Ministry of the Environment and Climate Change

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Ministère de l'Environnement et de l'Action en matière de changement climatique

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Ontario

April 6, 2017

File #: SI-LA-KI-540

Union Water Supply System
1615 Union Avenue
Ruthven, ON N0P 2G0

Attention: Mr. Rodney Bouchard, Manager

Re: Union Water Supply System (DWS#210000853) Inspection Report

Please find enclosed the Drinking Water System Inspection Report for the inspection that was conducted at the Union Water Supply System (DWS#210000853) on January 26, 2017.

A summary of **Non-Compliance with Regulatory Requirements and Actions Required** are found on page 15.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "Taking Care of Your Drinking Water: A guide for members of municipal council" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR), included as Appendix B of the inspection report, provides the Ministry, the system owner and the local Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance.

IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report. If you have any questions or concerns regarding the rating, please contact Marc Bechard, Drinking Water Program Supervisor, at 519-383-3778.

If you have any questions or concerns regarding this report, please call me at (519) 948-2467.

Yours truly,

Emily Awad

Water Inspector, Provincial Officer #1823
Safe Drinking Water Branch, Windsor Area Office

Encl.

cc: Ken Penney, Process & Compliance Technician and Dale Dillen, Operations Manager, Union Water Supply System;
Dr. Gary Kirk, Medical Officer of Health; Dr. Wajid Ahmed, Associate Medical Officer of Health; Theresa Marentette, Director of Health Protection; Mike Tudor, Manager, Health Inspection Department; Phil Wong, Manager, Health Inspection Department; WECHU
Katie Stammler, Source Water Protection Manager, Essex Region Conservation Authority
Marc Bechard, Supervisor, Ministry of Environment and Climate Change

Ontario

Ministry of the Environment and Climate Change

UNION AREA WATER SUPPLY SYSTEM

Inspection Report

Site Number:	210000853
Inspection Number:	1-CN5PA
Date of Inspection:	Jan 26, 2017
Inspected By:	Emily Awad

Table of Contents

OWNER INFORMATION:

Company Name:	UNION WATER SYSTEM JOINT BOARD OF MANAGEMENT (LEAMINGTON, KINGSVILLE, ESSEX, LAKESHORE)		
Street Number:	1615	**Unit Identifier:**	
Street Name:	UNION Ave		
City:	RUTHVEN		
Province:	ON	**Postal Code:**	N0P 2G0

CONTACT INFORMATION

Type:	Operating Authority	**Name:**	Dale Dillen
Phone:	(519) 326-4447	**Fax:**	(519) 326-0450
Email:	ddillen@ocwa.com		
Title:	Operations Manager, OCWA		
Type:	Operating Authority	**Name:**	Ken Penney
Phone:	(519) 326-4447	**Fax:**	(519) 326-0450
Email:	kpenney@ocwa.com		
Title:	Process & Compliance Technician, OCWA		

INSPECTION DETAILS:

Site Name:	UNION AREA WATER SUPPLY SYSTEM
Site Address:	1615 UNION AVE RUTHVEN ON N0P 2G0
County/District:	Kingsville
MOECC District/Area Office:	Windsor Area Office
Health Unit:	WINDSOR-ESSEX COUNTY HEALTH UNIT
Conservation Authority:	Essex Region Conservation Authority
MNR Office:	Chatham Regional Office
Category:	Large Municipal Residential
Site Number:	210000853
Inspection Type:	Unannounced
Inspection Number:	1-CN5PA
Date of Inspection:	Jan 26, 2017
Date of Previous Inspection:	Jan 14, 2016

COMPONENTS DESCRIPTION

Site (Name):	Union AWSS		
Type:	Other	**Sub Type:**	Other

Comments:

The Union Area Water Supply System (Union WSS) is located in Ruthven, Ontario. The drinking water system is owned by, and supplies water to, the municipalities of Kingsville, Leamington, Essex and Lakeshore via the Union Water System Joint Board of Management. Each of these respective municipalities forms part of the board, but each also owns and operates a separate standalone distribution system receiving water from the Union WSS. According to the drinking water system registration profile, this results in a total serviced population of approximately 55,000 persons. The Union WSS system is considered a "large municipal residential system" under O. Regulation 170/03. The communities of Kingsville, Leamington, Essex are equipped with elevated tanks. Other than the reservoirs on-

site at the Union treatment plant, there is also a reservoir/booster station in the village of Cottam which serves the Town of Essex.

Site (Name): Union AWSS Low Lift Building
Type: Source **Sub Type:** Surface Water
Comments:
The treatment facility in Ruthven, receives water from Lake Erie via a low lift pumping station. Seven low lifts pumps can draw water through two intake pipes and another emergency intake channel if needed. The low lift station is equipped with a zebra mussel control system consisting of two sodium hypochlorite chemical feed pumps to pre-chlorination lines retrofitted through both the #1 and 2 intake, extending to a diffuser within each intake crib. The low lift pumping station consists of a two cell interconnected pump-well, equipped with manually removed bar screens and automatic travelling screens. Low lift pump well #1 houses five low lift pumps and low lift pump well #2 houses the remaining two pumps. The low-lift also houses two surge tanks for pump pressure surges.
Raw water flows through 24 inch and 36 inch raw transmission mains to the treatment plant approximately one kilometre inland.

