

Environmental Services
City of Vaughan
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DRINKING WATER SUMMARY REPORT

2017

Description of the Vaughan Water Distribution System to fulfill the requirements under Schedule 22 of Ontario Regulation 170/03

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REPORT OVERVIEW

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This report has been created to fulfill the requirements under Schedule 22 of Ontario Regulation 170/03 (Summary Reports for municipalities).

This report is meant to provide an overview of the distribution system within the City of Vaughan. Set out within this report are:

- a system background,
- legislative requirements,
- Drinking Water Quality Management Standard (DWQMS) statement,
- reference to additional water summary reports
- water withdrawal summary

QUALITY MANAGEMENT SYSTEM POLICY

As the owners and operators of the City of Vaughan's water distribution system we are committed to:

- providing safe drinking water to our citizens and businesses
- complying with all applicable legislation and regulations as related to the provision of safe drinking water
- implementing and continually improving the effectiveness of our Quality Management System

This quality policy supports the Term of Council Service Excellence Strategy Map (2014-2018) statement to "Continue to ensure the safety and well-being of citizens."

DRINKING WATER SYSTEM PROFILE

System Number: 260003097	Class 2 Water Distribution Subsystem
Municipal Drinking Water Licence: 011-101	Drinking Water Works Permit: 011-201

REPORT OVERVIEW

PURPOSE

The completion of this report serves several purposes. First, it is intended to provide the Mayor and Members of Council, as “Owners” of the drinking water systems, an understanding of the status of the City of Vaughan’s drinking water system for the reporting period of January 1, 2017 to December 31, 2017.

Second, the Safe Drinking Water Act (2002) mandates that it is the municipalities responsibility to:

- Recognize that the people of Ontario are entitled to expect their drinking water to be safe; and,
- Provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing.

Finally, this report has also been created to satisfy the requirements of Schedule 22, O. Reg. 170/03 (Summary Reports for Municipalities).

For the 2017 reporting period, a separate Annual Report, which contains data related to annual testing and sampling parameters, was prepared to fulfill Section 11 of O. Reg. 170/03. This report was posted on the City’s website on February 12, 2018.

DRINKING WATER SYSTEM BACKGROUND

The City of Vaughan, Environmental Services Department is responsible for the distribution of safe drinking water throughout the City. In 2017, nearly 33 million litres of water was supplied to residences, industrial, commercial and institutional locations throughout the City.

The City purchases its drinking water from York Region prior to distribution. York Regions obtains this water from the City of Toronto and the Region of Peel. The water originates from Lake Ontario and is treated using a process called chloramination which ensures that the water continues to be safe to drink from the time of treatment until it reaches the consumer.



The Vaughan water distribution system includes 988 kilometres of watermains, 1 booster station and 1 pressure elevating station.

Chloramination is a disinfection method which uses chlorine combined with ammonia

LEGISLATIVE REQUIREMENTS

LEGISLATIVE REQUIREMENTS

The Act and the associated Regulations under which the City of Vaughan operates the Vaughan water distribution system are:

The Safe Drinking Water Act, 2002 (SDWA),

(a) Ontario Regulation 170/03 of the SDWA

- The overall legislative framework for operating a drinking water system

(b) Ontario Regulation 128/04 of the SDWA

- The certification of the City's drinking water system operators

(c) Ontario Regulation 169/03 of the SDWA

- The water sampling parameters according to Ontario Drinking Water Quality Standards

(d) Ontario Regulation 188/07 of the SDWA

- The licensing requirements of our drinking water system

ONTARIO REGULATION 170/03

The Drinking Water Systems Regulation (O. Reg. 170/03) establishes eight categories of drinking water systems, four of which are municipal, and the other four being non-municipal. The City of Vaughan's water system is a **Large Municipal Residential System**. It meets this requirement because it matches the legislative definition of a "municipal drinking water system that serves a major residential development and serves more than 100 private residences".

