innservices

Water Operations

Annual Summary Report

~ Innisfil Heights Drinking Water System ~

DWS # 220005081

~ Town of Innisfil ~

Reporting Year - 2020

InnServices Utilities Inc.

Innisfil Heights Drinking Water System

Introduction

Effective January 1, 2016, the Town of Innisfil transferred ownership of its municipal drinking water systems to InnServices Utilities Inc. (InnServices). InnServices is a municipal service corporation, wholly-owned by the Town of Innisfil, charged with the responsibility to operate, maintain and expand the municipal drinking water systems that service the Town of Innisfil.
The Innisfil Heights Drinking Water System services a population of approximately 400, on 121 residential connections. There is a mix of commercial and industrial properties as well, with 54 commercial and 19 industrial connections. The distribution system is comprised of approximately 18 kilometers of polyvinylchloride piping, 145 hydrants and 105 valves.
The system relies on 2 drilled wells as its source of groundwater. The wells feed directly into the reservoir, which is equipped with a bulk water transfer station for water haulers.

InnServices has prepared this Summary Report for the operations conducted during the 2020 calendar year.

This Summary Report has been prepared to meet the following commitments:

- To provide InnServices Utilities Inc. Board of Directors, as “Owners” of the drinking water system, a summary of the operations and maintenance of the Innisfil Heights Drinking Water System that took place during the reporting period of January 1 to December 31, 2020;
- To provide a status update of the systems capabilities and capacities as of December 31, 2020;
- To satisfy the requirements of O. Reg 170/03 Section 11, and
- To satisfy the requirements of O. Reg. 170/03 Schedule 22

The Annual Summary Report identifies specific details regarding the overall quality of the drinking water submitted to the Ministry of the Environment Conservation and Parks (MECP) for the Innisfil Heights Drinking Water System and is available on the Town of Innisfil website (https://innisfil.ca/annual-reports-drinking-water) and at InnServices Headquarters at 7251 Yonge St., Innisfil, Ontario.

This report provides information to the InnServices Board of Directors and Town of Innisfil Mayor and Council related to the operations, maintenance, drinking water quality, and system capacities of the Innisfil Heights Drinking Water System, which aids decision making related to system expansion needs, and assists Board and Council in meeting their Statutory Standard of Care requirements.

MECP Approvals

The Innisfil Heights Drinking Water System is classified as a Large Municipal Residential drinking water system, as defined by Ontario Regulation 170/03.

The **Safe Drinking Water Act, 2002** requires that the Owner of a municipal drinking water system have MECP approvals in the form of a Drinking Water Works Permit (DWWP) and a Municipal Drinking Water Licence (MDWL). The DWWP provides a description of the overall system and provides the authority to establish or alter the drinking water system. The MDWL provides the authority to use or operate the system.

The Innisfil Heights DWS operated for the majority of the year under
DWWP # 120-205, Issue #4 (Issued October 19, 2018)
MDWL # 120-105, Issue #2 (Issued January 8, 2016)

New DWWP and MDWL were issued December 15, 2020:
DWWP # 120-205, Issue #5
MDWL # 120-105, Issue #3

For the reporting period covered in this report, InnServices Utilities Inc. was defined as the Operating Authority of the Innisfil Heights Drinking Water System.

InnServices Utilities Inc. has established and maintains accreditation to the Drinking Water Quality Management Standard Version 2-2017 (DWQMS) under Certificate of Accreditation # 0136878, issued November 4, 2020 by SAI Global. The Certificate of Accreditation expires September 20, 2023.

Drinking Water System

The Innisfil Heights Drinking Water system relies on two drilled wells as its source of groundwater.
Sodium hypochlorite is used for primary disinfection.

A 200 kilowatt standby generator at the pump house and a 250 kilowatt generator at the reservoir ensure that the system is provided with water in the event of a power failure. An in-ground water storage reservoir has a capacity of 2200 cubic meters, and is also equipped with a bulk water transfer station for water haulers.

Expenses incurred related to well and well pump inspections and repairs amounted to approximately $12,200.

Analytical Laboratory Water Quality Monitoring

Bacteriological Analysis

Bacteriological testing is completed to verify that no microbiological contamination of the treated drinking water can be detected. Raw water is also analyzed to inform operations of the level of microbiological contamination the drinking water system is contending with. Bacteriological monitoring for the reporting period was conducted as required by Ontario Regulation 170/03 or as amended.
SGS Environmental Services, Lakefield, Ontario, conducted the bacteriological analysis of the drinking water.