Site (Name): Union AWSS WTP
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:
The Union WSS treatment plant is currently rated at 124,588 m3/d approved capacity. It is a conventional water treatment plant consisting of contact clarification via four solids upflow clarifiers after coagulant, coagulant aid (polymer) and activated carbon addition. Clarified water flows into eight dual media-type filters (sand and anthracite). Filter aid can be dosed on a contingency basis. The filters are equipped with backwash facilities via two backwash pumps. Sedimentation sludge and backwash from the filters is directed to a residue management pump station and is transferred to two settling/storage ponds. Supernatant overflow from the ponds is discharged into a storm sewer which discharges to Lake Erie.
Primary disinfection is provided via chlorine gas solution injection into the clarified effluent water (pre) and filtered effluent water (post) locations. Chlorine contact is achieved in two on-site reservoirs, operated in series. Interconnecting piping and valves allow taking individual reservoirs out of service. Free and total chlorine is monitored after the reservoirs to properly meter and inject aqueous ammonia into the treated water stream for secondary disinfection before the high-lift pump station. The high-lift pump station consists of two wells. High-lift pump well #1 houses seven high lift pumps and high-lift pump well #2 houses two pumps. There is also an emergency diesel-drive for one of the high-lift pumps. The high-lift also houses two surge tanks for pump pressure surges.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water related policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment and distribution components 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 the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

  Specifically, this review includes an assessment of compliance/conformance in relation to the following:
  • Drinking Water Systems Regulation (O. Reg. 170/03);
  • Drinking Water Operator and Water Quality Analyst Certification Regulation (O. Reg. 128/04) with respect to facility certification, operator licensing and operating standards;
  • Drinking Water System Licence 041-101, Issue Number 4, issued July 21, 2014, related to Performance, Monitoring and Recording, Operations and Maintenance requirements;
  • Drinking Water Works Permit 041-201, Issue Number 3, issued July 21, 2014;
  • Permit to Take Water Number 0816-9T9SVT, related to compliance with permitted taking limits and special conditions;
  • Ontario Drinking Water Quality Standards based on water quality data generated since the previous inspection, and
  • required actions and recommendations in the previous Ministry inspection report dated March 30, 2016.

  The inspection was conducted on an unannounced basis on January 26, 2017, with a follow-up site visit on March 24, 2017. It included:
  1. a physical inspection of the low and high lift pumping facilities, water treatment equipment, and residual waste management facilities;
  2. a review of critical alarms,
  3. testing free and combined chlorine residuals in the laboratory water (treated);
  4. collection of relevant operational documents and owner's sampling results.

  Follow-up components of the inspection consisted of review of collected documentation and operating and contingency procedures for assessment of compliance with regulated requirements. The inspection covers the period from January to December 2016.

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

  Condition 2.0 of Schedule C of the Drinking Water Licence requires the owner to undertake continuous flow measurement and recording for:
  2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.
  2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

  Two differential pressure type (Clarifiers 1 & 2) and two magnetic type (Clarifiers 3 & 4) meters are installed on the raw inlet supply to each upflow clarifier, four in total. The metered flow piping to clarifiers 1 and 2 are inter-connected with each other.

  Magnetic type meters are installed on each filter effluent line.
  Magnetic type meters are also installed on the high-lift discharge headers to the distribution system. Additionally flow meters are installed to measure filter backwash. A flow meter is also in operation at the Cottam booster pumping station on the station effluent/bypass header.

  It was observed during the physical inspection that flow was being measured at all operating filter effluent line meters as well as meters 1A and 1B, the two primary flow meters at the high lift (from the treatment subsystem to the distribution system). The on-site SCADA system indicated a total raw flow of 4123 gallons/minute (into the treatment subsystem) and 2173 and 2443 gallons/minute at meters 1A and 1B.

  Section 3.2 of Permit to take Water #0816-9T9SVT states that the maximum daily water takings shall not exceed 163,653 m3/d. During the period of review, the daily maximum volume of water pumped into the plant ranged from 20,167 m3/d to a maximum of 83,507 m3/d, which is 51% of the authorized water takings.

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Condition 1.0 of Schedule C of the Drinking Water System Licence states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 124,588 m3/day.
  During the period of review, the maximum day flow of treated water was 76,159 m3, or approximately 61% of the approved rated capacity.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

  A physical inspection was done to review the plant works for consistency with those identified in the Drinking Water System Description outlined in Schedule A of the Drinking Water Works Permit issued in July 2014. The works inspected were generally consistent with those identified in the Drinking Water System Description, with the exception of some missing components that were highlighted in the previous inspection report.
  The following observations were made:
  1. A retrofit of the no. 1 intake with a new sodium hypochlorite solution supply line extending to the intake crib, proposed in the last application for permit renewal, was installed in the summer of 2016.
  2. The relocation of the powdered activated carbon (PAC) dosing equipment from the maintenance room to the raw piping/valve gallery was completed April 13, 2016. This included the replacement of existing metering pumps with new peristaltic slurry mix/dosing pumps and the removal of the two slurry day tanks as they were no longer needed.
  3. Two earthen settling/storage ponds for waste; one of which was out of service at the time of the inspection, in order to allow the freeze/thaw cycle assist with compaction.
  4. Only two clarifiers were online and filters #2 and 4 were out of service at the time of the inspection.

