

Ministry of the Environment

**WEST ELGIN DRINKING WATER SYSTEM
Drinking Water System Inspection Report**

DWS Number:	260091117
Inspection Number:	1-8FEMA
Date of Inspection:	Feb 18, 2011
Inspected By:	Barry Moncrieff

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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

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INSPECTION DETAILS:

DWS Name: WEST ELGIN DRINKING WATER SYSTEM
DWS Address: 9210 GRAHAM RD
County/District: West Elgin
District/Area Office: London District
DWS Category: Large Municipal Residential
DWS Number: 260091117
Inspection Type: Unannounced
Inspection Number: 1-8FEMA
Date of Inspection: Feb 18, 2011
Date of Previous Inspection: Feb 09, 2010

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.

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.

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 Tower**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 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 183 fire hydrants, five metering chambers and one air release chamber. The meter pits on 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 hypochlorite 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 control documents, as well as conformance with Ministry drinking water related policies for the inspection period. The Ministry is implementing a rigorous and comprehensive approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.**

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

- Ministry of the Environment Drinking Water Information System (DWIS) for the West Elgin Water Supply System
- The West Elgin Water Supply System Operation and Maintenance Manual for the Distribution System
- The Ontario Clean Water Agency (OCWA) Operation and Maintenance Manual for the Water Treatment Plant
- The Ministry of the Environment Drinking Water Inspection Report #1-7GLF2 conducted on February 19, 2010
- The Ministry of the Environment Municipal Drinking Water Licence (Licence No. 043-101, Issue No. 2)
- The Ministry of the Environment Drinking Water Works Permit (Permit No. 043-201, Issue No. 2)
- Review of THM Reduction Alternative for the Tri-County Water System (DRAFT) by Stantec Consulting Ltd. (2010)
- Underwater Inspection of Raw Water Intake Structures for West Elgin prepared by Watech Services Inc. (October 2010)
- Pall Advanced Separation System Operating and Maintenance Manual by PALL Corporation
- Municipality of West Elgin New Water Treatment Plant Design Brief by Stantec Consulting Inc. (June 27, 2007)

SOURCE

- * **There were no obvious potential sources of pollution or activities in or around the source that could impair source water quality.**
- * **Measures were in place to protect the water source in accordance with a Permit, Licence or Approval issued under Part V of the SDWA.**

As part of the residual management system for the membrane filtration water treatment process at the plant, the owner has installed a concrete settling basin which has a gravity overflow from the settling tank to a two (2) bay settling lagoon. The overflow from the settling lagoon discharges into a municipal drain which leads to Lake Erie. A discharge limit of 25 mg/L has been established to protect the water quality of Lake Erie and the area in the vicinity of the intake crib for the water plant.

- * **Trends in source water quality parameters were monitored and trended to assist in the operation of the drinking water system.**
- * **Trends in water quantity/takings, or other measures for ensuring the reliability of volume supplied, were being monitored.**

SOURCE

- * **The zebra mussel control system had been installed and operated in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.**

A pre-chlorination zebra mussel control feed system is installed at the low lift works facility. This disinfection system consists of two (2) electronic dual-platform cylinder weigh scales, a pre-chlorinator with capacity of 45.0 Kg/d, solution feed lines, sample taps, valving and piping. Chlorine gas solution is added at the intake crib when required.

According to records maintained by the operating authority, pre-chlorination for zebra control commenced on June 15, 2010 and was terminated on December 6, 2010. The start-up/shut-down of the pre-chlorination system is dependent on the temperature of the source water.

PERMIT TO TAKE WATER

- * **A Permit to Take Water (PTTW) was required.**

The West Elgin Water Supply System operates under the Ministry of the Environment Permit To Take Water #0815-6QQH9A which was issued June 20, 2005. The Permit expires on July 15, 2011.

- * **The owner had a valid PTTW for all of the production sources.**
- * **The maximum water takings were in accordance with those allowed under the PTTW.**
- * **No complaints of interference due to the water taking were received by the owner/operating authority.**

CAPACITY ASSESSMENT

- * **There was sufficient monitoring of flow as required by the Permit, Licence or Approval issued under Part V of the SDWA**
- * **Flow measuring devices were calibrated or verified in accordance with the requirements of a Permit, Licence or Approval issued under Part V of the SDWA.**
- * **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Permit, Licence or Approval issued under Part V of the SDWA.**

The Municipal Drinking Water Licence (Licence No. 043-101, Issue No. 2) Schedule C Condition 1.0 specifies that the rated capacity for the for the West Elgin Water Supply System and the Iona Interconnect are 12, 160 and 1, 600 cubic meters per day, respectively. There were no exceedances for the inspection period.

- * **Records of flows and any capacity exceedances were made in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.**

CAPACITY ASSESSMENT

- * **The owner was monitoring demand and population trends in order to monitor the need to upgrade or expand the system.**

The Municipality of West Elgin constructed a new drinking water plant in 2009 in response to an increase in demand from the residences in the Tri-County Area (West Elgin, Southwest Middlesex and Dutton-Dunwich). The capacity doubled with the commissioning of the new plant. The new plant has a rated capacity of 12, 160 cubic meters per day. According to records provided by the owner/operating authority, the plant is operating at approximately 20-30% capacity depending on the time of year.