Zero (0) items of non-compliance with the Ontario Drinking Water Standards related to bacteriological analyses occurred during the reporting period.

Microbiological testing done under the Schedule 10 of Regulation 170/03, during this reporting period:

	Number of Samples	*Range of E.Coli Results Min. – Max.*	*Range of Total Coliform Results Min. – Max.*	*Number of HPC Samples*	*Range of HPC Results Min. – Max.*
Raw	100	0-0	0-19	n/a	n/a
Treated	52	0-0	0-0	52	0-3
Distribution	208	0-0	0-0	208	0-21

Chemical Analysis

Chemical analysis of this water supply is conducted as required by Ontario Regulation 170/03.
SGS Environmental Services, Lakefield, Ontario, conducted the required chemical analyses for the drinking water system during the reporting period. This lab as well as any laboratories to which they sub-contract certain types of analyses are licensed by the MECP and accredited by the Canadian Association for Laboratory Accreditation (CALA) and/or Standard Council Canada (SCC).
Zero (0) incidents of non-compliance with Ontario Drinking Water Standards related to chemical analysis were reported during 2020.
A summary of all analytical results for Organic and Inorganic testing is attached in Appendix A.

Continuous Water Quality Monitoring

Free Chlorine Residual

The Innisfil Heights Drinking Water System utilizes NSF® certified 12% sodium hypochlorite to meet primary disinfection requirements and provide an adequate chlorine residual for secondary disinfection requirements.

A requirement of O.Reg. 170/03 and the Procedure for Disinfection of Drinking Water in Ontario is that the chlorine residual must be recorded at the point directly after primary disinfection is achieved, at a frequency of every 5 minutes. Grab samples are taken and analyzed for free chlorine residual (FCR) when microbiological samples are taken throughout the distribution system. Ontario Regulation 170/03 requires that sufficient residual be available in the water to achieve a residual of greater than 0.05 mg/L at all points in the distribution system.

Zero (0) incidents of non-compliance with the Procedure for Disinfection of Drinking Water in Ontario were reported during 2020.

A summary of the chlorination monitoring that took place directly after primary disinfection is achieved is depicted below:

	Number of Grab Samples	*Range of Results (min #)-(max #)*	*Unit of Measure*
Turbidity	N/A	N/A	N/A
Chlorine	8760	0.291– 5	mg/L
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

All instances where Free Chlorine Residual (FCR) was less than 1.00 mg/L were investigated and confirmed to coincide with a power outage, calibration activities, and/or appropriate corrective actions were taken to remove non-compliant water from the system.

Plant Flow Monitoring

Raw Water Takings

The Innisfil Heights Drinking Water System utilizes groundwater wells as its raw water source. The raw water takings from groundwater wells are authorized by the MECP through a Permit to Take Water (PTTW # 6777-B4GNWB, issued October 19, 2018).

Raw water takings for 2020 were reported to the electronic Water Taking Recording System (WTRS).

Table 1 below provides a summary of the Innisfil Heights Drinking Water System's raw water takings in 2020

Table 1: Summary of 2020 Raw Water Takings

	Units	PTTW # 6777-B4GNWB		2020 Takings
		Well #2	Well #3	
PTTW Daily Maximum	(m^3/day)	2,937.60	3,110.40	3,110.40
Maximum Day	(m^3/day)	1,693	1,439	1,693
Average Day	(m^3/day)	240	169	409
Total Annual Takings	(m^3)	87,803	61,931	149,734

Performance Summary

The volume of daily treated water delivered to the distribution system is authorized by the MECP through the designation of a Rated Capacity within the Municipal Drinking Water Licence (MDWL). The Treated Water volume is essentially the same as the Raw Water Takings. The well system is operating at approximately 13% of the rated capacity of 3110 m^3/day. At the maximum flow, treated water demand flow in 2020 was 54% of the rated capacity.

Table 2 (following page) provides a summary of the Innisfil Heights Drinking Water System's treated water demand in 2020.
Zero (0) incidents of non-compliance related to the rated capacity were reported in 2020.