Treatment Processes

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

  Form 2 documents must be prepared for any works falling within the scope of sections 4.1, 4.2 and 4.3 of the Drinking Water Works Permit. Required Form 2 documents were prepared for 14 projects undertaken in 2016. A random selection of 7 Form 2's were reviewed and found to be completed correctly:
  - Change in treatment coagulant chemical from DelPAC 2020 to Hyperion 1090 in order to reduce aluminum residual. Form 2 prepared July 25, 2016. In use August 6, 2016.
  - Installation of new turbidimeter on Clarifier #1 water effluent. Form 2 prepared on November 23, 2016.
  - Carbon system relocated to a new containment area built under the pumping system. Spill detection alarm installed and linked to SCADA. Form 2 prepared Mar. 21, 2016. Completed April 13, 2016.
  - Two Jesco paristaltic pumps (ALP17) purchased to replace pumps on clarifiers; maximum 2.0L/min. Form 2 prepared April 11, 2016.
  - Replaced CRA-5 Unit with HACH CLT 10sc and sc200 which controls the chlorinator Post 1 plant effluent. Form 2 prepared November 8, 2016.
  - Containment area built around low lift diesel fuel tank. Form 2 prepared March 21, 2016.
  - Prominent dulco flow flowmeter installed in chemical feed valve room to verify chemical being fed to clarifiers. Form 2 prepared June 10, 2016.

  As it was difficult to determine if the Form 2's were completed before the modified or replaced components were placed into service, as required in the permit, it is recommended that the operating authority update the Form 2's with the project completion date in the future.

- **Records did not indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

  Operating logs and continuous trends from January to December 2016 were reviewed. Turbidity measurements were provided by the Operating Authority in 5 minute intervals.

  The Disinfection Procedure requires that in order to be considered conventional filtration and meet or exceed the 2.5 log Giardia cyst removal, the 2.0 log Cryptosporidium oocyst removal and 2.0 log virus removal credits, the filtration process must use a chemical coagulant at all times when the treatment plant is in operation. On April 16, 2016 there was a loss of coagulant for 12 hours due to human error and a lack of flow monitoring on the clarifier startup system. Coagulant was restored and the SOPs were revised to prevent this from happening again. Once the turbidity data was reviewed, it appeared that filter breakthrough occurred to at least 0.7 to 0.8 NTU and that filters 2 through 5 were most impacted. Literature suggests there is possibility of a loss of cryptosporidium disinfection credits due to an increase in turbidity of 0.2 to 0.3 NTU. On June 10, 2016, a flow monitoring device was installed on the secondary coagulant system which alarms to SCADA when flow is not measured.

  Turbidity levels from filters #1-8 ranged from 0 to 0.86 NTU, never exceeding the regulatory limit of 1 NTU. Performance must meet filtered water turbidity of less than or equal to 0.3 NTU in 95% of the turbidity measurements each month. Summaries assessed for the review period show that, except for April 2016, turbidity values were less than 0.3 NTU virtually 100% of the time. This performance standard was met at each filter in each month and maximum values for filters 6, 7, and 8 never exceeded 0.3 NTU.

- **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.**

  Distribution monitoring programs for combined chlorine residuals in each of the respective municipalities fed by the

Treatment Processes

Union WSS are included within the scope of inspections for each of the stand-alone distribution systems for those drinking water systems. The Union WSS is responsible for operation of the remote sites including Cottam Booster Station and the elevated tank and tower sites, and must maintain adequate combined chlorine residuals at those locations to ensure acceptable residuals are maintained throughout the entire system.

A review of the combined chlorine residuals at the outlet of the Cottam Booster Station showed the majority of residuals above 0.25mg/L. There were a few exceptions where values were recorded as "(null)", zero or greater than 3mg/L. For the most part, these exceptions corresponded to notations of maintenance activities or power outages in the Facility Logbooks.

During the inspection, the Operator was asked to use the handheld colorimeter to check the combined chlorine residual in the laboratory water (treated). The meter read a free chlorine residual of 0.09mg/L and a total chlorine residual of 2.07mg/L, for a combined chlorine residual of 1.98mg/L.

On June 20, 2016 (AWQI #129835), the Operator discovered total chlorine residual value of 0.19mg/L in the Cottam Booster reservoir lasting approximately 20 minutes. According to the Facility log, grab samples taken at both analyzers at the Cottam Booster Station indicated that the total chlorine residual was well above 0.25mg/L. This was reported as an adverse, however, it appears to be an analyzer malfunction and because the booster station is part of the treatment equipment and not the distribution system, this analyzer is a process analyzer (not regulated) and therefore corrective actions were not required.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

  A ProMinent D1C continuous chlorine monitor/controller (designated as CRA-7) with CLE probe measures free chlorine on the second reservoir outlet line for measuring primary disinfection CT, consistent with the Ministry's "Procedure for Disinfection of Drinking Water in Ontario". This location is prior to addition of aqueous ammonia for the creation of chloramine for secondary disinfection.