TREATMENT PROCESSES

- * **A valid Permit, Licence or Approval issued under Part V of the SDWA existed for the facility.**

The Corporation of the Municipality of West Elgin received its first Municipal Drinking Water Licence (Licence No. 043-101, Issue No. 1) and Drinking Water Works Permit (Permit No. 043-201, Issue No. 1) on July 27, 2009. Due to some discrepancies observed in DWWP Schedule A during the 2009 inspection, the Licence and DWWP was amended to Issue No. 2 on June 4, 2010.

The current Licence expires on July 26, 2014.

- * **The owner had not ensured that all equipment was installed in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.**

Condition 4.0 (Minor Modifications to the Drinking Water System) of the Drinking Water Works Permit provides the owner with criteria and permission to complete pre-authorized minor modifications to the drinking water system. However, the owner/operating authority must maintain records of any changes to the system as per Condition 4.0 through completion of Form 2 (Record of Minor Modification and Replacements to the Drinking Water System).

During the inspection, it was observed that the owner/operating authority completed works under Schedule B Condition 4.0 which included replacing microstrainers after the recycle tank at the Water Treatment Plant and a sodium hypochlorite storage tank at the Iona Rechlorination Station. The owner/operating authority did not fulfill the requirements for documenting the work under Form 2 as per the Permit.

- * **The owner complied with the requirement to seek changes to the Permit, Licence or Approval issued under Part V of the SDWA where required, when changes were made.**
- * **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.**
- * **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.**
- * **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

TREATMENT PROCESSES

- * 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 owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.
- * The owner had evidence indicating that all chemicals and materials used in the treatment process met the AWWA and ANSI standards in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.

During the inspection, the chemical storage room at the water treatment plant was inspected. The following chemicals were observed in the chemical storage room:

- citric acid and caustic soda: introduced during a reverse filtrate (backwash) process to maintain the integrity of the filtration system.
- hydrogen peroxide: used in the advanced oxidation process
- sodium bisulphite: injected into the neutralization tank
- sodium hypochlorite solution: used for primary and secondary disinfection processes as well as cleaning membranes

Records indicate that all these chemicals are certified to NSF/ANSI standards 60 and 61.

- * **Up-to-date plans for the drinking-water system were available in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.**

It was noted in the 2010 Inspection Report #1-7GLF2 that "as built" drawings for the water treatment plant were not available. Subsequently the owner/operating authority met the requirement as per Licence 043-101 Issue No. 2 Condition 15.0 (Drawings) and provided "as built" Process Flow Diagram (PFD) for the West Elgin Water treatment Plant during the inspection. For future reference, the PFD was completed by Stantec Consulting Ltd. and submitted to the owner/operating authority on June 25, 2010.

It should be noted that the PFD does not show two (2) microstrainers used before the Recycle Tank. The owner/operating authority should ensure that the two (2) microstrainers are shown on future editions of the drawing.

- * **The facility and equipment did not appear to be maintained or in a fit state of repair.**

It is recognized that the water treatment plant and distribution system have undergone significant upgrades in recent years. For the most part, records indicate that the components of the system are operated and maintained to meet regulatory requirements in Ontario. However, during the inspection, the evidence collected indicates that two (2) components of the system did not appear to be in a fit state of repair. These components are described below.

1. The West Elgin Water Treatment plant has two (2) intake pipes: a main intake and an emergency intake. An underwater intake pipeline inspection was carried out by WATECH SERVICES Inc. (London) on October 6 and 7, 2010.

Although the inspection revealed that the main intake structure appears to be in good condition, the emergency intake structure, just off-shore from the low lift station, is in very poor condition. The intake structure is partially collapsed and armour stone has shifted and is blocking the inlet. The report recognizes that repairs to the existing emergency intake may not be practical due to its proximity to the shore line and water depth.

As an alternative, the report recommends the following:

TREATMENT PROCESSES

- construct an emergency intake that extends the intake beyond the surf and potential ice damage zone
- construct a larger and heavier grate that could be completely covered in larger stone to protect the structure within the surf and ice damage zone.

2. The Ontario Clean Water Agency (OCWA) operates the Iona Re-Chlorination Facility, an above grade building housing re-chlorination equipment. During the physical inspection, an assessment was conducted to determine whether the facility and equipment appear to be generally well maintained and in a fit state of repair. The facility was found to have sodium hypochlorite leaks and poor building ventilation which has led to excessive corrosion of treatment equipment, support fixtures and building components.

Water samples are collected and tested regularly from the facility. Water samples are collected from a chlorine analyzer plastic discharge tube. There is no sampling tap installed in the facility.

A 200 litre (L) capacity sodium hypochlorite solution tank with spills containment is located in the facility. However, due to the amount of sodium hypochlorite solution consumed, a smaller tank was installed by the operating authority. The tank was not pre-authorized as per the Drinking Water Works Permit #043-201 Issue #2.

