Ministry of the Environment

WEST ELGIN DRINKING WATER SYSTEM

Drinking Water System Inspection Report

DWS Number:	260091117
Inspection Number:	1-954Z4
Date of Inspection:	Feb 01, 2012
Inspected By:	Barry Moncrieff

Table of Contents

OWNER INFORMATION:

Company Name:	WEST ELGIN, THE CORPORATION OF THE MUNICIPALITY OF		
Street Number:	22413	**Unit Identifier:**	
Street Name:	HOSKINS Line		
City:	RODNEY		
Province:	ON	**Postal Code:**	N0L 2C0

CONTACT INFORMATION

Type:	Owner	**Name:**	Joanne Groch
Phone:	(519) 785-0560	**Fax:**	(519) 785-0644
Email:	jgroch@westelgin.net		
Title:	Chief Administrative Officer		

Type:	Operating Authority	**Name:**	Dale Lebritton
Phone:	(519) 768-9925	**Fax:**	(519) 785-0644
Email:	dlebritton@ocwa.com		
Title:	Senior Operations Manager, Elgin Middlesex Hub		

Type:	Operating Authority	**Name:**	Cindy Sigurdson
Phone:	(519) 768-9925	**Fax:**	(519) 785-0644
Email:	csigurdson@ocwa.com		
Title:	Process and Compliance Technician		

Type:	Operating Authority	**Name:**	Mike Kilita
Phone:	(519) 785-0560	**Fax:**	(519) 785-0644
Email:	watersupt@westelgin.net		
Title:	Water Superintendent		

INSPECTION DETAILS:

DWS Name:	WEST ELGIN DRINKING WATER SYSTEM
DWS Address:	9210 GRAHAM RD WEST LORNE N0L 2P0
County/District:	West Elgin
MOE District/Area Office:	London District
Health Unit:	ELGIN-ST. THOMAS HEALTH UNIT
Conservation Authority	N/A
MNR Office:	N/A
DWS Category:	Large Municipal Residential
DWS Number:	260091117
Inspection Type:	Announced
Inspection Number:	1-954Z4
Date of Inspection:	Feb 01, 2012
Date of Previous Inspection:	Feb 18, 2011

DRINKING WATER SYSTEM COMPONENTS DESCRIPTION

Site (Name): Raw Water Intake
Type: Source **Sub Type:** Surface Water
Comments:

Raw water is drawn through a 700 mm diameter, polyethylene, primary intake pipe located 610 m into Lake Erie at a depth of 5.7 m. An additional 600 mm diameter stand-by intake is located along the shoreline adjacent to the low lift pumping station. The primary intake pipe is equipped with one (1) 2-inch chlorine solution line for zebra mussel control. A raw water sampling line extends through the primary intake pipe into the intake crib, prior to pre-chlorination. There is no chlorine or raw water sampling line installed for the stand-by intake pipe.

The low lift pumps and wet wells are housed in the low lift pumping station. The chlorination equipment is located inside the chemical building, adjacent to the low lift pumping station.

Raw water is conveyed from the low lift pumping station via an inlet valve chamber by four (4) fixed speed vertical turbine pumps each rated at 85L/s at a dynamic head of 77.4m. The low lift station is equipped with two (2) 10 mm coarse wire mesh stainless steel screens which filter larger debris before the source water is transported to four (4) wet wells. Each wet well is equipped with a sonic level sensor to monitor water levels. Two (2) 1500m long and 400mm diameter raw water transmission lines provide raw water from the low lift pumping station to the new water treatment plant.

Backup power is supplied by a 200kW generator located at the low lift electrical building.

Site (Name): Water Treatment Plant
Type: Treated Water POE **Sub Type:** Treatment Facility

Comments:

The new water treatment plant building is located approximately one kilometer north of the original facility which has since been decommissioned.

Water is pumped from the low lift pumping station and directed to four (4) self cleaning motorized microstrainers. Downstream of the microstrainers is an on-line continuous turbidity meter and chlorine residual analyzer which is used in conjunction with the addition of chlorine for zebra mussel control.

Water which has passed through the microstrainers is pumped to one of four (4) membrane filtration racks each rated at 75 L/s net capacity. The filtration racks also consist of individual flow and turbidity meters. The SCADA system is programmed so that there is an automatic shutdown when turbidity from the individual filter racks exceed 0.3 NTU for 600 seconds (10 minutes).

There is a backwash and secondary recovery system in place which consists of one (1) 17m³ reverse filtrate recovery tank, two (2) reverse filtrate (backwash) pumps, two (2) reverse filtrate recovery (backwash recovery) pumps and two (2) reverse filtrate recovery strainer (strainer backwash recovery) together with appropriate valving and piping.