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

  Filter effluent turbidity values are measured by:
  - ABB-4690 continuous turbidity analysers on filters #1, 2, and 3; the analyser on filter #1 has since been replaced (March 23/2017) with a Hach TU5300sc unit
  - Rosemount Clarity II analyser on filter #4
  - Hach TU5300sc analyser on filter #5 (installed Nov. 07/2016)
  - ABB-4670 analysers on filters #6, 7, and 8; Hach TU5300sc units were installed on filter #6 on Feb. 23/2017, #8 on March 02/2017 and will be installed on filter #7 once it's put back online.

  Measured results are recorded by SCADA. Alarm and filter-to-waste set-points are established in SCADA to respond to measured tests from these analysers.

  Reg.170/03, Schedule 7 section 7(3)(2) requires continuous monitoring equipment of each filter effluent line. Continuous monitoring for turbidity is required only of the filter effluent that is directed to the next treatment process/stage (and eventually to the distribution system).

  Upon inspection, each operating filter effluent line had a functioning continuous turbidity meter (except filters #2 and #4 which were out of service due to valve replacement).

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

Treatment Process Monitoring

In accordance with the operating authority's policy, and as reflected in the project logs, reviews of continuous monitoring results via daily summary reports are completed once per day and recorded on the summary reports.

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

  Free chlorine is measured on the reservoir's outlet (CRA-7) for monitoring primary disinfection CT and each filter effluent line is equipped for continuous measurement of turbidity.

  Low and high chlorine alarm settings reviewed for CRA-7 through SCADA during the Ministry's inspection were LoLo: 1.20 mg/L, Lo: 1.30 mg/L, Hi: 2.50 mg/L and HiHi: 2.6 mg/L respectively. These settings were seasonally adjusted from 1.30 mg/L low and 2.50 mg/L high settings documented in the operating manual in order to adjust for required increased secondary disinfection combined residuals in Essex and Lakeshore. Alarms for secondary disinfection free and total chlorine levels leaving the plant are similarly set.

  At the inspection, the operator tested the chlorine alarm from CRA-7 by adjusting the Lo alarm setting to 2.30, which caused an audible alarm to be sounded in the treatment plant and a visual display at the SCADA terminal (screen flashed red). The plant is staffed 24 hours per day. The audible can be heard through and outside the plant.

  Filter turbidity alarm setpoints reviewed through SCADA during the inspection were Hi: 0.16 NTU and HiHi: 0.19 NTU. At 0.20 NTU, the filter is automatically directed to waste; however, the operator can adjust this setpoint for operational purposes (i.e. to keep a filter online). Hi and hi-hi alarms are audible throughout the plant. Operational alarms for clarifier effluent turbidity prior to filtration are set at 3 NTU (hi) and 5 NTU (hi-hi).

  On April 7, 2016, a filter was started up while the turbidimeter was out of service and turbidity was not monitored for 25 minutes. To address this, the system is now set so that if the turbidity value drops to zero or there is a power failure, it will alarm and filter to waste.

  On March 13, 2017, the turbidimeter on filter #3 was "air locked" and froze at 0.02 NTU for approximately 2.5 hours. Filters #1, 5, 6 and 8 have new Hach TU 5300sc turbidimeters installed which include a local alarm when flow is interrupted. It is recommended that the operating authority tie this flow alarm into the SCADA system to prevent this from re-occurring. Once the four remaining turbidimeters are replaced with the new Hach units, as planned, any flow disruptions to turbidimeters can be addressed immediately.

  Due to the complexity of the Union WSS, the engineers designed an algorithm for SCADA to calulate CT which accounts for the current raw water conditions (temperature, pH), reservoir volume and flow rate, and free chlorine residual. The chlorine levels in the reservoirs are generally high as the chloramination system requires the chlorine at a 4:1 ratio to ammonia and alarm setpoints for CRA-7 warn the Operator if the chlorine levels are getting too low.

- **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 and recording data with the prescribed format.**

  O. Regulation 170 sub-section 6-5(1) requires the continuous monitoring equipment to record the date, time, sampling location and result of every test for the parameter with at least the minimum frequency prescribed as follows:
  1. Free chlorine residual required to achieve primary disinfection: 5 minutes;
  2. Filter effluent turbidity: 15 minutes.

  A review of SCADA data confirmed that, in the majority of cases, monitoring of free chlorine residual at CRA-7 and turbidity at each filter was occurring at least every 5 minutes. Instances where the frequency of measurements

Treatment Process Monitoring

exceeded the minimum requirements were due to maintenance of the analyzers or filters, calibration of the analysers, software restarts, sample collection, power outages or communication losses, which were noted in the logbook.