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

The West Elgin Water Treatment Plant used a Microza Microfiltration Membrane System manufactured by PALL Corporation. The microfiltration system is comprised of four (4) modular racks with eighty-nine (89) modules on each rack. The modules are rated at 0.1 micrometers. Each module contains over 6,200 hollow fibers made from polyvinylidene fluoride (PVDF) with an outside diameter of 1.4 mm. The module outshell is nominally 6.5 inches in diameter and 93 inches in length.

The membrane system is monitored by a SCADA system and is programmed to run automatically based on the Programmable Logic Controller setpoints and functions for each rack through different cycles. The SCADA system also monitors and records water flows and turbidity from each modular rack to comply with the requirements specified in O. Reg. 170/03 and the Procedures for Disinfection of Drinking Water in Ontario.

In addition, operators periodically visually inspect the membrane racks for signs of malfunctioning (e.g. air bubbles from the modules due to damaged fibers). Records of the unusual observations are maintained in the logbook.

- * **Where a potential bypass of primary or secondary treatment equipment existed, measures were taken to ensure that raw or partially treated water was not directed to the distribution system.**
- * **Based on information provided by the owner/operator, it was not likely that contaminants entering the floor drains would have come in contact with the source water or treated water.**
- * **Measures were taken to ensure that pesticides were not applied, stored, or mixed in the immediate vicinity of source(s), treatment, and storage facilities.**

PROCESS WASTEWATER

PROCESS WASTEWATER

- * **The facility generated process wastewater.**

Process wastewater arises from the pre-filter microstrainers and the reverse filtrate (backwash) recovery system.

- * **The process wastewater and residual solids/sludges were being treated, handled and disposed of in accordance with the design requirements approved under the Permit, Licence or Approval issued under Part V of the SDWA.**

The process wastewater and residual solids/sludge's are managed using the the following equipment and processes.

- wastewater from the microstrainers and reverse filtrate (backwash) recovery system are discharged directly into an outside concrete settling tank
- wastewater from the concrete settling tank flows over a weir into a two basin settling lagoon

Schedule C (System-Specific Conditions) in Licence 043-101 Issue #2 has established the following wastewater discharge conditions.

- Residual management criteria: Total Suspended Solids (TSS) with annual average concentration of 25 mg/L
- Environmental discharge parameter: TSS composite grab samples with 3 samples, each taken 2 hours apart, on a quarterly basis at the point of discharge from the settling lagoons

There is no formal monitoring program to assist the owner/operating authority in the long-term management of the sediment accumulation in the concrete settling basin and two basin settling lagoon. This issue is addressed in another section of this report.

- * **Process wastewater monitoring was being performed as required by the Permit, Licence or Approval issued under Part V of the SDWA.**

As per the Municipal Drinking Water Licence (Licence No. 043-101, Issue No. 2) Schedule C Condition 1.05, the annual average concentration of suspended solids discharged into the natural environment from the treatment subsystem shall not exceed 25 mg/L. To meet this requirement, the owner/operating authority must comply with the requirements specified under Schedule C, Condition 4.4 Table 7 (Environmental Discharge Parameters). The sample location is at the point of discharge from the settling lagoons. Records provided by the owner/operating authority show that the discharge concentration of suspended solids complies with the licence requirements.

- * **The process wastewater discharge quality complied with requirements established in the Permit, Licence or Approval issued under Part V of the SDWA.**
- * **There was no evidence or indication of an environmental impact as a result of discharged wastewater.**

The owner/operating authority does not have a formalized procedure/process in place to monitor the performance of the settling lagoon.

DISTRIBUTION SYSTEM

- * **The owner had up-to-date plans for the distribution system.**

During the inspection, it was observed that the information required in the Drinking Water Works Permit (Permit #043-201, Issue No. 2) Schedule A Condition 1.2 (Watermains) is incomplete. A document for a portion of the distribution system from the West Elgin Water Treatment Plant to the West Lorne Tower was not listed in Table 1.

DISTRIBUTION SYSTEM

The owner/operating authority had engineering drawings on hand for the portion of the distribution system from the West Elgin Water Treatment Plant to the West Lorne Water Tower. However, they were not submitted during the application process for the drinking water works permit.

The owner/operating authority is required to produce and submit to the Ministry of the Environment Licence and Approvals Branch the portion of the distribution system from the West Elgin Water Treatment Plant to the West Lorne Water Tower in the format specified in the "Application Guide - First DWWP Licence and Operational Plan Acceptance" (PIBS 6809e01). This file will be included in future issues of the Drinking Water Works Permit.

- * **There was a cross-connection control/backflow prevention program, policy and/or by-law in place.**

The Corporation of the Municipality of West Elgin instituted a backflow prevention by-law initially in 2002 (By-Law 2002-62). The by-law was amended on two occasions since its initial creation. The current by-law is designated as By-law 2007-107 and includes an implementation schedule based on the degree of hazard according to a selected guide.

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

According to the owner, backflow preventers are installed at each service connection to Industrial/Commercial/Institutional and agricultural process that were considered high hazard facilities.

- * **There were no known cross connections between the distribution system and other water sources.**

According to the owner/operating authority, there are no known cross connections between the distribution system and other water sources.