Sodium hypochlorite solution addition for primary and secondary disinfection occurs upstream of the treated water reservoir for primary disinfection and downstream of the high-lift pumps for secondary disinfection residual maintenance. Sodium hypochlorite for primary disinfection is applied by one of two (2) chemical metering pumps, each rated at 150L/hr prior to entering one of two (2) 2,276m³ above grade glass fused steel storage tanks. Trim sodium hypochlorite addition is applied by one of two (2) chemical metering pumps, each rated at 60L/hr.

UV can be used for backup primary disinfection if there is a failure in the sodium hypochlorite system.

Backup power is supplied by a 750kW generator, complete with fuel tank and exhaust system, at the membrane filtration plant.

Site (Name): Water Treatment Plant

Type: Other **Sub Type:** Treatment Facility

Comments:

Water directed from the membrane filtration process can also undergo Advanced Oxidation Process (AOP) or backup disinfection. The AOP system consists of two (2) 300mm diameter Ultra Violet (UV) reactors each rated at 83L/s in AOP mode or 166L/s when used in back up disinfection mode. The setup consists of high intensity medium pressure lamps providing a dose of 40mJ/cm², UV intensity sensor and an automatic on-line sleeve cleaning system. The AOP system utilizes UV light, Hydrogen Peroxide and Sodium Hypochlorite for taste and odour control. Hydrogen peroxide is added prior to the UV reactors via two (2) chemical metering pumps, rated at approximately 11 L/hr.

Site (Name): Process Wastewater

Type: Other **Sub Type:** Other

Comments:

Residual Management consists of one (1) outdoor concrete settling tank with a gravity overflow to a two basin constructed wetland prior to overflow to the municipal drain. Process waste water is generated through back filtration, Enhanced Flux Maintenance (EFM) and Clean-In-Place (CIP) processes. These processes are used for cleaning membrane modules which produce spent chemical wash solution which is then pumped to a neutralization tank. Prior to pumping the wastewater to the settling tank the solution is treated to a neutral pH and zero free chlorine residual.

Citric Acid and Caustic Soda for the CIP membrane cleaning process is supplied by two (2) (1-citric and 1-caustic chemical pump), two (2) 9.5m³ CIP chemical tanks and two (2) 454L day tanks. Sodium bisulphate solution for the neutralization process is supplied by one (1) chemical pump which pumps from one (1) 454L day tank.

Site (Name): West Lorne Standpipe
Type: Other **Sub Type:** Reservoir
Comments:
Water storage consists of a 38.6 metre steel standpipe constructed in 1984. It has a capacity of 2889 cubic metres and includes a valve chamber with interconnected piping, associated valves and appurtenances.

Site (Name): Rodney Tower
Type: Other **Sub Type:** Reservoir
Comments:
An elevated water storage tank that consists of a 40 metre metal tower constructed in 1993. It has a capacity of 1200 cubic metres and contains an overflow pipe and drain pipe which discharge into a storm sewer. The tower houses an altitude valve and associated piping and valves as well as electrical and control panels.

Site (Name): Distribution System
Type: Other **Sub Type:** Other
Comments:
The West Elgin Water Treatment Plant supplies water to the following communities: Eagle, New Glasgow, Rodney, West Lorne, Dutton-Dunwich, Southwest Middlesex, Bothwell and Newbury as well as a Highway #401 Service Station. The primary transmission line from the Water Treatment Plant consists of 6 km of 16" AC line installed in 1980 and ends at the West Lorne Standpipe. The West Elgin Water Supply System serves a population of approximately 2700 individuals in the municipality of West Elgin. The West Elgin Distribution System consists of the Rodney Tower, approximately 190 fire hydrants, five metering chambers and seven air release chamber. The meter pits on Talbot Line, Silver Clay, Marsh Line and Pioneer serve the Rodney area.

Site (Name): Iona Re-Chlorination Facility
Type: Other **Sub Type:** Treatment Facility
Comments:
The Iona Re-Chlorination Facility is composed of one (1) re-chlorination station with an above-ground building located near the hamlet of Iona on the Talbot Line at Iona Road (NAD 27, UTM Zone 17, 0467141 m East, 4730881 m North). The facility includes one (1) constant speed sodium hypochlorite solution feed pump, together with associated chemical solution feed lines, control panel, ventilation system,valves and piping. The chlorination system includes:

- secondary/standby equipment for the existing sodium hypochlorite feed system including one (1) sodium hypochorite metering pump rated at 1.29 L/h and paced to flow;

- one (1) 200 L sodium hypochlorite solution tank;

- secondary spill containment ; and

- two (2) on-line free chlorine residual analyzers, one (1) analyzer measuring the residual of the incoming supply and one (1) analyzer measuring the residual of the outgoing supply.

INSPECTION SUMMARY

INTRODUCTION

* **The primary focus of this inspection is to confirm compliance with Ministry of the Environment legislation and authorizing documents such as Orders and Certificates of Approval, as well as evaluating conformance with Ministry drinking water related policies and guidelines during the inspection period.**

The Ministry is implementing a rigorous and comprehensive approach in the inspection of drinking water systems that keys on the source, treatment and distribution components of the system as well as management practices.