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

  Manufacturer's instructions for the Prominent free chlorine analyser located at CRA-7 indicates calibration should be repeated at regular intervals. Maintenance records show that the continuous chlorine analyser was calibrated monthly. Ongoing maintenance and calibration is conducted as necessary. Since the SCADA control system uses CRA-7 free chlorine analyser signal in a compound loop with the final plant flow signal to accurately dose aqua-ammonia to achieve a full conversion to monochloramine, CRA-7 accuracy must be frequently checked. Logs show that when the analyser was serviced the aqua-ammonia dosing pumps were temporarily shutdown. In September 2016, a new Prominent free chlorine analyser was installed at CRA-7. This model includes an SD card for data backup.

  Manufacturer's instructions for the ABB turbidity sensor recommend maintenance limited mainly to manual monthly cleaning of the flow chamber under normal conditions, unless there is a high turbidity breakthrough, upon which the chamber should be cleaned immediately to ensure accurate readings. Instructions also state that routine calibration is normally unnecessary but routine calibration checks of the system accuracy may be needed, particularly after cleaning. If readings are still out of specification, instructions are given to calibrate the sensor using a manufacturer's dry calibration standard or wet calibration formazine standard. Manufacturer's instructions for the Clarity II turbidity sensor recommend calibration after maintenance of the turbidity sensor. Instructions are also given for the flow chamber and calibration instructions and verification against known standards such as grab sample or formazine standard. Routine calibration checks of on-line instrument versus hand-held and lab bench units are done for this purpose.
  Maintenance records also show that all turbidimeters are calibrated monthly. Maintenance and/or calibration is conducted as necessary. Maintenance, checks and calibrations are documented in the operating authority's equipment maintenance recording system.

  The operating authority maintains three instrument calibration SOPs for operator reference:
  - OCWA-C1-01 ABB Turbidimeter Calibration
  - OCWA-C1-03 Prominent Chlorine Analyzer Calibration
  - OCWA-C3-26 SS7 Raw Turbidity Meter Calibration
  These procedures contain excerpts from manufacturers' manuals. The Operating Authority is moving away from developing additional SOPs so they have instructed staff to refer to the manufacturer's manuals for calibration instructions. To address the recommendation in the 2015-16 Inspection Report for Standard operating procedures to be developed for calibration of the Rosemount Clarity II Emerson 56 turbidimeter and the SWAN AMI Trides free chlorine analyser, the operating authority will be adding a statement in the Operations Manual directing staff to the manufacturer's manual for calibration instructions.

Operations Manuals

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

  The Union Area WSS Operations Manual contains descriptions of each of the process steps. Sections of the Operations Manual were revised in 2015, 2016, and early 2017. Standard Operating Procedure manuals for the plant and the Cottam Booster Station contain standard procedures and policies. Operators also have access to a map showing transmission mains in the Union distribution system along with as-built drawings. These are available as hard copies at the water plant.

Operations Manuals

As indicated in the previous inspection report, plant drawings must be updated within one year of the re-location of the powdered activated carbon (PAC) dosing equipment as required by conditions 4.8 of the Drinking Water Works Permit and 15.2 of the Drinking Water System Licence. The owner shall update the plant drawings by April 13, 2017.

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

  As required by Condition 16.2 under Schedule B of the Drinking Water System licence, the Union Area WSS Operations Manual contains procedures for monitoring, operating and maintaining equipment, contingency plans for emergencies, and procedures for dealing with complaints.

  During the review of the Operations Manual, a number of inconsistencies in the plant/equipment specifications were noted between the Operations Manual and the component desciption in Schedule A of the Drinking Water Works Permit. A review of these inconsistencies should be completed to ensure the information in the manual is correct. In addition, the Operations Manual only refers to the use of Delpac 2020 coagulant; however, Hyperion 1090 coagulant was also used from August to October 2016 and the Operations Manual should be updated to include a description of other coagulants that have been or will be used in the water treatment process.

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.**

Security

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

  The Union WSS water treatment plant is located in a fenced compound with locked/camera monitored security entrances which must be remotely opened by the operator. With the exception of the front door of the plant, which is monitored from the control room, all doors of the plant are steel security doors which are normally kept locked.

  The low lift building is in a separate windowless brick structure. It is not in a fully fenced compound, although strategic security fencing has been installed for preventing access to the roof and the electrical transformer compound. The building is equipped with lockable steel security doors, intruder door contact alarms, keycode entry and remote camera monitoring.

Certification and Training

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

  The overall responsible operator for the treatment system and distribution system is identified in SOP OCWA-C3-01. He holds a valid class IV certification for both; matching the classification of the Union water treatment plant and the Union trunk water distribution system. Two backup overall responsible operators hold class III certifications for both treatment and distribution sub-systems and are also identified in the SOP.

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

  Operators in charge for each shift are required to be identified in a designated field in the project log book. When an operator in training was on shift during the review period, log book entries were consistently made to reflect this.

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

Certification and Training

According to operating logs reviewed for the period assessed, only certified operators made adjustments to the treatment equipment.

Water Quality Monitoring

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

  O. Regulation 170/03 Schedule 10-3 requires the owner and operating authority to sample treated water once per week and analyse it for E. coli, total coliforms and heterotrophic plate count (HPC). For the period reviewed, treated water microbiological samples were taken each week.