- * **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**
- * **Existing parts of the distribution system that were taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that came in contact with drinking water, were disinfected in accordance with the Procedure for Disinfection of Drinking Water In Ontario.**
- * **There was a program for rehabilitation or replacement of watermains.**

The owner has applied for an Ontario Small Waterworks Assistance Program (OSWAP) to replace 1250 meters (m) of 200 millimeter (mm) cast iron watermain on Graham Road with a 250 polyvinyl (PVC) watermain. This replacement will include 10 new fire hydrants. Also, 180 m of cast iron watermain will be upgraded to PVC from Graham Road west to Maple Ridge Road.

- * **The owner had implemented a program for the flushing of watermains as per industry standards.**

Records indicate that the owner/operating authority conducted a comprehensive flushing program for the entire distribution system during June 2010.

It is noted that the operating authority has installed #9800 Eclipse Automatic Flushing Devices at remote locations in the distribution system where regular flushing is required. At present, these devices are located at Dymock and Dunborough Roads, Colley and Crinan Roads and Queen's Line between Graham and Dunborough Roads, the west end of McMurchy Line and Marsh Line west of Furnival Road. The operating authority is planning to purchase 5-7 additional auto-flushers and will install them at key dead ends throughout the system.

DISTRIBUTION SYSTEM

- * **A program was in place for inspecting and exercising valves.**

The owner/operating authority conducts a formal program for exercising valves annually. Records indicate that the valve inspection program ran from November 16-18, 2010. A Valve Inspection Report is completed by operational staff for each valve inspected. Each report includes the following information: date inspected, location of the valve, valve size, number of turns, comments/deficiencies and operator(s) conducting the inspection.

The author of this report recommends that the Corporation of the Municipality of West Elgin use the AWWA Standard G200-04 (Distribution System Operation and Management, Section 4.2.5 for Valve exercising and replacement pg 9-10) to assist staff in enhancing the program. As per the AWWA Standard G200-04, a valve exercising program should include, but not be limited to:

- a goal for the number of transmission valves to be exercised annually based on the percentage of the total valves in the system,
 - a goal for the number of distribution valves to be exercised annually,
 - Measures to verify that the goals are met and written procedures for action if the goals are not attained, and
 - Critical valves in the distribution system shall be identified for exercising on a regular basis. Potential quality and isolation concerns shall be recognized. The program shall track the annual results and set goals to reduce the percentage of inoperable valves.
- * **There was a program in place for inspecting and operating hydrants.**

The owner/operating authority inspects its approximately 188 hydrants within the distribution system annually. Records show that the Hydrant Maintenance Program for 2010 was conducted between May 31 to June 7. A maintenance report was completed for each hydrant which identifies the condition of the hydrant and whether repairs were necessary.

- * **There was a by-law or policy in place limiting access to hydrants.**
- * **Consumer water usage, including industrial and commercial water users, was fully metered.**
- * **The owner had conducted an assessment of production volumes versus authorized consumption to determine the percentage of water loss in the distribution system.**
According to the operator, water loss within the West Elgin Distribution System is currently less than 10%. The majority of the distribution system is relatively new and all water is metered.
- * **The owner had undertaken efforts to identify, quantify and reduce sources of apparent water loss and/or established a leak detection/minimization program.**
- * **The distribution system pressure was monitored to alert the operator of conditions which may have lead to loss of pressure below the value under which the system is designed to operate.**

Distribution system pressures are monitored by the Supervisory Control and Data Acquisition System (SCADA) located at the West Elgin Water Treatment Plant. Some pressure monitoring locations are alarmed to facilitate an operator response to the a low pressure event. Daily and monthly pressure monitoring results from SCADA summaries and daily logbooks were reviewed for the inspection period.

DISTRIBUTION SYSTEM

- * **Based on the records available the owner was able to maintain proper pressures in the distribution system.**

- * **The donor had an agreement with a receiver system, and the agreement satisfied the requirements prescribed by subsection 5(4) under O. Reg. 170/03.**

The Southwest Middlesex and Dutton-Dunwich Distribution Systems receive water from the West Elgin Water Supply System.
- * **The donor had provided an Annual Report to the receiver drinking water system.**

- * **The donor had provided an Annual Report to the receiver stand alone distribution system(s) connected to this system.**

OPERATIONS MANUALS

- * **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

There are two (2) sets of Operation and Maintenance Manuals (O&MM) for the West Elgin Water Supply System. The O&MM for the water treatment plant was developed by Ontario Clean Water Agency (OCWA) and is readily available for staff use at the plant. The O&MM for the distribution system was developed by the owner/operating authority and is located at the Rodney Tower.
- * **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

It is noted that OCWA continues to develop and refine the O&MM as needed. Since the plant is less than two years old, procedures effecting the operation of the Advanced Oxidation Process (AOP) and related equipment are undergoing continual improvement as testing is conducted.
- * **The operations and maintenance manuals did meet the requirements of the Permit, Licence or Approval issued under Part V of the SDWA.**