This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg.170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

This report is based on a "focused" inspection of your system. Although the inspection involved fewer activities than those normally undertaken by a detailed inspection, it contained most of the elements required to assess key compliance issues.

Your system was chosen for a focused inspection during this inspection cycle because inspection findings over the past three years were such that the number of violations were minimal or non existent, there were few or no orders issued to you that were of significance in the maintenance of water potability and there were no deficiencies as defined in O. Reg. 172/03. The undertaking of a focused inspection at your drinking water system during this year's inspection cycle does not ensure that a similar type of inspection will be conducted at any point in the future.

Documents and records reviewed with this report include, but are not limited to:

- Ministry of the Environment Municipal Drinking Water Licence (Licence No. 043-101, Issue No. 2)

- Ministry of the Environment Drinking Water Works Permit (Permit No. 043-201, Issue No. 2)

- The Ministry of the Environment Permit To Take Water #0815-6QQH9A

- The Municipality of West Elgin Operations and Maintenance Manual for the Distribution System

- The Ontario Clean Water Agency Operations and Maintenance Manual for the Water Treatment Plant

- The Municipality of West Elgin and Ontario Clean Water Agency operational and maintenance documents and records from February 1, 2011 to December 15, 2011

SOURCE

* **Measures were in place to protect the water source in accordance with a Permit and Licence or Approval issued under Part V of the SDWA.**

The Lower Thames Valley Conservation Authority (LTVCA) has the mandate to comply with the requirements of the Ministry of the Environment Clean Water Act (CWA). The Lower Thames Valley Assessment Report for the West Elgin Water Drinking Water System under the CWA defines the Intake Protection Zones (IPZ) for primary and emergency intakes as well as potential threats to the drinking water source. The Source Protection Committee is presently in the process of producing a Source Protection Plan for this water system. Further details pertaining to the Assessment Report and the Source Protection Plan can be obtained the LTVCA.

CAPACITY ASSESSMENT

* **There was sufficient monitoring of flow as required by the Permit and Licence or Approval issued under Part V of the SDWA**

  The owner and operating authorities for the West Elgin Drinking Water System has installed flow meters both within the water treatment plant and at locations throughout the distribution system that allow for accurate monitoring of water volumes at all times. These locations include:

  - flow volumes for source water (Iona Interconnect and Lake Erie), at locations within the plant as well as volumes leaving the plant

  - flow volumes at Eagle, Marsh Line, Silver Clay, and the West Lorne and Rodney Water Towers

  Flows are monitored and recorded through the SCADA system located at the water treatment plant. There is a read only SCADA monitor located at the Rodney Water Tower to allow municipal staff access to system monitoring data.

* **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Permit and Licence or Approval issued under Part V of the SDWA.**

  The Municipal Drinking Water Licence 043-101 Issue No. 2 Schedule C Condition 1 (Performance Limits) for the West Elgin Drinking Water System (WEDWS) has a rated capacity of 12,160 and 1,600 cubic meters per day for the West Elgin Water Treatment Plant and the Iona Interconnect, respectively. According to the flow measurement records maintained by the Ontario Clean Water Agency, the WEDWS operates at about 25-35% of the rated capacity throughout the year.

TREATMENT PROCESSES

* **The owner had ensured that all equipment was installed in accordance with the Permit and Licence or Approval issued under Part V of the SDWA.**

  Currently the West Elgin Drinking Water System operates under the Municipal Drinking Water Licence (Licence No. 043-101 Issue No. 2) and Drinking Water Works Permit (Permit No. 043-201 Issue No. 2) (DWWP). The equipment is installed as per the DWWP Schedule A (Drinking Water System Description).

  In February 2011, the owner and operating authority replaced the Reverse Filtration Recovery (RFR) System manual strainer with a 300 micrometer automatic microstrainer. The owner and operating authority complied with the terms and conditions prescribed in Schedule B conditions 4.1, 4.2 and 4.3 of the DWWP.

* **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Permit, Licence or Approval issued under Part V of the SDWA at all times that water was being supplied to consumers.**

  According to the Procedures for Disinfection of Drinking Water in Ontario, the West Elgin Water Treatment Plant (WEWTP) must provided a minimum of 2-log (99%) removal or inactivation of Cryptosporidium oocystes, 3-log (99.9%) removal or inactivation of Giardia cysts and a 4-log (99.99%) removal or inactivation of viruses for primary disinfection before water is delivered to the first consumer.

  The WEWTP receives log removal/inactivation credits as specified in the Municipality of West Elgin New Water Treatment Plant Design Brief (Stantec Consulting Ltd., June 27, 2007). They include:

  - greater than 2-log removal of Cryptosporidium oocysts, greater than 3-log removal/activation of Giardia cysts and 0.5-log removal/inactivation of viruses from the PALL membrane system

  - 3.5-log removal/inactivation of viruses and 0.5-log removal/inactivation of Giardia cysts from the UV disinfection process or through the chlorine contact time.