The Regulation contains schedules that address a number of requirements for a drinking water system. The following schedules are applicable to the City of Vaughan's distribution system:

- Schedule 6 Operational Checks, Sampling and Testing - General
- Schedule 7 Operational Checks
- Schedule 10 Microbiological Sampling and Testing
- Schedule 13 Chemical Sampling and Testing
- Schedule 15.1 Lead
- Schedule 16 Reporting Adverse Test Results and Other Problems
- Schedule 17 Corrective Action
- Schedule 22 Summary Reports for municipalities

LEGISLATIVE REQUIREMENTS

SCHEDULE 6 – OPERATIONAL CHECKS, SAMPLING AND TESTING – GENERAL

This section of the Regulation provides direction on sample frequency, form, handling, monitoring equipment and record keeping. Wording in this schedule provides the framework for performing drinking water samples as discussed in detail in Schedule 7.

SCHEDULE 7 – OPERATIONAL CHECKS

This schedule identifies responsibility for chlorine, turbidity, and fluoride testing, as well as defines tests that can be done by a certified water operator.

21,868 samples were taken to measure chlorine residuals in 2017

As required under this schedule, the City ensures that drinking water samples from the Vaughan Water Distribution System are taken and tested for a combined chlorine residual. The Vaughan Water Distribution System is a stand-alone system which means that the water which is received stays only within the City borders. Primary disinfection, testing for turbidity and fluoride addition is provided by the City of Toronto and the Region of Peel at their water treatment plants.



SCHEDULE 10 – MICROBIOLOGICAL SAMPLING AND TESTING

The frequency of microbiological sampling for the presence of bacteria and testing for the City is covered within this schedule. The number of required samples is based upon population size, and therefore in 2017 Vaughan was mandated to take a minimum of 134 microbiological samples per month for an annual total of 1,608 samples.

HPC measures the overall bacteriological quality of drinking water

The City exceeded the minimum requirement and collected a total of 1,970 microbiological samples for testing. Of these, more than 25% of them were additionally sampled for HPC (Heterotrophic Plate Count) to satisfy regulatory requirements.

LEGISLATIVE REQUIREMENTS

SCHEDULE 13 – CHEMICAL SAMPLING AND TESTING

This schedule outlines requirements for sampling of inorganics, organics, trihalomethanes (THMs), nitrate and nitrites, sodium, and fluoride.

Inorganics are natural components found in water and include calcium, aluminum, and magnesium

The Vaughan Water Distribution System, being a stand-alone distribution system, obtains treated drinking water from another large municipal drinking water systems that provides primary disinfection, and therefore they must test for the parameters listed above. Though the City itself was not required to test for inorganics, to maintain diligence, testing was performed for these in 2017.

The City also tested for trihalomethanes (THMs) and haloacetic acids (HAAs) – a chlorine disinfection byproduct - on a quarterly basis. All levels were below legislative limits.

SCHEDULE 15.1 – LEAD SAMPLING

This Schedule applies to sampling for lead and stipulates that there are two sample periods to consider – one during the winter and the other during the summer. Prior to 2011, the City was mandated to collect 100 samples from points in plumbing that serve private residences, 10 samples from points in plumbing that do not serve private residences and 20 samples from sampling points in the distribution system. These samples showed that lead is not a matter of significant health concern in the City, and therefore regulatory relief from testing in private residences was granted by the MOECC.

A reduced lead sampling schedule is followed in Vaughan with 10 distribution samples, obtained from fire hydrants throughout the City, taken twice per year and measured for pH, alkalinity and lead.

All results of lead sampling were below regulatory limits

HYDRANT
PREPARED FOR
SAMPLING



LEGISLATIVE REQUIREMENTS

SCHEDULE 16 – REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS

Reporting adverse test results and other problems is mandated under Schedule 16. The schedule defines the City's duty to report in the event that any drinking water test result exceeds any of the standards prescribed by Schedules 1, 2, or 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03), along with other specific parameters as identified within the schedule such as chlorine residuals, fluoride, and microbiological parameters.