- * **The operation and maintenance manuals and the emergency/contingency plans were reviewed on a periodic basis.**

LOGBOOKS

- * **Logs for the treatment subsystem(s) of the drinking water system contained the required information.**

Logbooks for the operation of the water treatment plant operated by the Ontario Clean Water Agency were reviewed and comply with the requirement in O. Reg 128/04 section 27(5).
- * **Logs for the distribution subsystem(s) of the drinking water system contained the required information.**

Logbooks for the operation of the water distribution system operated by the municipality were reviewed and comply with the requirement in O. Reg 128/04 section 27(5).
- * **Logs for the distribution and supply subsystem(s) of the drinking water system contained the required information.**

LOGBOOKS

- * Logbook entries were made in chronological order.
- * The record system allowed the reader to unambiguously identify the person who made the logbook entry.
- * Entries in the logbook were made only by appropriate and authorized personnel.
- * 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.
- * For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.
- * The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.
- * Logs or other record keeping mechanisms were available for at least five (5) years.

CONTINGENCY/EMERGENCY PLANNING

- * The owner had developed a written contingency/emergency plan as required by the Permit, Licence or Approval issued under Part V of the SDWA.
- * The contingency/emergency plan was available for reference by all staff as required by the Permit, Licence or Approval issued under Part V of the SDWA.
- * Spill containment was provided for process chemicals.
- * Spill containment was provided for standby power generator fuel.
- * Clean-up equipment and materials were in place for the clean up of spills.
- * Standby equipment was available for critical treatment processes as required by a Permit, Licence or Approval issued under Part V of the SDWA.

A 200 kW generator is located at the low lift electrical building to provide power for critical equipment at the low lift station (e.g. pumps) during an emergency. A 750 kW generator is also located at the membrane filtration plant for the overall operation of that facility during emergency situations.

CONTINGENCY/EMERGENCY PLANNING

- * Back-up power was available as required by Permit, Licence or Approval issued under Part V of the SDWA.
- * Standby power generators were tested under normal load conditions.

SECURITY

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

CONSUMER RELATIONS

- * Water conservation was being practiced by the owner or operating authority.
- * A documented system that records consumer complaints, steps taken to determine the cause of the issue, and corrective measures taken to alleviate the cause and prevent its reoccurrence did exist.

Customer compliant records indicate that the owner/operating authority received and recorded a variety of complaints related to drinking water throughout the inspection period. Responses/corrective action for each complaint was recorded on the customer complaint form.
- * Required documents were available free-of-charge during normal business hours at a location accessible to the public.
- * The owner did take effective steps to advise users of the water system of the availability of Annual Reports.

CERTIFICATION AND TRAINING

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

The Overall Responsible Operator (ORO) for the West Elgin Water Treatment Plant is Dale LeBritton. Beverly Mollard or Carl Grimstead act as ORO in the absence of Mr. LeBritton.

Michael Kalita act as 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 ORO.

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

CERTIFICATION AND TRAINING

- * All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.

- * All operators possessed the required certification.

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

- * **Operator certificates or water quality analyst certificates were displayed in a conspicuous location at the workplace or at the premises from which the subsystem was managed.**

Operator certificates for the Ontario Clean Water Agency (OCWA) are displayed at the West Elgin Water Treatment Plant. Operator certificates for the municipality are displayed at the Rodney Water Tower.
- * **The subsystem had been replaced or altered, since the issuance of the existing subsystem certificate of classification and the owner applied for the re-determination of the type and class of the subsystem or had determined that the alteration(s) was not sufficient to trigger an application.**

- * **The classification certificates of the subsystems were conspicuously displayed at the workplace or at premises from which the subsystem was managed.**

- * **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

- * **The owner/operating authority was aware of the operator training and record keeping requirements, and they were taking reasonable steps to ensure that all operators receive the required training.**

- * **Operators were regularly trained with respect to the contents of the operations and maintenance manual and Contingency/Emergency Plan.**

WATER QUALITY MONITORING

- * **Relief from water quality monitoring requirements had been granted.**

- * **Raw water samples were being collected and analyzed at the appropriate frequency.**

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

As a regulatory requirement, ten (10) microbiological samples must be collected and tested for E. coli and total coliform each month. As least three (3) of the samples must be tested for heterotrophic plate count. The owner/operating authority exceeded the minimum requirement by collecting and testing five (5) microbiological samples each week with two (2) of the samples being analyzed for heterotrophic plate count.

WATER QUALITY MONITORING

- * All microbiological water quality monitoring requirements for treated samples were being met.
- * All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.
- * All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.
- * All trihalomethanes water quality monitoring requirements prescribed by legislation were conducted within the required frequency.

The operating authority for the distribution system samples and tests for trihalomethanes (THM) at locations within the distribution system where the potential for trihalomethanes formation is elevated. These locations include Dymock Line (#26360), the 401 Service Centre Station, Port Glasgow and Marsh Line (West of Furnival). These stations are sampled and tested on a rotational basis.