  Monthly SCADA reports for the inspection period demonstrate that the treatment system was operated to meet the requirements established by the Ministry of the Environment O. Reg. 170/03.

TREATMENT PROCESSES

* **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

* **The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03.**

  The West Elgin Water Treatment Plant has installed the PALL membrane system for primary disinfection. The operating authority, the Ontario Clean Water Agency, has developed and implemented the PALL System Critical Alarm Standard Operating Procedure (SOP) to acknowledge and respond to a series of alarms related to the operation of the membrane system. When an event causes a PALL membrane system alarm to sound, the plant is shutdown until the operator rectifies the alarm. The procedure specifies that operator responding to the alarm document all actions taken during the response in the facility logbook. A review of the facility logbook and SCADA trending reports verifies that the procedure is administered as prescribed.

  The plant also uses sodium hypochlorite for primary disinfection. However, the UV system is designed to be able to provide back up to the sodium hypochlorite for primary disinfection. The UV disinfection system is designed to meet the legislative requirements. These include the following:

  - warm up mode (no water to pass through reactor until bulbs have reached the required temperature)

  - requires a dose of 40 mj/cm2

  - flow must not exceed 166 L/s

  - 90% UV Transmittance

  - calculations of UV dose, flow rates, UV Transmittance, UV lamp status are provided every 4 hours

  Although the UV disinfection system is used as a back-up for primary disinfection, it is tested monthly to ensure the system is functioning as prescribed in O. Reg. 170/03 and the Municipal Drinking Water Licence. Monthly SCADA test data provided by the operating authority during the inspection verifies that the system meets legislative requirements.

* **The Operator-in-Charge had ensured that all equipment used in the processes was monitored, inspected, and evaluated.**

DISTRIBUTION SYSTEM

* **Backflow preventers were installed at each service connection to Industrial/Commercial/Institutional and agricultural process that were considered high hazard facilities.**

  According to the Overall Responsible Operator (ORO) and records provided by the municipality, backflow preventers are installed at high risk facilities. However, the municipality has not maintained records for annual backflow preventer testing as prescribed in The Corporation of the Municipality of West Elgin's By-Law 2007-107 Section 9 (Testing of Devices). The municipality's adherence with the by-law and testing requirements under Section 9 are addressed in another area of this report.

OPERATIONS MANUALS

OPERATIONS MANUALS

* **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

The Ontario Clean Water Agency maintains comprehensive Operations and Maintenance Manual (O&MM) at the West Elgin Water Treatment Plant that include plans, drawings and process descriptions for all areas of the water treatment plant, the Iona Interconnect and the portion of the distribution system up to and including the West Lorne Standpipe.

The Municipality of West Elgin maintains an O&MM for the remainder of the distribution system. After assessing the O&MM for the municipality, it was determined that it lacked procedures required in the Municipal Drinking Water Licence 043-101. Corrective action is prescribed in another area of this report.

* **The operations and maintenance manuals did not meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.**

During the review of the The Corporation of the Municipality of West Elgin Operations and Maintenance Manual, it was determined that the owner/operating authority for the distribution system did not comply with all conditions specified in Condition 16.0 of the Municipal Drinking Water Licence 043-101 Issue No. 2. They include:

- Procedures specified in the Drinking Water Works Permit 043-201 Issue No. 2 Schedule B Condition 2.0, 3.0 and 4.0.

- Procedures for the Disinfection of Drinking Water in Ontario.

- Procedures for the maintenance and/or repair of the distribution system monitoring equipment (Condition 16.2.4), main break repair, water main flushing, valve and hydrant maintenance, system pressure maintenance, backflow prevention and cross-connection control measures.

- Procedures for reporting prescribed AWQIs and corrective actions.

- Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown. More specifically accurate contact information and an on-call procedure that utilizes OCWA personnel when municipal staff are not readily available.

LOGBOOKS

* **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Municipal operational staff maintain records on the operation and maintenance of the distribution system in logbooks located at the Rodney Water Tower office. Archived logbook records are stored at the Wastewater Treatment Plant on Pioneer Line.

OCWA operator log records are maintained at the West Elgin Water Treatment Plant, Iona Interconnect and the West Lorne Standpipe.

Operational records reviewed during the 2011 inspection confirm that operational testing not performed by continuous monitoring equipment was being done by a certified operator who suffices the requirements of O. Reg. 170/03 7-5.

