complete when a backflow preventer is not in proper working order have been modified. To protect the City's drinking water, the property owner is required to stop all activities that may result in backflow and the backflow preventer must be repaired immediately.

When the backflow device can not be immediately repaired, where feasible, staff will collaborate with the property owner to ensure that temporary measures (or process modifications) are in place to ensure that the City's water system is protected while avoiding long-term water outages for the property owner. This includes the ability for the property owner to replace the device immediately with one that meets or exceeds the by-law, with the administrative submissions and reviews, taking place afterward.

A risk-based approach for the selection of backflow preventing devices ensures that the level of protection matches the severity of the hazard

The selection of the backflow preventer should be made based on the hazards posed by the plumbing system within a property. To assist in assessing the hazard level, staff have evaluated typical property uses and prepared a reference table, identifying the level of risk associated with a generalized property use. This table (Attachment 3) will form an appendix to the by-law and guide its application.

If a property type is not listed within the above referenced appendix, staff will evaluate risks, based on property use and plumbing system design, and make a final determination on the type of backflow preventer required for the water service.

Financial penalties for non-compliance with the requirements of the by-law can help protect the drinking water system

Proposed financial penalties will be included to encourage compliance with the requirements of the by-law and assist in enforcement, if required.

Where a property owner is not in compliance with the relevant standards and regulations, they will be assessed a penalty based on the type, severity and frequency of the contravention.

Examples of non-compliance that could result in penalties are as follows:

- Improperly installed backflow device
- Lack of backflow device testing
- Improperly operating backflow preventer
- Failure to obtain a permit
- Connection of an auxiliary water source to the drinking water system without backflow protection and authorization from the City

Connections between private fire protection systems and the City's water system without backflow protection can create risks to drinking water quality

Fire systems will be included under a dedicated section which will give the City the ability to protect the drinking water system from this specific hazard.

Staff are creating an inventory of the type of fire protection systems installed within existing properties. This data, along with the addition of fire systems in the bylaw, will provide Staff with mechanisms to monitor and enforce the future installation of backflow prevention devices on fire service lines.

Previous Reports/Authority

Implementation of Backflow Prevention By-law, Dec.11, 2017

Analysis and Options

Many Ontario municipalities are developing or have implemented a Backflow Prevention By-law

As part of the review of the current by-law, the backflow prevention by-laws from the following municipalities were used as a comparison and in some cases as guidance, in the development of the proposed backflow prevention by-law:

- City of Barrie
- City of Toronto
- Halton Region
- City of Markham
- City of Guelph
- City of Ottawa
- Peel Region
- City of Orillia
- City of Hamilton

Development and consulting industries have been consulted regarding the proposed amendments and appear to have no concerns

On May 7, 2020, local developers and consultants were invited to a presentation on the Backflow Prevention Program. The presentation and discussion covered the potential revisions and additions covered in this report. To date, Environmental Services has received no concern on the proposed amendment.

Internal stakeholders were consulted to ensure Backflow Prevention program improvements aligned with existing systems and processes

Staff from By-Law and Compliance, Licensing and Permit Services, Legal Services, Development Engineering and Infrastructure Planning along with Building Standards have been consulted on the on the proposed revisions.

Stakeholders will be informed of amendments to the by-law through various means, such as the following:

- Updating the City website, forms and documents with relevant information
- Notifying property owners of the revisions, additions and any new expected requirements

Financial Impact

The administrative component of the Backflow Prevention Program has been integrated into the AMANDA software platform. By leveraging an existing corporate software solution, used to manage building permits, inspections, and municipal licensing, opportunities to generate automated processes have been created.

There will be minimal financial impact from incorporating the proposed amendments to the Backflow Prevention Program and can be accommodated within the existing staff compliment.

Broader Regional Impacts/Considerations

There are no Regional implications as a result of the proposed amendment to the by-law.

Conclusion

The proposed amendment to the Backflow Prevention By-law will enhance the protection of the City’s drinking water, reducing risks to public health.