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

  Provided that previous sample results haven't exceeded one-half maximum acceptable concentration (MAC) for any parameter under Schedule 23, O. Regulation 170/03 Schedule 13-2 requires that samples must be taken and analysed for Schedule 23 parameters every 12 months for a surface water supply.
  The required samples were taken January 12, 2016. Previous samples for analysis of these parameters were taken January 12, 2015.

  Schedule 6-1.1 (5) states that for samples required to be taken every 12 months and tested for a parameter, the owner and the operating authority shall ensure that at least one sample that is taken during a 12-month period for the purpose of being tested for that parameter is taken not more than 30 days before or after the first anniversary of the day a sample was taken for that purpose in the previous 12-month period. The owner complied with this provision.

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

  Provided that previous sample results haven't exceeded one-half maximum acceptable concentration (MAC) for any parameter under Schedule 24, O. Regulation 170/03 Schedule 13-4 requires that samples must be taken and analysed for Schedule 24 parameters every 12 months for a surface water supply.
  The required samples were taken January 12, 2016. Previous samples for analysis of these parameters were taken January 12, 2015.

  Schedule 6-1.1 (5) states that for samples required to be taken every 12 months and tested for a parameter, the owner and the operating authority shall ensure that at least one sample that is taken during a 12-month period for the purpose of being tested for that parameter is taken not more than 30 days before or after the first anniversary of the day a sample was taken for that purpose in the previous 12-month period. The owner complied with this provision.

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

  The drinking water system does not include any distribution systems except transmission mains. An assessment of distribution sampling compliance for Trihalomethanes is referred to within the scope of those separate stand-alone distribution system inspections. However, samples for Trihalomethane analysis were also taken at the water treatment plant quarterly and the running annual average for 2016 (19.6 ug/L) is comparable to the RAA's at the 4 distribution systems that are fed by the Union Area WSS (Essex=20.25ug/L, Kingsville=20.5ug/L, Lakeshore=19.1ug/L, and Leamington=22.8ug/L).

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

  As required under O. Regulation 170/03 Schedule 13-7, samples must be taken and analysed for nitrate and nitrite

Water Quality Monitoring

every 3 months. Raw and treated samples were taken weekly and analyzed for total ammonia, nitrate, nitrite, and nitrite+nitrate. Concentrations of nitrate, nitrite, and nitrate+nitrite were well below the drinking water standards.

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

  O. Regulation 170/03 Schedule 13-8 requires sampling and analysis of sodium every 60 months. A sample for analysis of sodium was last taken on January 12, 2016. A previous sample for analysis of this parameter was taken January 12, 2015.

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

  O. Regulation 170/03 Schedule 13-9 requires sampling and analysis of fluoride every 60 months. A sample for analysis of fluoride was last taken on January 12, 2016. A previous sample for analysis of this parameter was taken January 12, 2015.

- **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 Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

  Microbiological quality consistently met Ontario Drinking Water Quality Standards.

  The following water quality is also noted from the owner's results for treated water samples collected from January to December 2016:
  (i) Trihalomethane samples from treated water from the plant yielded an average concentration of 0.019 mg/L for the last four quarters of sampling, below the drinking water standard of 0.1 mg/L (running annual average). As discussed above, an assessment of distribution sampling compliance for Trihalomethanes is referred to within the scope of the separate member-owned stand-alone distribution system inspections. The running annual average in the Distribution Systems was similar to that of the plant (Essex: 0.020mg/L, Kingsville: 0.020mg/L, Lakeshore: 0.019mg/L, and Leamington: 0.022mg/L).
  (ii) Sampling for nitrification products associated with chloramination yielded results that were within Ontario Drinking Water Quality Standards for nitrites (as N) and nitrates (as N). The sampling program consisted of weekly samples from the raw and treated water sampling points.
  (iii) Samples submitted weekly for monitoring of algal toxins seasonally under the owner's monitoring program and also the Ministry's DWSP monitoring program showed detections of Microcystins in the raw water but no detections in treated water.
  (iv) Aluminum residual samples from treated water from the plant were generally taken weekly. Concentrations ranged from 23.8 to 353ug/L, with concentrations considerably higher in the warmer months (May-August) compared to the rest of the year, where maximum concentrations were approximately 100ug/L or less.

Reporting & Corrective Actions

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

  Forms 2A and 2B were submitted on time for the two adverse events and corrective actions were taken in a timely manner.

  On June 20, 2016 (AWQI #129835), the Operator discovered a total chlorine residual value of 0.19mg/L in the

Reporting & Corrective Actions

Cottam Booster reservoir. This lasted for approximately 20 minutes. The drop in residual was caused by debris in the check valve of the ammonia pump restricting flow. According to the Facility log, grab samples were taken at both analyzers at the Cottam Booster Station (CRA-01 and CRA-02) and the results were well above 0.25mg/L. This was reported as an adverse, however, it appears to be an analyzer malfunction and because the booster station is part of the treatment equipment not the distribution system, this analyzer is a process analyzer (not regulated) and therefore corrective actions were not required. Minutes for the plants Operations meeting from June 24, 2016 indicate that staff were notified of operational policy changes going forward which includes collecting upstream and downstream grab samples and bacti samples as soon as reasonably possible in the immediate area and flushing by municipal staff if a grab sample indicates a low residual.