CONTINGENCY/EMERGENCY PLANNING

* **The contingency/emergency plan was not available for reference by all staff as required by the Permit and Licence or Approval issued under Part V of the SDWA.**

The ORO for the West Elgin distribution system was unable to provide evidence that meets Condition 16.2.5 prescribed in the Municipal Drinking Water Licence 043-101 Issue No. 2. More specifically, an accurate emergency/contingency plan that includes an up-to-date contact list and procedures that coordinate on-call activities with the Ontario Clean Water Agency (OCWA) when municipal staff are not available to respond were not readily available for staff to reference.

SECURITY

* **All storage facilities were completely covered and secure.**

  The West Elgin Drinking Water System has four (4) water storage structures. They include two (2) above grade glass fused steel storage tanks each with 2,276 cubic meter capacity, the West Lorne Standpipe with 2,889 cubic meter capacity and the Rodney Water Tower with 1,200 cubic meter capacity. All of the above are covered, surrounded by a security fence, and possess intrusion alarms. Access is permitted by authorized personnel only.

* **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

* **The owner had provided security measures to protect components of the drinking-water system.**

  During the inspection it was observed that meter and valve chambers as well as water storage facilities were secured with locks, intrusion alarms, fencing and/or signage to prevent entry by unauthorized individuals.

CERTIFICATION AND TRAINING

* **The overall responsible operator had been designated for each subsystem.**

  The Overall Responsible Operator (ORO) for West Elgin Water Treatment Plant is Dale LeBritton. Cindy Sigurdson or another qualified operator act as ORO in the absence of Mr. LeBritton.

  Michael Kilita acts as the ORO for the distribution system component of the West Elgin Water Supply System. In the absence of Mr. Kalita, Chad Yokom assumes the role of ORO.

  All operators above possess the required level of certification to act as an ORO.

* **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

* **Only certified operators made adjustments to the treatment equipment.**

  According to the logbook entries and maintenance log records made by the Ontario Clean Water Agency, only certified operators made adjustments to the treatment equipment.

WATER QUALITY MONITORING

* **All microbiological water quality monitoring requirements for distribution samples were being met.**

  The combined microbiological sample results for the two operating authorities, the Municipality of West Elgin and the Ontario Clean Water Agency (OCWA), exceed the requirement prescribed in O. Reg. 170/03 Schedule 10-2. The municipality is the operating authority for the distribution system while OCWA is the operating authority for the portion of the distribution system from the Water Treatment Plant at Eagle to the West Lorne Water Tower. OCWA also collects microbiological water samples from the Iona Interconnect. Sample results verify that four (4) distribution samples are collected each week by OCWA while the municipality collects five (5) each week. This exceeds the minimum requirement of ten (10) microbiological samples for each month.

* **All microbiological water quality monitoring requirements for treated samples were being met.**

  The Ontario Clean Water Agency collects the treated water sample each week to meet the requirements prescribed in O. Reg. 170/03 Schedule 10-3.

WATER QUALITY MONITORING

* **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The current inspection period is from February 1, 2011 to December 15, 2011. Records demonstrate that the operating authority, the Ontario Clean Water Agency (OCWA), collects and tests for Schedule 23 (Inorganic Parameters) in January each year. During the inspection, it was verified that sampling and testing for Schedule 23 was undertaken by OCWA in January 2011 and 2012.

* **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The current inspection period is from February 1, 2011 to December 15, 2011. Records demonstrate that the operating authority, OCWA, collects and tests for Schedule 24 (Organic Parameters) in January each year. During the inspection, it was verified that sampling and testing for Schedule 24 was undertaken by OCWA in January 2011 and 2012.

* **All trihalomethanes water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  As referenced in the 2010 Ministry of the Environment inspections report, the introduction of the membrane filtration technology at the new water treatment plant in 2009 has resulted in an increase in the Trihalomethane (THM) concentrations (a disinfection by-product) in treated water leaving the plant, within the West Elgin distribution system and those drinking water systems that receive water from the West Elgin Drinking Water System (WEDWS). The systems receiving water from the WEDWS include Dutton-Dunwich, Southwest Middlesex, Bothwell and Newbury Distribution Systems.

  THM standard in O. Reg. 169/03 is expressed as a running annual average with a value not to exceed 100 ug/L. Although the THM analytical results do not exceed the standard established in O. Reg. 169/03, results are consistently above 70 ug/L within the distributions systems receiving water from the WEWTP and on occasion have exceeded 100 ug/L.

  As a result of the elevated levels, OCWA has increased the frequency of water sampling for THM analysis and are now monitoring at the point at which water leaves the West Elgin Water Treatment Plant (WEWTP) and the West Lorne Standpipe. These sample results show a range from 25 ug/L (July 13, 2011) to 60 ug/L (October 28, 2011). Also, the same laboratory results show chloroform concentrations ranging from 19 ug/L (November 24, 2011) to 43 ug/L (October 28, 2011). THM samples collected within the West Elgin Distribution System show results as follows: 84 ug/L (Dymock Line, February 2, 2011), 66 ug/L (Hwy. #401 Service Centre, May 4, 2011), 81 ug/L (Hwy. #401 Service Centre, July 28, 2011) and 73 ug/L (Port Glasgow, November 2, 2011).