It should be noted that since the introduction of the membranes filtration technology at the new water treatment plant, the THM test results for those systems receiving water from the West Elgin Water Supply System as well as the West Elgin Distribution System have increased. Those systems receiving water from the West Elgin Water Supply System include Dutton-Dunwich, Southwest Middlesex, Bothwell and the Newbury Distribution Systems.

The owner retained Stantec Consulting during the fall for 2010 to conduct a study to determine the source of elevated THMs as well as equipment and procedures needed to reduce the levels. Although a final decision on how to reduce the level is pending, the preferred option at this time is carbon dioxide injection at the low lift station before water enters the microstrainers. Pilot tests indicate that the addition of carbon dioxide will reduce the pH in the finished water and, hence, lower the potential for THM formation.

The Ministry will continue to monitor developments in this area and provide updates in future inspection reports.

- * **Trihalomethane samples were being collected from a point in the distribution system or connected plumbing system that was likely to have an elevated potential for the formation of trihalomethanes.**
- * **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**
- * **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

A sample was last collected and tested for sodium on 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 fluoride on May 2009. As per O. Reg. 170/03, water must be sampled and tested for fluoride every 60 months.
- * **The owner ensured that water samples were taken at the prescribed location.**

WATER QUALITY MONITORING

- * All water quality monitoring requirements imposed by the Permit, Licence or Approval issued under Part V of the SDWA were being met.
- * The owner had not established water quality goals over and above regulatory requirements.
- * 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.
- * The owner was conducting sampling beyond the minimum legislative requirements.

As specified earlier in this report, the owner/operating authority exceeds the minimum microbiological sampling and testing requirements established in O. Reg. 170/03.

- * Samples for chlorine residual analysis were tested using an acceptable portable device.
- Operational staff use HACH Pocket Colorimeters (Model 11-59530-00) in the field for chlorine residual analysis. Records indicate they were calibrated on April 13, 2010 by HACH Inc. Calibration are conducted annually and due to be calibrated on April 13, 2011.
- * 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.
 - * All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.
 - * Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.
 - * 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.
 - * Records confirmed that the maximum free chlorine residual in the distribution system was less than 4.0 mg/L or that the combined chlorine residual was less than 3.0 mg/L.
 - * Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.

WATER QUALITY MONITORING

- * 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.
- * Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.
- * Continuous monitoring of each filter effluent line was being performed for turbidity.
- * 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.
- * The drinking water system owner had submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order Certificate of Approval (OWRA) or a Permit, Licence or Approval issued under Part V of the SDWA.

The facility is equipped with an Advanced Oxidation Process (AOP) to be used when a taste and odour problem is detected in the source water. According to the operating authority the AOP was tested and is ready to function if a taste and odour problem arises. A major source of taste and odour problems in drinking water comes from blue-green algae, or cyanobacteria, blooms in raw water which predominately arise from the period of June to October. A chemical indicator for detecting this problem is microcystin. In the event that the plant must respond to a taste and odour problem, the operating authority is encouraged to include ELISA test protocol, a Ministry of the Environment approved testing procedure for microcystin-LR, in the Laboratory Services Notification for the drinking water system.

- * Based on information provided by the owner/operator, samples were being taken and handled in accordance with instructions provided by the drinking-water system's laboratories.
- * The owner indicated that the required records are kept and will be kept for the required time period.

WATER QUALITY ASSESSMENT

- * The inspector collected audit samples during the inspection.

The Ministry of Environment audit samples were collected on March 8, 2011.

- * Results of Ministry audit sampling met the standards included in the Ontario Drinking Water Quality Standards (O. Reg. 169/03) and O.Reg. 170/03.

WATER QUALITY ASSESSMENT

- * Records show that all water sample results taken during the review period met the Ontario Drinking Water Quality Standards (O.Reg. 169/03).

REPORTING & CORRECTIVE ACTIONS

- * **Corrective actions (as per Schedule 17) were taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

With reference to the Adverse Water Quality Incident (AWQI) #96597, a low free chlorine residual at the Rodney Water Tower was reported to the Ministry of the Environment Spills Action Centre on July 27, 2010 at 19:06. The incident was reported as a result of an alarm and direct notification from a staff member at the West Elgin Water Treatment Plant where the SCADA is located for the system. The response to the alarm were delayed due to a malfunction of the alarm dialer and lack of personal contact between operational staff at the plant and distribution system field staff.

As part of the response to the incident, the operator notified Elgin St. Thomas Public Health (ESTPH) as per the O. Reg. 170/03. ESTPH directed the operator to flush and collect water samples for microbiological testing.

- * **Corrective actions as directed by the Medical Officer of Health had been taken by the owner and operating authority to address exceedances of the lead standard.**
- * **All required notifications of adverse water quality incidents were immediately provided as per O.Reg. 170/03 16-6.**
- * **All required notifications of adverse water quality incidents were provided as per O.Reg. 170/03 16-7.**
- * **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O.Reg. 170/03 16-9.**

In addition to owner/operating authority complying with O. Reg. 170/03 Schedule 17 requirements for corrective action, the owner and operating authorities (Ontario Clean Water Agency and the Municipality) worked collaboratively to develop and implement an improved communication protocol to facilitate a effective response to similar incidents in the future.
- * **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.**
- * **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.**
- * **Annual Reports included the required information.**

REPORTING & CORRECTIVE ACTIONS

- * The Annual Report was prepared by February 28th of the following year.
- * Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.
- * All written notices, warning notices and reports were issued by the owner in a form provided by or approved by the Director.
- * The system was registered with the Ministry and provided the required notice containing information about the system.
- * All changes to the system registration information were not provided within ten (10) days of the change.

