

Wingham Drinking Water System- 2023 Compliance Summary

This document is a compliance summary for the Wingham water supply for the year 2023 as per Reg 170/03 Schedule 22. A full summary of the water systems test results, flows and significant activities were submitted on February 5, 2024

System Description

The Wingham Drinking Water System (DWS # **220001502**), is characterized as a “secure ground water” system and is classified as a large municipal residential system. The system consists of two wells – Well 3 with a rated capacity of 6537 m³/day and Well 4 with a rated capacity of 5270 m³/d. Treatment at both sites consists of chlorination (sodium hypochlorite) and iron sequestration (sodium silicate) treatment. The Well 3 system is located at 200 Water St. Well #4 is located at 23 Albert St. The distribution system serves the community of Wingham with a population of approximately 2950 residents, 1150 customer services and 29 km of various size and material water main.

The system is owned by the Corporation of the Township of North Huron and operated by Veolia Water Canada, the Operating Authority.

The Well 3 supply system consists of a 323 mm drilled to a depth of 102.1m fitted with variable speed pump capable of pumping the volume specified in the MOE Permit to Take Water. The raw water consistently has substantial naturally occurring hardness and relatively high iron content that requires sequestering to prevent discoloration in the distribution system which is typical of all drilled wells in the area. Chlorine, (a critical process) and an iron sequestering agent are added to the raw water prior to entry into a baffled contact tank that satisfies the chlorine contact time required with adequate chlorine residual to disinfect.

From the contact tank/reservoir the water flows to the distribution/standpipe that maintains adequate system pressure. The well is cycled by a level controller that starts and stops the well 3/high lift pumps. Emergency power is supplied by a portable diesel generator that allows operation of the equipment during extended power interruptions. The treated drinking water is monitored for chlorine residual and turbidity by on-line equipment connected to SCADA/auto dialer. The monitoring system will alert the on-call operator to respond if the set points are breached. The chlorine and turbidity analysis data levels are stored on a data logger.

The distribution system has elevated storage to maintain pressure. Critical processes to ensure safe water are adequate chlorination and maintenance of system pressure. The monitors activate an alarm through the auto-dialer if the set points are breached.

Well #4 is a 356 mm drilled well, 98.65 m deep, complete with a stainless-steel liner and equipped with a submersible vertical turbine pump, well level sensor to measure static level and provide well level monitoring. The system has been designed to operate to alternate the duty wells between well 3 and 4.

The #4 well house is equipped with back-up diesel generator, sodium hypochlorite(2) and sodium silicate pump, a baffled chlorine contact tank equipped with 3 high lift pumps, on-line monitoring, alarm generation and auto-dialer.

Back-up power is supplied by one diesel standby generator with automatic transfer switch and double wall fuel tank.

The water quality is monitored and data-logged by a SCADA system with breaches of set-points going to an alarm dialer.

Disinfection is achieved on the Wingham well supply through the use of 12% sodium hypochlorite. In the well houses this chemical is added prior to the water entering the chlorine contact facilities at dosages high enough to achieve both primary and secondary disinfection objectives.

The distribution system is constructed with a combination of ductile iron, cast iron, PVC and high density polyethylene piping with polyethylene, copper and galvanized steel services. There are known lead services, of which have been sampled at the initial plumbing sampling program, where no elevated levels were found due to the service material. The iron sequestering also has dual purpose of corrosion control, coupled with very stable pH and substantial alkalinity and hardness that inhibits corrosion that controls lead corrosion. These services will be replaced when street reconstruction takes place.

The system has approximately 135 fire hydrants.

The chlorine dosages range varies with the chlorine demand of the raw water.

The free chlorine residual is monitored at the point of entry to the distribution system, by an on-line chlorine analyzer, with a target residual of > 1.00 mg/l and < 1.30 mg/l.

The Wingham well supply Operated on PTTW (Permit to Take Water) #1450-B38HKS which expires on August 1, 2028 which allows 11,807 cubic meters per day to be pumped from the combined wells.

The Wingham Drinking Water System (treatment Subsystem) has maximum flows as specified in the Municipal Drinking Water License (MDWL) 090-102, Issue 4 and Drinking Water Works Permit (DWWP) 090-202), Issue 4. The maximum total daily flow is 11,807 cubic meters per day.

The treated water is monitored by an on-line chlorine analyzer.

Typical system pressure ranges from 40 psi to 85 psi.

Flows

The Wingham well supply has 1 PTTW (Permit to Take Water) #1450-B38HKS which expires on August 1, 2028, which allows 11,807 cubic meters per day to be pumped from the combined wells.

Well #3 being permitted to take up to 6537 cubic meters a day and well #4 being able to take up to 5270 cubic meters a day. In 2023 the peak flow for Well #3 was 1718 Cubic meters or 26.3% capacity, for well #4 the peak flow was 1336 cubic meters or 25.4% capacity.

Below is a summary of the Monthly total flows combined Well 3 and Well 4 as well as the Max daily flow for each month

Month	Total Flow m3	Max Daily Flow
January	27843	1220
February	25986	1281
March	27883	1399
April	26511	1216
May	35310	1919
June	36819	1806
July	33207	1978
August	27287	1145
September	30395	1575
October	28042	1725
November	27223	1119
December	28939	1527
Total	355445	
Min	25986	1119
Max	36819	1978
Avg	29620	974

Annual Ontario Ministry of Environment Conservation and Parks Inspection

The Ministry of Environment inspection was completed by Shayne Finlay on July 20- Aug 25 2023.

There were no non-compliances noted and the final inspection rating was 100%

Boil Water Advisory

There were no Boil Water Advisories Issued for the Wingham Drinking water system in 2023

Precautionary Boil Water Notices

There were no Precautionary Boil Water Notices issued in 2023.

Adverse Water Quality indicators

There were no Adverse Water Quality Indicators in 2023

Exceedances

There were no exceedances to report during 2023 for the Wingham drinking water system

Infrastructure Assessment

Regular contact is maintained with the Township of North Huron Representatives. The Jobs-Plus Maintenance program is continually updated with preventative and corrective maintenance issues. A complete summary can be forwarded to the client upon their request. Through regular communication between the operating authority and the client, capital items are discussed. A list of the capital items and Infrastructure review were forwarded to North Huron' representatives on October 2022 for the Operating year 2023, this was reviewed again with the New Hire Public Works Director prior to the Township Budget approvals

DWQMS

The annual Management Review was conducted by the operating authority on November 15, 2023 as per the DWQMS requirement in Element 20, The Management Review Report and Action Items were forwarded to the Owner on Dec 8, 2023. These regular discussions between the client and the operating authority for this water system are continued throughout the year by emails, phone calls, and meetings as per the requirements of Element 15 of the DWQMS.

The Internal Audit was completed Dec 11-12, 2023 and the annual Risk Assessment Review was completed October 23, 2023.

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