  OCWA has also collected water samples at the WEWTP for Haloacetic Acids (HAA), a disinfection by-product related to THMs. An HAA standard presently does not exist under O. Reg. 169/03. Concentrations of HAA at the WEWTP ranged from 12 ug/L (April 11, 2011) to 22 ug/L (October 5, 2011).

  The Ministry of the Environment identified the THM issue in the 2010 inspection report and was informed by the operating authority that a consultant was retained to conduct a study to determine the source of elevated THMs as well as equipment and procedures needed to reduce the levels. Although the owner and operating authority have implemented some strategies to mitigate the problem, elevated concentrations still persist.

  The Ministry of the Environment recommends later in this report that the owner and operating authority develop and implement a management strategy/plan that addresses the THM issue in the short and long term.

* **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

  Analytical test results provided by the operating authority show that samples were collected for nitrate-nitrite in April (0.238 mg/L), July (0.19 mg/L) and October (0.188 mg/L) of 2011.

WATER QUALITY MONITORING

* **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  A sample was last collected and tested for sodium in May 2009. As per O. Reg. 170/03, water must be sampled and tested for sodium every 60 months.

* **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  A sample was last collected and tested for flouride on May 2009. As per O. Reg. 170/03, water must be sampled and tested for fluoride every 60 months.

* **All water quality monitoring requirements imposed by the Permit and Licence or Approval issued under Part V of the SDWA were being met.**

* **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

* **All sampling requirements for alkalinity and pH prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

* **All continuous monitoring equipment utilized for sampling and testing required by O.Reg.170/03, or approval or order, were equipped with alarms or shut-off mechanisms that satisfied the standards described in Schedule 6.**

  OCWA has developed and implemented a series of Standard Operating Procedures (SOP) for operational staff to follow in the event an alarm is enunciated. As per the SOPs, chlorine, pH and turbidity continuous analyzers are equipped with alarms that are enunciated when levels are above or below the established setpoints, if the continuous monitoring equipment malfunctions or there is a loss of power to the continuous analyzer. The SOPs incude:

  - SCADA Alarms
  - Discharge UV Chlorine Analyzer Alarms
  - Distribution Free Chlorine and pH Analyzer Alarms
  - Distribution Free Chlorine High Lift Shutdown Alarms
  - Iona Re-Chlorination and Interconnection Alarms
  - PALL System Critical Alarms
  - Suctions Header Free Chlorine and pH Analyzers

  During the inspection, the alarm logs, SCADA trending and logbook entries maintained by the operating authority were reviewed. It is concluded that continuous monitoring equipment being utilized for sampling and testing is equipped with alarms or shut-off mechanisms which satisfy the standards described in s. 6-5(1) 5 under Schedule 6 of O.Reg. 170/03.

* **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

WATER QUALITY MONITORING

* **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

  The West Eligin Water Treatment Plant facility logbook entries verify that the requirement in O. Reg. 170/03 s. 6-5(1)3. is met. The Ontario Clean Water Agency has developed the Standard Operating Procedure 72 Hour Review of Continuous Monitoring Equipment for operational staff to follow.

* **Primary disinfection chlorine monitoring was being conducted at a location approved by Permit, Licence or Approval issued under Part V of the SDWA, or at/near a location where the intended CT had just been achieved.**

* **The secondary disinfectant residual was measured as required for the distribution system.**

  The Municipality of West Elgin operational staff monitor chlorine residual within the distributions system in accordance with O. Reg. 170/03 Schedule 7-2 (4) and (6). Results are recorded in the operators logbook which is maintained and located in the staff office at the Rodney Water Tower.

* **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

  Laboratory Certificates of Analysis for microbiological sample results for the distribution system and the West Elgin Water Treatment Plant show that chlorine residuals are being conducted and recorded at the same time and same location that microbiological results are obtained.

* **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03.**

* **All continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was recording data with the prescribed format.**

* **Continuous monitoring of each filter effluent line was being performed for turbidity.**

  The treatment system utilizes four (4) membrane filtration racks with effluent flow and turbidity monitoring for each rack. Monthly SCADA reports show that the membrane filtration process meets the criteria prescribed in the Procedure for Disinfection of Drinking Water in Ontario. More specifically, records show that the filtrate from each filter is being continuously monitored for turbidity and the performance criterion for filtered water turbidity is less than or equal to 0.1 NTU in 99% of the measurements each month.

* **Testing for parameters required by legislation, Order, or a Permit, Licence or Approval issued under Part V of the SDWA was conducted by laboratories in Ontario licenced to test for that parameter, or by eligible laboratories outside Ontario.**

  Microbiological and chemical sample testing required under O. Reg. 170/03 is conducted by SGS Lakefield Research Ltd. at 657 Consortium Court, London, ON N6E 2S8, a laboratory approved by the Ministry of the Environment. The owner/operating authorities use the above mentioned laboratory.