During the review of the Drinking Water Information System profile, it was observed that some information was inaccurate. More specifically, the Owner's Contact Person Details for Owner Alternative Contact and 7x24 Contact Person Details were outdated.

OTHER INSPECTION FINDINGS

- * The following issues were also noted during the inspection:
 1. As described within this inspection report, THM levels in drinking water systems that receive water from the West Elgin Water Supply System have recorded higher levels of THM since the commissioning of the new water treatment plant in May 2009. Stantec Consulting Ltd. has recommended that the owner/operating authority use a carbon dioxide injection system before the primary treatment process to lower the pH, thus inhibiting THM formation.

Since THM formation is also positively correlated with dissolved organic carbon (DOC) concentration, chlorine concentration and time, the owner/operating authority should review the need for large quantities of treated water storage during low demand periods of the year.
 2. During the inspection, criteria for testing of the backflow prevention devices as per By-law 2007-107 was reviewed. Section 9 stipulates that the devices must be tested annually by a licensed tester and a test report must be submitted to the Municipality within 14 days of the test being conducted. The Municipality was unable to confirm that the terms in By-law 2007-107 Section 4 are being enforced.

As described previously, annual testing and record keeping of backflow preventor performance is a requirement in By-law 2007-107. The Municipality should consider developing in-house expertise for the total administration of the program including the use of staff to conduct backflow testing. Staff development and economic criteria should be used in assessing whether the Municipality should conduct the testing using internal operational staff.
 3. A great majority of the municipality's documents and records requested by the inspector during the inspection were provided in paper format. Although there is a willingness by operational staff to manage document and records in an electronic format, they have limited resources as well as personal skill sets to undertake this transition. Updated computer hardware, software and training would provide operational staff with the resources necessary to manage documents and records more efficiently and effectively.
 4. Municipal operational staff do not have access to system wide SCADA real time monitoring data (e.g. water tower levels, meter readings, status of points or sensors such as pressures, flows and disinfection levels within the system). Such access would allow the municipal operational staff to

OTHER INSPECTION FINDINGS

monitor the performance of the distribution system and enhance their ability to communicate and response to incidences more effectively.

5. Wastewater from the microstrainers and reverse filtrate (backwash) recovery system at the plant is discharged into a concrete settling tank. A weir allows the wastewater to overflow into a two basin settling lagoon (a constructed wetland). According to the operating authority the sediment layer is not monitored on a regular schedule. It was observed during the inspection that mature macrophytons (e.g. cattails) had established themselves in the sediment of the concrete settle tank. Periodic sediment depth determinations would assist the owner/operating authority in managing the settling basin as well as minimizing the sediment loading in the two basin settling lagoon.

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 owner had not ensured that all equipment was installed in accordance with the Permit, Licence or Approval issued under Part V of the SDWA.

Condition 4.0 (Minor Modifications to the Drinking Water System) of the Drinking Water Works Permit provides the owner with criteria and permission to complete pre-authorized minor modifications to the drinking water system. However, the owner/operating authority must maintain records of any changes to the system as per Condition 4.0 through completion of Form 2 (Record of Minor Modification and Replacements to the Drinking Water System).

During the inspection, it was observed that the owner/operating authority completed works under Schedule B Condition 4.0 which included replacing microstrainers after the recycle tank at the Water Treatment Plant and a sodium hypochlorite storage tank at the Iona Rechlorination Station. The owner/operating authority did not fulfill the requirements for documenting the work under Form 2 as per the Permit.

Action(s) Required:

For all minor modifications completed under the Drinking Water Works Permit Schedule B 4.0, the owner shall complete Form 2 and submit the completed forms to the author of this report by April 30, 2011.

The owner shall develop a procedure for the pre-authorization for minor modifications to the system to ensure that the requirements specified in the DWWP Schedule B Condition 4.0 are met. The procedure shall be submitted to the author of this report by April 30, 2011.

2. The facility and equipment did not appear to be maintained or in a fit state of repair.

It is recognized that the water treatment plant and distribution system have undergone significant upgrades in recent years. For the most part, records indicate that the components of the system are operated and maintained to meet regulatory requirements in Ontario. However, during the inspection, the evidence collected indicates that two (2) components of the system did not appear to be in a fit state of repair. These components are described below.

1. The West Elgin Water Treatment plant has two (2) intake pipes: a main intake and an emergency intake. An underwater intake pipeline inspection was carried out by WATECH SERVICES Inc. (London) on October 6 and 7, 2010.

Although the inspection revealed that the main intake structure appears to be in good condition, the emergency intake structure, just off-shore from the low lift station, is in very poor condition. The intake structure is partially collapsed and armour stone has shifted and is blocking the inlet. The report recognizes that repairs to the existing emergency intake may not be practical due to its proximity to the shore line and water depth.