For more information, please contact: James Steele, Director of Environmental Services, x6116

Attachments

Attachment 1 – Backflow Prevention Devices
Attachment 2 – Summary of Proposed By-law Revisions
Attachment 3 – Table of Property/Risk Classifications

Prepared by

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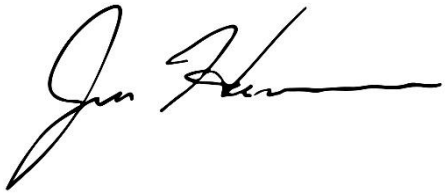
Approved by

Zoran Postic,
Deputy City Manager, Public Works

Reviewed by



Jim Harnum, City Manager

ATTACHMENT 1 – Backflow Prevention Device

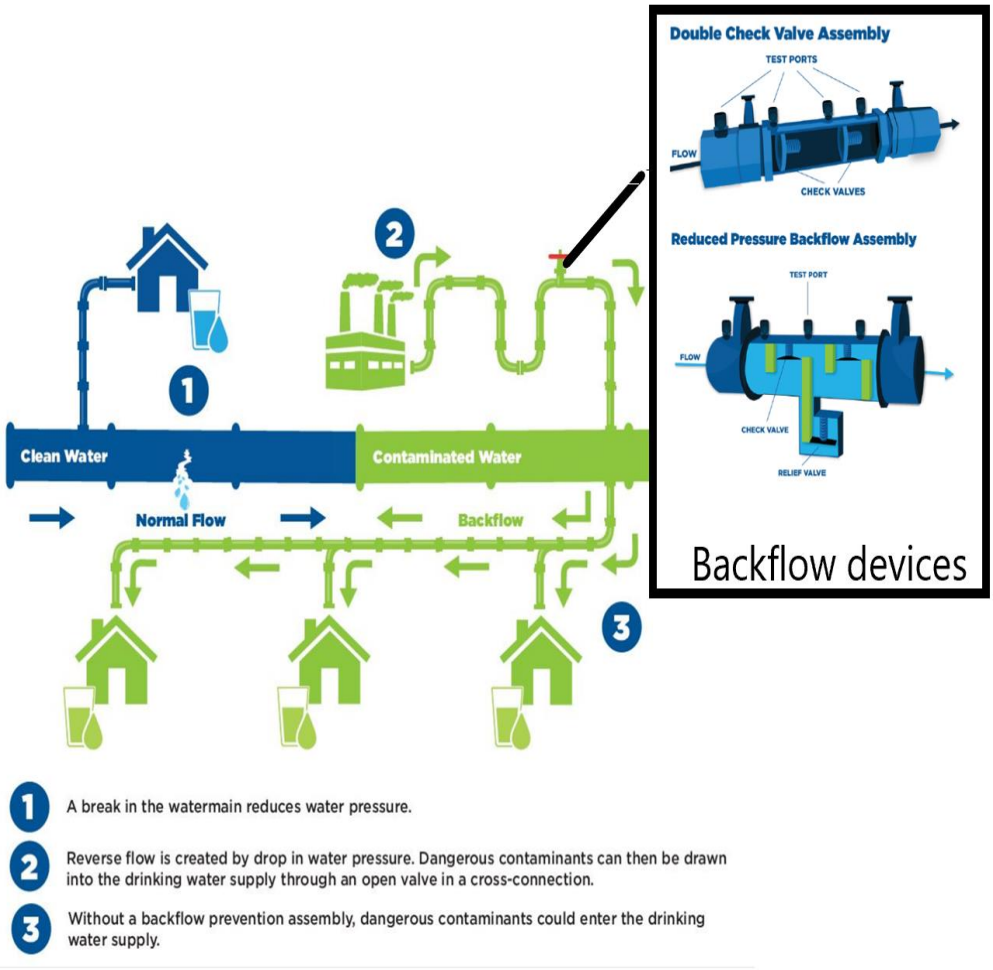


Figure 1- Graphical illustration of how the Backflow Prevention Device works

Attachment 2 – Summary of Proposed By-Law Revisions

Change Level	Description of Change
Minor Modify Application of By-law	The current Backflow Prevention By-law applies to industrial, commercial, and institutional (ICI) properties and mixed-use and multi-use residential properties located within the City. There are other hazards within the City that do not fall under the above property types. To protect from all hazards against the drinking water system, the Backflow Prevention By-law should be amended to include provisions to monitor all water services connected to the drinking water system. **Summary** - Including all property classes that pose a risk of backflow provides comprehensive protection to the City's drinking water system
Minor Add Section to protect from Temporary Water Connections hazards	To protect the drinking water system from potential hazards that occur due to construction and contractor use, a new section will be included to protect the City's water from this type of hazard. **Summary** – Added protection of drinking water from potential hazards, regardless of their short duration
Minor Modify Persons Permitted to Carry Out Work	Currently the bylaw does not reference a specific training certification body when it relates to the ability to test the backflow preventers in the City. The current bylaw does not require proof of tester's certificate, current calibration certificate for the test equipment or adequate insurance requirements to perform the work. By including a specific testing body and by receiving proof of the required documents, the City will be able to verify credentials when a Qualified Company or Qualified Person is registering for the Backflow Prevention Program. **Summary** – Defines requirements for certification and calibration to ensure that only qualified people and equipment are used to install, maintain and certify backflow prevention devices.
Moderate Modify Persons Permitted to Carry Out Work	A performance-based policy for the Qualified Company & Qualified Person will be created. This will provide a mechanism for the City to monitor those qualified by the City to complete work on backflow prevention devices. **Summary**- Enhancing requirements of Qualified Company and Qualified Persons builds greater credibility of the Backflow Prevention Program.