No adverse water quality incident resulted in a risk to public health

The reporting requirement involves immediate oral and written notification to the Ministry of the Environment and Climate Changes Spills Action Centre (SAC), and the Medical Officer of Health at the York Region.

SCHEDULE 17 – CORRECTIVE ACTION

In conjunction with the requirements of Schedule 16 listed above, corrective actions are immediately undertaken to address adverse water quality incidents. Responses include watermain flushing and resampling of the identified area. The samples are tested for chlorine residuals and sent to the laboratory for further microbiological tests. Once complete results have been received from the laboratory, and are within the set regulatory limits, a notice of issue resolution is reported back to both the MOECC Spills Action Centre and the Medical Officer of Health at York Region. For 2017, a total of 23 adverse samples were reported for the Vaughan Distribution System which represented around 1% of all samples taken.

WATERMAIN FLUSHING PRIOR TO RESAMPLING



SCHEDULE 22 - SUMMARY REPORTS FOR MUNICIPALITIES, AND SECTION 11 OF O. REG. 170/03

Summary Reports for Municipalities for Large Municipal Residential systems are identified within Schedule 22. The requirements of the report are listed within it, and annual submissions for the previous calendar year, must be submitted to Members of Council, as "Owners" of the system, by March 31 of the following year. The City also posts the report on the City's website; hard copies of the report are available to the public at the City's Joint Operations Centre located at 2800 Rutherford Road, in Vaughan. The report is made available to any and all other interested parties.

LEGISLATIVE REQUIREMENTS

Similarly, Annual Reports defined under Section 11 of the Regulation are prepared for submission no later than February 28th of the following year. The requirements of the content set within this report are also defined in the legislation. The City ensures that effective steps are taken to advise users that copies of the report are available, without charge, and locations where copies of the report may be obtained. This report is also made available on the City of Vaughan’s website.

ONTARIO REGULATION 128/04 (CERTIFICATION OF DRINKING WATER SYSTEM OPERATORS)

This Regulation establishes the training and certification requirements that must be satisfied by certified water operators.

The City of Vaughan’s water operations staff operated the Vaughan Water Distribution System in 2017. Every operator is required to complete a total of 105 training hours within the three year operator certificate renewal period. Operator training consists of 36 hours of Ministry of Environment and Climate Change’s “Director Approved” class room training, plus 69 hours of On-the-Job practical training.

All 26 Certified Water Operators met and exceeded provincial training requirements

During the reporting period January 1, 2017, to December 31, 2017, all City of Vaughan’s drinking water operators held a valid operator certificate in compliance with O. Reg. 128/04.

ONTARIO REGULATION 169/03 - ONTARIO DRINKING WATER QUALITY STANDARDS

The Ontario Drinking Water Quality Standard (ODWQS) identifies the minimum level of drinking water quality acceptable for human consumption.

The City of Vaughan water sampling and testing program complied with the following standards:

- Schedule 1. Microbiological Standards
- Schedule 2. Chemical Standards
- Schedule 3. Radiological Standards

As this Regulation indicates the minimum standard, exceedance of these values represents the point of which adverse reporting and corrective action is triggered.

ONTARIO REGULATION 188/07 - LICENSING OF MUNICIPAL DRINKING WATER SYSTEMS

The Safe Drinking Water Act, 2002 (SDWA) requires Owners and Operating Authorities of municipal residential drinking water systems to have an accredited Operating Authority. In order to become accredited, an Operating Authority must establish and maintain a Quality Management System (QMS). Minimum requirements for the QMS are specified within the Drinking Water Quality Management Standard (DWQMS). Ontario Regulation 188/07 of the SDWA has been established to aid in the licensing of the municipal drinking water systems.