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

- **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.**

  The water plant is staffed 24 hours per day, 365 days per year, therefore an operator is always on site and the operating authority has an expectation of an immediate response to alarms. Water plant operating logs reviewed do not indicate that response to analyser alarm conditions was inadequate in the instances where the operator was alerted to the problem.

Other Inspection Findings

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

  During the physical inspection, the solids residue waste pile was observed on the north end of the property, adjacent to the waste residual settling/storage ponds. Operating Authority staff indicated that the solid waste mainly consisted of carbon and aluminum sulfate from filter backwash and clarifier blow off. Surface runoff from this waste pile flows to a ditch and then a constructed drain/pipe to Lake Erie. Union WSS, as required by their MDWL, collects monthly composite samples of total suspended solids (TSS) from the discharge of the waste ponds; however, the run-off from the solids pile is not captured in these samples. To determine the quality of the combined effluent from the site to Lake Erie, it is recommended that a representative sample from the drainage pipe downstream of the residual solids waste pile be collected monthly for one year, and analysed for TSS, during or after a rain or precipitation event, where flow from the drain permits an adequate and representative sample.

  On July 24, 2016, Union WSS received approval from the ministry to test a new coagulant, Hyperion 1090, and it was used exclusively from August 6 to October 24, 2016. As per Condition 4.3.3.1 of their DWWP, prior to making alterations to coagulants and pH adjustment chemicals, the owner is required to undertake a review of the impacts that the alteration will have on corrosion control or other treatment processes. Union WSS had contracted Associated Engineering to conduct a review of the impact of previous coagulants they had been testing (SternPAC, XL-54, and DelPAC 2020). There was also a limited amount of data reviewed in that assessment from November 11 to December 31, 2015, when Hyperion 1090 was used in conjunction with DelPAC 2020. Coagulant testing was being done mainly for operational purposes (cost, chemical storage), but was also done in response to a complaint of elevated aluminum residual. As indicated in the Associated Engineers report, DelPAC 2020 produced the highest aluminum residuals. Hyperion 1090 was used in an effort to reduce the aluminum residuals that increased during the warmer months. However, Hyperion 1090 produced more solid waste. The Associated Engineering review also highlighted the chloride to sulfate mass ratio (CSMR); high CSMR in distribution water is linked with increased lead leaching, especially from lead solder in copper joints. It stated that DelPAC 2020 may increase the risk of lead and copper release but the test duration was not long enough to do a proper assessment. A number of recommendations were made in their report, including to continue to monitor WTP and distribution water quality parameters associated with water stability and increase sampling of relevant corrosion indicators (lead, copper)

Other Inspection Findings

within the distribution system. It was also recommended that a bench-scale assessment of different coagulants to try to optimize performance and dose, and to repeat these assessments seasonally. Full-scale testing of the selected coagulant regime with enhanced sampling is recommended subsequently to make a full assessment. Union WSS has been monitoring the distribution system for water quality parameters weekly and select metals monthly, and will continue for one year to assess impacts. It is recommended that along with this sampling, Union WSS review and implement the recommendations from the Associated Engineering report so that:
1. A clear assessment of the impacts of the coagulants on corrosion can be determined.
2. Treatment should be optimized to reduce aluminum residual to under the operational guideline of 100 ug/L. As stated in the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, high residual aluminum can cause coating of the pipes in the distribution system resulting in increased energy requirements for pumping, interferences with certain industrial processes and flocculation in the distribution system.

Further, regular jar testing is recommended to optimize coagulant dosing and improve plant operation. The California State training manual prescribes at least daily jar tests and more often when raw water quality changes.

During the previous inspection, two concerns regarding the physical integrity of the facilities were identified and have not yet been addressed. At least two cracks were noted in the floor of the maintenance shop located above the belowgrade powdered activated carbon slurry tanks. Repairs should be implemented to ensure that ponded water from the maintenance shop floor does not introduce contaminants into the slurry tanks. In addition, the inspector identified a leak at an expansion joint around one of the roof support columns in the contact chamber of the Cottam Reservoir. This leak was covered with rubber foam with a stainless steel backing and concrete blocks were used to hold it in place; however, some leakage from the Cottam reservoir into the perimeter sump via its underdrains likely still continues. The owner and operating authority should undertake measures to address these integrity concerns.

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 Records did not indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.

The Disinfection Procedure requires that in order to be considered conventional filtration and meet or exceed the 2.5 log Giardia cyst removal, the 2.0 log Cryptosporidium oocyst removal and 2.0 log virus removal credits, the filtration process must use a chemical coagulant at all times when the treatment plant is in operation. On April 16, 2016 there was a loss of coagulant for 12 hours due to human error and a lack of flow monitoring on the clarifier startup system. Coagulant was restored and the SOPs were revised to prevent this from happening again. Once the turbidity data was reviewed, it appeared that filter breakthrough occurred to at least 0.7 to 0.8 NTU and that filters 2 through 5 were most impacted. Literature suggests there is possibility of a loss of cryptosporidium disinfection credits due to an increase in turbidity of 0.2 to 0.3 NTU. On June 10, 2016, a flow monitoring device was installed on the secondary coagulant system which alarms to SCADA when flow is not measured.