As an alternative, the report recommends the following:

- construct an emergency intake that extends the intake beyond the surf and potential ice damage zone
- construct a larger and heavier grate that could be completely covered in larger stone to protect the structure within the surf and ice damage zone.

2. The Ontario Clean Water Agency (OCWA) operates the Iona Re-Chlorination Facility, an above grade building housing re-chlorination equipment. During the physical inspection, an assessment was conducted to determine whether the facility and equipment appear to be generally well maintained and in a fit state of repair. The facility was found to have sodium hypochlorite leaks and poor building ventilation which has led to excessive corrosion of treatment equipment, support fixtures and building components.

Action(s) Required:

The owner/operating authority shall:

1. 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 shall submit the plan to the author of this report by October 31, 2011.
2. Assess the building and its components at the Iona Re-Chlorination Facility to address ongoing issues related to excessive corrosion and equipment within the facility. Additionally, the owner/operating authority shall ensure that all aspects of the facility such as: spare critical instrumentation equipment, chemical pumps, analyzers, controllers, electrical system components, ventilation system, roof, doors, drainage systems, sampling ports, etc. are managed, maintained and operated to comply with all applicable regulations.

As of March 2011, the owner/operating authority proceeded with upgrading portions of the facility. A new header panel was installed for sodium hypochlorite solution injection lines and pumps. Other components within the facility are being reviewed at the time of the release of this report.

The owner/operating authority shall provide a summary report by May 31, 2011 which identifies deficiencies at the facility along with the corrective actions (e.g. upgrade, repair or replace) and an implementation schedule. The owner/operating authority shall ensure that all deficiencies are corrected by October 31, 2011.

3. **All changes to the system registration information were not provided within ten (10) days of the change.**

During the review of the Drinking Water Information System profile, it was observed that some information was inaccurate. More specifically, the Owner's Contact Person Details for Owner Alternative Contact and 7x24 Contact Person Details were outdated.

Action(s) Required:

The owner/operating authority updated the DIMS profile as per O. Reg. 170/03 S. 10.1. and submitted the correct information to the Ministry of the Environment on March 8, 2011. No further action is required.

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:

1. As described within this inspection report, higher levels of THM have been recorded subsequent to the commissioning of the new water treatment plant in May 2009. Since there is a positive correlation between THM formation and dissolved organic carbon (DOC) concentration, chlorine concentration and time, the owner/operating authority should review the need to storage large quantities of drinking water during low demand periods of the year.

2. During the inspection, criteria for testing of the backflow prevention devices as per By-law 2007-107 was reviewed. The Municipality was unable to confirm that the terms in By-law 2007-107 Section 4 were enforced. Staff development and economic criteria should be used in assessing whether the Municipality should administer all aspects of By-law 2007-107 including the use of internal operational staff to test the backflow devices.

3. A great majority of the municipality's documents and records requested during the inspection were provided in paper format. Limited technological resources, both equipment and human, are available to operational staff to manage documents and records electronically. Updated computer hardware, software and training would provide operational staff with the resources necessary to manage documents and records more efficiently and effectively.

4. Municipal operational staff do not have access to system wide SCADA real time monitoring data (e.g. water tower levels, meter readings, status of points or sensors such as pressures, flows and disinfection levels within the system). Such access would allow the municipal operational staff to monitor the performance of the distribution system and enhance their ability to communicate and response to incidences expeditious.

5. There is no evaluation criteria and/or formal monitoring program that would provide data to allow the owner/operating authority to effectively manage the wastewater system to preserve the constructed wetland.

Recommendation:

The author of this report recommends that the owner/operating authority:

- Review the use of the two (2) above grade glass fused steel storage tanks during the yearly cycle with the objective of minimizing THM formation before treated water enters the distribution system.
- Implement a program/process/procedure that allows the municipality to administer the terms and conditions of By-law 2007-107 efficiently and effectively. Consideration should be given to training operational staff in the area of backflow prevention testing.
- Review the current method for managing documents and records to determine if it is economically viable, efficient and effective to create a new electronic document and record management system to improve the overall management of the drinking water system.
- Provide computer equipment and training for drinking water operational staff to manage documents and records in a contemporary manner.
- Provide the necessary computer hardware, software and staff training to allow for a human machine interface and access of system-wide drinking water data by municipal staff.
- Establish evaluation criteria and initiate a monitoring program for the wastewater settling tank and two basin settling lagoon that would provide data to effectively manage the wastewater system at the plant as well as mitigate any negative impact on the wetland.

SIGNATURES

Inspected By:

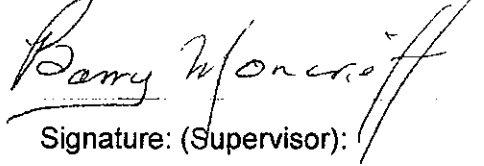
Barry Moncrieff

Reviewed & Approved By:

Shawna Bourne

Review & Approval Date:

Signature: (Provincial Officer):



Signature: (Supervisor):



March 24, 2011

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.