Moderate Modify Application of Standards and Selection of Methods	When a backflow preventer is required to be installed within a building, the selection of the backflow preventer must meet the degree of hazard associated with the property and the plumbing system, therein. To ensure that a backflow preventer is installed based on the risk that the building use poses to the drinking water system, properties and building uses have been classified based on the hazard level they can pose on the drinking water system. If a property type is not listed within the Appendix, the City will have the ability to select what type of backflow preventer is to be installed on the water service line. **Summary** - Providing greater clarity on the type of backflow prevention device required will increase protection for the water supply
Minor Modify Installation of Backflow Preventers	The current by-law does not provide for monitoring during the installation of new backflow preventers. The existing bylaw will be modified to establish requirements for new installations, provide guidance to the Property Owners to ensure compliance with the by-law. The new section within will cover where the backflow preventer is to be installed, specific installation requirements and when a backflow preventer is to be installed. **Summary** – Monitoring and controlling new installations will provide increased protection for the drinking water system.
Minor Add Section to protect from Auxiliary Water System hazards	To better protect our drinking water from the hazards that occur due to existing and new auxiliary water systems (such as private water supplies connected to the property's plumbing system, such as wells), a new section will be included to protect against this type of hazard. **Summary** – including residential properties with auxiliary water systems in the by-law, will avoid water that may not meet regulatory standards (e.g. untreated well water) from entering the City's water system.
Minor Modify Testing of Backflow Preventers	To permit Qualified Companies to use their own test tags, the wording below will be included in the Testing Requirements Section of the revised bylaw **Summary**- Allowing qualified companies to utilize their own test tags will avoid the introduction of an administrative burden while maintaining the integrity of the Backflow Prevention Program
Moderate Modify Testing of Backflow Preventers & Corrective Actions	The corrective actions that the property owner must complete for when a backflow preventer is found to be malfunctioning will be updated to help ensure the property owner can repair the backflow preventer within a reasonable amount of time. If the backflow preventer is unable to be repaired due to the unit being discontinued or the repair parts are on backorder, the updated by-law allows for property owners to immediately replace the backflow preventer with a new one and completing the administrative steps (e.g. building permit and inspection process) immediately thereafter. **Summary** – This clause builds in a contingency when a backflow prevention device must be repaired and sets out specific timelines for the Owner to act.

Minor Add Inspection Section to guarantee compliance	Site inspections will be used to investigate and confirm compliance, or any exemptions from, the Backflow Prevention Program. Site inspection will help identify any new backflow risks and potential non-compliances and establish corrective actions required of the property owner. **Summary**- Provides a means for site inspections to take place, ensuring continued compliance with the by-law.
Moderate Add Damage to the Waterworks Section	To protect the City from incurring costs associated rectifying damage in relation to a backflow event or negligent act caused by an individual or business. **Summary** – This change allows the City to recover costs if damage to the City's water distribution system occurred as a result of a connection that causes a back flow situation.
Moderate Modify Administration and Enforcement	In order to protect the quality of water within the drinking water system, the City requires the ability to eliminate a potential hazard when it is first identified. The procedure to be used will be different depending on the level of risk on the drinking water system and will range from issuing orders to shutting off water immediately. **Summary**: The City will respond to hazards based on the level of threat to the water system.
Moderate Add Financial Penalties Section	By including and assessing financial penalties, the City will be able to promote compliance of the by-law and provide a financial incentive for owners to comply, protecting the integrity of the water distribution system. If it is determined that the property owner is not in compliance with the relevant standards and regulations, they will be assessed a penalty based on the type, severity and frequency of the contravention. **Summary**: By including financial penalties, owners are provided with a financial incentive to comply with the requirements of the by-law.
Minor Modify Implementation and Compliance	Adjusting the timelines for compliance to ensure adequate time for the Owner to obtain permits, select, install and certify a backflow preventer, provide consistency and will help Owners remain in compliance. **Summary:** Adjusting the time requirements to ensure Backflow Prevention devices provides Owners adequate time to install and certify backflow preventers to comply with the requirements of the by-law.

Moderate Necessary amendments to ensure consistency and effective administration	Additional amendments may be needed to the By-law in order to give effect to the above-mentioned changes, and/or to ensure the by-law can be consistently and effectively administered in accordance with best practices and legislative requirements. **Summary:** Various amendments, made in accordance with the City Solicitor's (or designate) review and approval, and made to ensure effective administration of the by-law in accordance with best practices and legal/legislative requirements.