Action(s) Required:

To ensure treatment equipment is being operated to meet primary treatment requirements, it is necessary for monitoring equipment to be functioning properly. Even with the most sophisticated SCADA system, manual equipment checks are necessary to ensure the proper functioning of equipment and to prevent human error (e.g. loss of coagulant for 12 hours). As per section 26 of O. Regulation 128/04, the operator in charge must ensure that the processes within his or her responsibility are measured, monitored, sampled and tested in a manner that permits them to be adjusted when necessary.

It is recommended that the Operating Authority institute more frequent walk throughs and equipment checks, at a minimum of every 3 hours. By May 1, 2017, a procedure shall be developed to increase operational checks around the plant and documentation indicating that staff have been trained on the new procedure shall be provided to the undersigned inspector.

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

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

Recommendation:

SIGNATURES

Inspected By: Signature: (Provincial Officer)

Emily Awad

Reviewed & Approved By: Signature: (Supervisor)

Marc Bechard

2017.04.06 13:26:56 -04'00'

Review & Approval Date:

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.

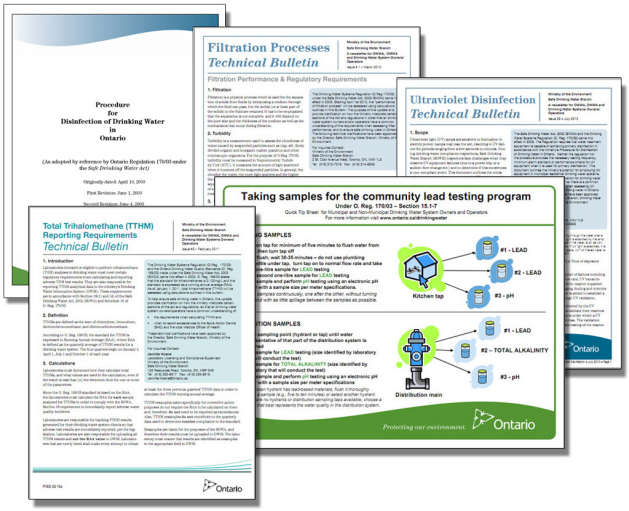
Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or **picemail.moe@ontario.ca**.

For more information on Ontario's drinking water visit **www.ontario.ca/drinkingwater** and email **drinking.water@ontario.ca** to subscribe to drinking water news.



PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

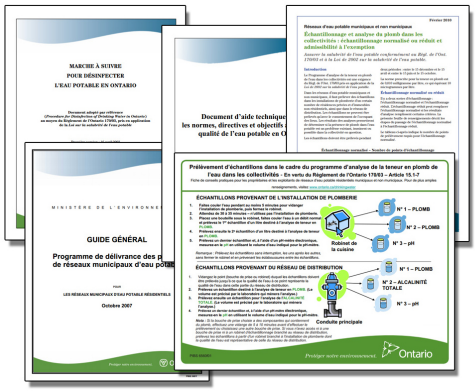
PIBS 8990b01

Ontario

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à **picemail.moe@ontario.ca** si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site **www.ontario.ca/eaupotable** ou envoyez un courriel à **drinking.water@ontario.ca** pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Thrihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

ontario.ca/eaupotable

PIBS 8990b01

Ontario

Inspection Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2016-2017)

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner:	Union Water System Joint Board Of Management (Leamington, Kingsville, Essex, Lakeshore)
Municipal Location:	Kingsville
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	January 26, 2017
Ministry Office:	Windsor Area Office

Maximum Question Rating: 421

Inspection Module	Non-Compliance Rating
Capacity Assessment	0 / 30
Treatment Processes	21 / 60
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 28
Water Quality Monitoring	0 / 83
Reporting & Corrective Actions	0 / 66
Treatment Process Monitoring	0 / 112
TOTAL	**21 / 421**

Inspection Risk Rating	**4.99%**

FINAL INSPECTION RATING:	**95.01%**

Inspection Rating Record Generated On 06-APR-17 (Inspection ID: 1-CN5PA).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2016-2017)

DWS Name:	UNION AREA WATER SUPPLY SYSTEM
DWS Number:	210000853
DWS Owner:	Union Water System Joint Board Of Management (Leamington, Kingsville, Essex, Lakeshore)
Municipal Location:	Kingsville
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	January 26, 2017
Ministry Office:	Windsor Area Office

Non-compliant Question(s)	Question Rating
Treatment Processes	
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?	21
TOTAL QUESTION RATING	21

Maximum Question Rating: 421

Inspection Risk Rating	**4.99%**

FINAL INSPECTION RATING:	**95.01%**

Inspection Rating Record Generated On 06-APR-17 (Inspection ID: 1-CN5PA).