Table 2: Summary of 2020 Treated Water Demand

	Innisfil Heights Well system
System Rated Capacity (m^3/day)	3110
Maximum Day (m^3/day)	1693
Average Day (m^3/day)	409
Total Annual Demand (m^3)	149,734
System Performance- rated capacity	13.15%
System Performance-at Maximum Flow	54.4%

Distribution Flow Monitoring

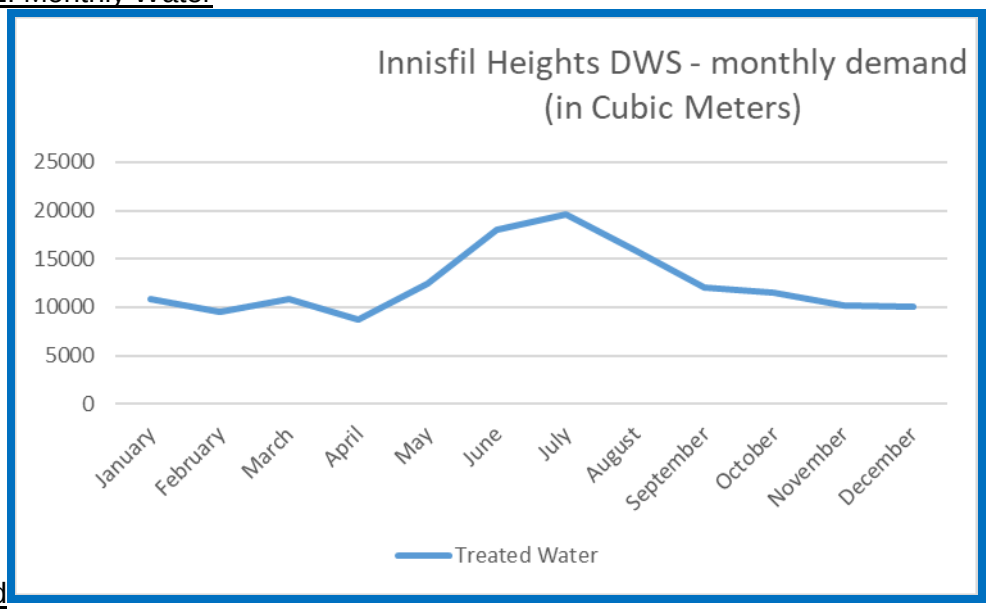
The Innisfil Heights Drinking Water System (DWS) produces water for distribution to homes and businesses within the Innisfil Heights area of the Town of Innisfil (TOI).

Table 3 and Graph 1(below and following page), demonstrate the monthly volumes of drinking water directed toward the Innisfil Heights distribution systems in 2020.

Table 3: Monthly Water Production

Month	Treated Water Production (m^3)
January	10827
February	9566
March	10874
April	8732
May	12467
June	18044
July	19648
August	15932
September	11993
October	11506
November	10148
December	9997
Annual Total	**149734**

Graph 1: Monthly Water demand



MECP Annual Inspection

An Unannounced Focused inspection was conducted on December 24, 2020 by the Ministry of the Environment, Conservation and Parks. The inspection covered the period of May 19, 2019 to December 24, 2020.

Items of Non Compliance
There were zero (0) items of non-compliance identified during the inspection period.

Provincial Officer's Orders
No Provincial Officer's Orders were issued in the Report as a result of the 2020 inspection.

Inspection Risk Rating
This year the Innisfil Heights system received an Inspection Risk Rating of 0%, resulting in a Compliance Rating of 100%.

Appendix A – Chemical Analysis

Organic and Inorganic parameters testing is required at least once every 36 months from a raw water supply that is ground water.

Inorganic Parameter	*Sample Date*	*Result Value*	*Unit of Measure*	*Exceedance*
Antimony	20-Nov-2018	0.03	µg/L	No
Arsenic	20-Nov-2018	<0.2	µg/L	No
Barium	20-Nov-2018	129	µg/L	No
Boron	20-Nov-2018	16	µg/L	No
Cadmium	20-Nov-2018	<0.003	µg/L	No
Chromium	20-Nov-2018	0.09	µg/L	No
Mercury	20-Nov-2018	<0.01	µg/L	No
Selenium	20-Nov-2018	<0.04	µg/L	No
Uranium	20-Nov-2018	0.185	µg/L	No