WATER QUALITY ASSESSMENT

* **The inspector collected audit samples during the inspection.**

  Audit samples were collected on February 8, 2012 at the West Elgin Water Treatment Plant and at various locations within the distribution system.

REPORTING & CORRECTIVE ACTIONS

* **All reporting requirements for lead sampling were complied with as per schedule 15.1-9 of O.Reg. 170/03.**

* **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

  After reviewing SCADA trending data and alarm logs as well as facility logbook entries, it is concluded that operators responded as specified in Schedule 6-5(1)5.

* **When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions.**

  The Ontario Clean Water Agency has developed a series of Standard Operating Procedures for responding to alarms enunciated at the West Elgin Water Treatment Plant. These are listed earlier in the report. Facility logbook entries and alarm logs specify details including the time the operator responded, analyzed and corrected the problem indicate that operators responded to the alarms in a timely manner and took appropriate action to correct the problem.

OTHER INSPECTION FINDINGS

* **The following instance(s) of non-compliance were also noted during the inspection:**

  During the 2011 inspection, it was identified that the emergency water intake off shore from the water treatment plant did not appear to be maintained or in a fit state of repair. An underwater intake pipe inspection was completed by Watech Services Inc. (London) on October 6 and 7, 2010.

  The 2011 Ministry of the Environment required the owner/operating authority to develop a strategy and plan for the effective management of the emergency intake pipe. The strategy and plan shall include justification and timelines for its decommissioning or upgrade, renovation, etc. The owner/operating authority was required to submit a plan to the author of the report by October 31, 2011.

  A plan was authored by the Ontario Clean Water Agency and submitted to the Tri-County Management Committee in late August, 2011. The Tri-County Management Committee passed a resolution to implement an option to rehabilitate the exiting intake structure and for the Ontario Clean Water Agency to stop work and report to the committee if the rehabilitation cannot proceed. The Ministry received the documentation pertaining to this matter on September 13, 2011.

  According to the owner/operating authority, the intake was located and marked in early February 2012. An engineering consulting firm has been retained to evaluate options to rectify the issue and report to the Tri-County Management Committee in April 2012.

  Since the issue is outstanding and unresolved, it remains as a non-compliance under the Safe Drinking Water Act (2002) section 11(1)2.(ii).

* **The following issues were also noted during the inspection:**

  During the inspection the following issues were identified.

  1. As described earlier in this inspection report, elevated trihalomethane levels continue to occur in drinking water systems receiving water from the West Elgin Water Treatment Plant.

  2. The read-only SCADA monitor is located at the Rodney Water Tower. OCWA maintains the SCADA system at the West Elgin Water Treatment Plant and provided the municipality with specific parameters at the tower. No data is provided for chlorine residual leaving the plant, Glencoe Reservior and flows for the West Elgin north chamber.

  3. The operating authority for the municipal distribution system:

OTHER INSPECTION FINDINGS

- is not maintaining records demonstrating that testing of backflow devices as prescribed in the municipal By-Law 2007-107 Section 9 is being administered.

- does not have a written policy that facilitates communication between the fire department and the owner/operating authorities that operate and maintain the West Elgin Water Supply System.

- does not use an electronic work order system to coordinate and track operational and maintenance activities associated with managing the distribution system.

- does not collect microbiological, trihalomethane and chlorine residual sample at station WE-7 frequently

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

1. **The operations and maintenance manuals did not meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.**

   During the review of the The Corporation of the Municipality of West Elgin Operations and Maintenance Manual, it was determined that the owner/operating authority for the distribution system did not comply with all conditions specified in Condition 16.0 of the Municipal Drinking Water Licence 043-101 Issue No. 2. They include:

   - Procedures specified in the Drinking Water Works Permit 043-201 Issue No. 2 Schedule B Condition 2.0, 3.0 and 4.0.

   - Procedures for the Disinfection of Drinking Water in Ontario.

   - Procedures for the maintenance and/or repair of the distribution system monitoring equipment (Condition 16.2.4), main break repair, water main flushing, valve and hydrant maintenance, system pressure maintenance, backflow prevention and cross-connection control measures.

   - Procedures for reporting prescribed AWQIs and corrective actions.

   - Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown. More specifically accurate contact information and an on-call procedure that utilizes OCWA personnel when municipal staff are not readily available.

   Action(s) Required:
   The owner/operating authority for the West Elgin Distribution System shall review, edit and update the Operations and Maintenance Manual to ensure that all components listed in the Municipal Drinking Water Licence (Licence Number 043-101 Issue No. 2) Schedule B Condition 16.0 and pertinent to the system are met. The owner/operating authority shall provide a copy of the Operations and Maintenance Manual that meets the requirement under Condition 16.0 to the author of this report by July 31, 2012.