DRINKING WATER QUALITY MANAGEMENT STANDARD (DWQMS)

The Drinking Water Quality Management Standard has 21 elements which relate to quality management and the risk assessment/risk management of critical control points. The Operational Plan documents the processes and procedures that the Owner and Operating Authority have in place to meet the requirements of the DWQMS.

A full scope DWQMS accreditation certificate was formally issued by Canadian General Standards Board to the Corporation of the City of Vaughan on July 7, 2009. Based on obtaining DWQMS accreditation and submitting a Council approved Financial Plan, as required under the Sustainable Sewage and Water System Act, to the Ministry of Municipal Affairs and Housing, the City of Vaughan received its Drinking Water Works Permits and Municipal Drinking Water Licenses on July 27, 2009.

As participants of the full scope accreditation process for the DWQMS, the City of Vaughan is required to submit system information for an on-site verification audit to maintain accreditation status. The Vaughan Distribution System remains fully accredited.



ASSOCIATED DOCUMENTS & REPORTS

ASSOCIATED DOCUMENTS & REPORTS

City of Toronto, Annual Report and Annual Summary Report:

<https://www.toronto.ca/services-payments/water-environment/tap-water-in-toronto/tap-water-quality-system-reports/>

Region of Peel, Annual Report and Annual Summary Report:

<http://www.region.peel.on.ca/pw/water/quality/reports/index.htm>

York Region, Annual Report and Annual Summary Report:

http://www.york.ca/wps/portal/yorkhome/environment/yr/waterandwastewater/drinkingwaterqualityandmonitoring/!ut/p/a1/jZDLTsMwEEW_pYssiSful4adFR5OSkgrlZpmg1zqOhaJHRyXCL4eE7FA4jm7O3OuZu6gCpW00vxZSe6U0bx519XiPqVXKWNLyloZSYBCQTMcE7iYTz2w9QD8UBT-8mf_WIBtnuQSVR139YnSB4PKgTthud4PvHdiFKjcW6UflZajfDryRrkXj7RGK2f8TKINqsZ1GM8WLEoggyg-hfTyJrld5xjDHXwBWEE8EK_m54RFsMQfwC-BfSLZmN34vC3Vuynxp1txEFbY8Gh9u3au688CCGAYhIAalxsRPvAAvnPUpnc-72cQdW35es1ArdoN6elk8gajDqcs/dl5/d5/L2dBISEvZ0FBIS9nQSEh/#.Woxu1oPwaUk

CONTACT INFORMATION

ANNUAL WATER TAKING FROM YORK REGION

York Region receives treated water from the City of Toronto and the Region of Peel, and supplies it to the City of Vaughan for distribution. The total volume of water supplied from York Region to the Vaughan Distribution System for the reporting period of January 1, 2017 to December 31, 2017 was 32,967,944.88 m³.

Monthly flows for the Vaughan Water Distribution System are indicated in the table below:

Month	Volume (m ³)
January	2,341,199.33
February	2,210,626.59
March	2,489,134.88
April	2,410,970.61
May	2,711,203.04
June	3,046,223.98
July	3,191,455.03
August	3,450,340.31
September	3,432,867.25
October	2,904,117.75
November	2,397,179.40
December	2,382,626.72
TOTAL	32,967,944.88

The Maximum Daily Flow for January 1, 2017 to December 31, 2017 is unavailable from York Region (the supplier) for the Vaughan Water Distribution System as these flows are also shared with the City of Markham and the Town of Richmond Hill.

Schedule 22, requires that if a system is receiving all of its water from another system under an agreement, a comparison of actual flow rates to the flow rates specified in the written agreement, needs to be provided. The City does not currently have a written agreement under subsection 5 (4) with the Regional Municipality of York. The City, along with the other area municipalities, rely on Sections 11 and 89 (b), of the Ontario Municipal Act with respect to the supply of water.

CONTACT INFORMATION

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