Organic Parameter	*Sample Date*	*Result Value*	*Unit of Measure*	*Exceedance*
Alachlor	20-Nov-2018	<0.02	µg/L	No
Atrazine + N-dealkylated metobolites	20-Nov-2018	<0.01	µg/L	No
Azinphos-methyl	20-Nov-2018	<0.05	µg/L	No
Benzene	20-Nov-2018	<0.32	µg/L	No
Benzo(a)pyrene	20-Nov-2018	<0.004	µg/L	No
Bromoxynil	20-Nov-2018	<0.33	µg/L	No
Carbaryl	20-Nov-2018	<0.05	µg/L	No
Carbofuran	20-Nov-2018	<0.01	µg/L	No
Carbon Tetrachloride	20-Nov-2018	<0.16	µg/L	No
Chlorpyrifos	20-Nov-2018	<0.02	µg/L	No
Diazinon	20-Nov-2018	<0.02	µg/L	No
Dicamba	20-Nov-2018	<0.20	µg/L	No
1,2-Dichlorobenzene	20-Nov-2018	<0.41	µg/L	No
1,4-Dichlorobenzene	20-Nov-2018	<0.36	µg/L	No
1,2-Dichloroethane	20-Nov-2018	<0.35	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	20-Nov-2018	<0.33	µg/L	No

Dichloromethane	20-Nov-2018	<0.35	µg/L	No
2-4 Dichlorophenol	20-Nov-2018	<0.15	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	20-Nov-2018	<0.19	µg/L	No
Diclofop-methyl	20-Nov-2018	<0.40	µg/L	No
Dimethoate	20-Nov-2018	<0.03	µg/L	No
Diquat	20-Nov-2018	<1	µg/L	No
Diuron	20-Nov-2018	<0.03	µg/L	No
Glyphosate	20-Nov-2018	<1	µg/L	No
Malathion	20-Nov-2018	<0.02	µg/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	20-Nov-2018	<0.00012	Mg/L	No
Metolachlor	20-Nov-2018	<0.01	µg/L	No
Metribuzin	20-Nov-2018	<0.02	µg/L	No
Monochlorobenzene	20-Nov-2018	<0.3	µg/L	No
Paraquat	20-Nov-2018	<1	µg/L	No
Pentachlorophenol	20-Nov-2018	<0.15	µg/L	No
Phorate	20-Nov-2018	<0.01	µg/L	No
Picloram	20-Nov-2018	<1	µg/L	No
Polychlorinated Biphenyls(PCB)	20-Nov-2018	<0.04	µg/L	No
Prometryne	20-Nov-2018	<0.03	µg/L	No
Simazine	20-Nov-2018	<0.03	µg/L	No
Terbufos	20-Nov-2018	<0.01	µg/L	No
Tetrachloroethylene	20-Nov-2018	<0.35	µg/L	No
2,3,4,6-Tetrachlorophenol	20-Nov-2018	<0.2	µg/L	No
Triallate	20-Nov-2018	<0.01	µg/L	No
Trichloroethylene	20-Nov-2018	<0.44	µg/L	No
2,4,6-Trichlorophenol	20-Nov-2018	<0.25	µg/L	No
Trifluralin	20-Nov-2018	<0.02	µg/L	No

Vinyl Chloride	20-Nov-2018	<0.17	µg/L	No

One water sample is taken every 60 months to test for Sodium and Fluoride

Parameter	*Date of Sample*	*Result*	*Unit of Measure*	*Exceedance*
Sodium	14-Dec-2016	8.3	mg/L	No
Fluoride	14-Dec-2016	<0.1	mg/L	No

One water sample is taken every 3 months and tested for nitrate and nitrite

Parameter	*Date of latest Sample*	*Result*	*Unit of Measure*	*Exceedance*
Nitrite	9-Nov-2020	<0.003	mg/L	No
Nitrate	9-Nov-2020	<0.006	mg/L	No

Distribution Sampling

Based on results of community lead sampling program conducted, Innisfil Heights DWS has qualified for reduced sampling protocol as per O. Reg .170/03 Schedule 15.1. Under this protocol, only alkalinity and pH are required from 2 sampling points for each summer and winter period. Lead is tested in the distribution system every third 12-month period.

Location Type	*Number of Samples*	*Range of Alkalinity Results Min. – Max.*	*Range of Lead Results- 2020*	*Number of Exceedances*
		Aesthetic Objective 30-500 Mg/L	*Maximum Concentration 10 µg/L*	
Distribution	4	188-203 Mg/L	0.01-0.19 µg/L	0

Trihalomethanes (THMs) and Haloacetic Acids (HAAs) are sampled on a quarterly basis in accordance with O. Reg. 170/03 Schedule 13. The most recent sample results:

Parameter	*Sample Date*	*Result Value*	*Maximum Allowable Concentration*
THM (latest rolling annual average)	09-Nov-2020	22.33 µg/L	100 µg/L
HAA (latest rolling annual average)	09-Nov-2020	9.49 µg/L	80 µg/L

Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards. (Lead and THM only)

Parameter	*Result Value*	*Unit of Measure*	*Date of Sample*
N/A			