2. **The contingency/emergency plan was not available for reference by all staff as required by the Permit and Licence or Approval issued under Part V of the SDWA.**

   The ORO for the West Elgin distribution system was unable to provide evidence that meets Condition 16.2.5 prescribed in the Municipal Drinking Water Licence 043-101 Issue No. 2. More specifically, an accurate emergency/contingency plan that includes an up-to-date contact list and procedures that coordinate on-call activities with the Ontario Clean Water Agency (OCWA) when municipal staff are not available to respond were not readily available for staff to reference.

   Action(s) Required:
   The owner shall review and update the emergency/contingency plan to include an accurate contact list and a procedure that coordinates on-call activities with the Ontario Clean Water Agency (OCWA) when municipal staff are not available to respond as prescribed in Condition 16.2.5 of the Municipal Drinking Water Licence 043-101 Issue No. 2. This information shall be made available to operational and municipal staff. The Ministry of the Environment will verify that the above requirement is met during the 2013 municipal drinking water inspection.

3. **The following instance(s) of non-compliance were also noted during the inspection:**

   During the 2011 inspection, it was identified that the emergency water intake off shore from the water treatment plant did not appear to be maintained or in a fit state of repair. An underwater intake pipe inspection was completed by Watech Services Inc. (London) on October 6 and 7, 2010.

   The 2011 Ministry of the Environment required the owner/operating authority to develop a strategy and plan for the effective management of the emergency intake pipe. The strategy and plan shall include justification and timelines for its decommissioning or upgrade, renovation, etc. The owner/operating authority was required to submit a plan to the author of the report by October 31, 2011.

A plan was authored by the Ontario Clean Water Agency and submitted to the Tri-County Management Committee in late August, 2011. The Tri-County Management Committee passed a resolution to implement an option to rehabilitate the exiting intake structure and for the Ontario Clean Water Agency to stop work and report to the committee if the rehabilitation cannot proceed. The Ministry received the documentation pertaining to this matter on September 13, 2011.

According to the owner/operating authority, the intake was located and marked in early February 2012. An engineering consulting firm has been retained to evaluate options to rectify the issue and report to the Tri-County Management Committee in April 2012.

Since the issue outstanding and unresolved, it remains as a non-compliance under the Safe Drinking Water Act (2002) section 11(1)2.(ii).

Action(s) Required:

The owner/operating authority shall submit an updated strategy and plan that includes justification and timelines for the emergency intake pipe upgrade and renovation by June 30, 2012.

SUMMARY OF BEST PRACTICE ISSUES AND RECOMMENDATIONS

This section provides a summary of all best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. Best Management Practices are recommendations and not mandatory requirements, but may lead to safe drinking water for the consumer.

In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following practices and consider measures to implement them so that all drinking water systems continuously improve their processes.

1. **The following issues were also noted during the inspection:**

During the inspection the following issues were identified.

1. As described earlier in this inspection report, elevated trihalomethane levels continue to occur in drinking water systems receiving water from the West Elgin Water Treatment Plant.

2. The read-only SCADA monitor is located at the Rodney Water Tower. OCWA maintains the SCADA system at the West Elgin Water Treatment Plant and provided the municipality with specific parameters at the tower. No data is provided for chlorine residual leaving the plant, Glencoe Reservior and flows for the West Elgin north chamber.

3. The operating authority for the municipal distribution system:

- is not maintaining records demonstrating that testing of backflow devices as prescribed in the municipal By-Law 2007-107 Section 9 is being administered.

- does not have a written policy that facilitates communication between the fire department and the owner/operating authorities that operate and maintain the West Elgin Water Supply System.

- does not use an electronic work order system to coordinate and track operational and maintenance activities associated with managing the distribution system.

- does not collect microbiological, trihalomethane and chlorine residual sample at station WE-7 frequently

Recommendation:
The author of this report recommends implementation the following:

1. The owner and operating authorities develop and implement a management strategy/plan that addresses the THM issue in the short and long term.

2. The owner and operating authorities review the parameters provided to the read-only SCADA monitor at the Rodney Water Tower to improve the overall monitoring and management of the distribution system

3. The operating authority for the municipal distribution system:

- administer By-Law 2007-107 as prescribed in Section 9 (Testing of Devices)

- create a written poicy that facilitates communication between the fire department and the owner/operating authorities during fire hydrant maintenance

- investigate the use of an electronic work order system to track operational and maintenance activities associated with managing the distribution system

- conduct microbiological, THM and chlorine residual sampling and testing at station WE-7

SIGNATURES

Inspected By:	Signature: (Provincial Officer):
Barry Moncrieff	Barry Moncrieff
Reviewed & Approved By:	Signature: (Supervisor):
Tom Clubb	Tom Clubb
Review & Approval Date:	March 06, 2012

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.