ATTACHMENT 3 - Table of Property/Risk Classifications

Type of Building / Water Use	Degree of Hazard
Agricultural	Severe
Animal Feed Lot	Moderate to Severe
Animal Stock Yard	Moderate to Severe
Aquaculture Farm	Severe
Aquarium (Public)	Severe
Arena	Moderate
Asphalt Plant	Severe
Auto Body Shop	Severe
Auto Dealership	Moderate
Automotive Repair Shop	Severe
Beverage Processing Plant	Severe
Blood Clinic	Severe
Campsite	Moderate
Campsite with RV Hook-ups or Dump-stations	Severe
Carwash	Severe
Chemical Plant	Severe
Church	Moderate
College	Moderate
Commercial Premises	Moderate to Severe
Concrete Plant	Severe
Dental Office	Moderate
Dental Surgery Facility	Severe
Dry Cleaning Plant	Severe
Dye Plant	Severe
Exhibition Ground	Severe
Farm	Moderate to Severe

Film Processing Facility	Severe
Fire Hydrant - Temporary Water Purposes	Severe
Fire Service - With Chemical Addition	Severe
Fire Service - Without Chemical Addition	Moderate
Fire Station	Moderate to Severe
Fish Farms or Hatchery	Severe
Food Processing Plant	Severe
Fuel Dispensing Facility	Moderate
Funeral Home	Severe
Garbage Transfer Facility	Severe
Gas Station with Automotive Repair	Severe
Golf Course	Moderate to Severe
Greenhouse	Severe
Grocer	Moderate
Hair Salon	Moderate
Hospital	Severe
Hotel	Moderate
Industrial Premises	Moderate to Severe
Institutional Premises	Moderate to Severe
Irrigation System - With Chemical Addition	Severe
Irrigation System - Without Chemical Addition	Moderate
Kennel	Moderate
Laboratory	Severe
Laundry (Commercial)	Severe
Laundry (Commercial, Coin-operated)	Moderate
Manufacturing Plant (Not specified)	Moderate to Severe
Marina (Pleasure-boat)	Moderate to Severe
Meat Packing Plant	Severe

Medical Clinic (Non-surgical)	Moderate
Medical Clinic (Surgical)	Severe
Medical Laboratories	Severe
Milk Processing Plant	Severe
Mining Facility	Severe
Mobile Home Park	Moderate
Mortuary or Morgue	Severe
Motel	Moderate
Motorcycle Repair Facility	Severe
Multi-service Interconnected Facility	Moderate to Severe
Multi-tenant Single-service Facility	Moderate
Nursing Home	Moderate
Office Building	Moderate
Oil Refinery	Severe
Paint Manufacturing Plant	Severe
Petroleum Processing or Storage Facility	Severe
Pharmaceutical Manufacturing Facility	Severe
Photo Processing Facility	Severe
Plants Using Radioactive Material	Severe
Plastic Manufacturing Plant	Severe
Poultry Farm	Severe
Power Generating Facility	Severe
Premises Where Access is Prohibited or Restricted	Severe
Printing Plant	Severe
Pulp and/or Paper Plant	Severe
Radiator Shop	Severe
Recycling Facility	Severe
Refinery, Petroleum Processing	Severe

Rendering Facility	Severe
Research Building	Severe
Residential Building - 4 Floors or More	Moderate to Severe
Residential Part 9 Building - With Auxiliary Supply	Severe
Residential Part 9 Building - Without Auxiliary Supply	Minor
Restaurant	Moderate
School (Elementary, Junior High, and Senior High)	Moderate
Seasonal Pressurized Connection	Moderate to Severe
Sewage Dump Station	Severe
Sewage Treatment Plant	Severe
Shopping Mall	Moderate
Slaughterhouse	Severe
Steam Plant	Severe
Steel Manufacturing Plant	Severe
Subway Station	Moderate to Severe
Swimming Pool Facility	Moderate
Townhouse - With Auxiliary Supply	Severe
Townhouse - Without Auxiliary Supply	Minor
Trackside Facility for Trains	Severe
University	Moderate to Severe
Veterinary Clinic	Moderate to Severe
Waste Disposal Plant	Severe
Wastewater Facility	Severe
Wastewater Pump Station	Severe
Wastewater Treatment Plant	Severe
Water Filling Station	Severe
Water Pumping Station	Severe
Water Park	Moderate

Water Treatment Plant	Severe
Water Treatment Pump Station	Severe
Zoo	Severe