

Audit Report

Systems Audit for

The Regional Municipality of Niagara

1631650-02

Audited Address:

3501 Schmon Parkway, Thorold, Ontario, CAN, L2V 4T7

Start Date: May 27, 2020 End Date: May 29, 2020

Type of audit - System

Issue Date: May 29, 2020

Revision Level: Final

BACKGROUND INFORMATION

SAI Global conducted an audit of The Regional Municipality of Niagara beginning on May 27, 2020 and ending on May 29, 2020 to DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017.

The purpose of this audit report is to summarise the degree of compliance with relevant criteria, as defined on the cover page of this report, based on the evidence obtained during the audit of your organization. This audit report considers your organization's policies, objectives, and continual improvement processes. Comments may include how suitable the objectives selected by your organization appear to be in regard to maintaining customer satisfaction levels and providing other benefits with respect to policy and other external and internal needs. We may also comment regarding the measurable progress you have made in reaching these targets for improvement.

SAI Global audits are carried out within the requirements of SAI Global procedures that also reflect the requirements and guidance provided in the international standards relating to audit practice such as ISO/IEC 17021-1, ISO 19011 and other normative criteria. SAI Global Auditors are assigned to audits according to industry, standard or technical competencies appropriate to the organization being audited. Details of such experience and competency are maintained in our records.

In addition to the information contained in this audit report, SAI Global maintains files for each client. These files contain details of organization size and personnel as well as evidence collected during preliminary and subsequent audit activities (Documentation Review and Scope) relevant to the application for initial and continuing certification of your organization.

Please take care to advise us of any change that may affect the application/certification or may assist us to keep your contact information up to date, as required by SAI Global Terms and Conditions.

This report has been prepared by SAI Global Limited (SAI Global) in respect of a Client's application for assessment by SAI Global. The purpose of the report is to comment upon evidence of the Client's compliance with the standards or other criteria specified. The content of this report applies only to matters, which were evident to SAI Global at the time of the audit, based on sampling of evidence provided and within the audit scope. SAI Global does not warrant or otherwise comment upon the suitability of the contents of the report or the certificate for any particular purpose or use. SAI Global accepts no liability whatsoever for consequences to, or actions taken by, third parties as a result of or in reliance upon information contained in this report or certificate.

Please note that this report is subject to independent review and approval. Should changes to the outcomes of this report be necessary as a result of the review, a revised report will be issued and will supersede this report.

Standard:	DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017		
Scope of Certification:	Full Scope - Treatment and Distribution System		
Drinking Water System Owner:	Regional Municipality of Niagara		
Operating Authority:	Regional Municipality of Niagara		
Population Services:	400,000		
Activities:	Treatment Distribution		
Drinking Water Systems	Decew Falls / Niagara Falls Drinking Water System, Municipal Drinking Water Licence # 007-102, Issue 5		
	Grimsby Drinking Water System, Municipal Drinking Water Licence # 007-105, Issue 3		
	Port Colborne Drinking Water System, Municipal Drinking Water Licence # 007-101, Issue 3		
	Welland Drinking Water System; Municipal Drinking Water Licence # 007-104, Issue 3		
	Rosehill Drinking Water System, Municipal Drinking Water Licence # 007-103, Issue 5		
Total audit duration:	Person(s): 1	Day(s): 2.25	
Audit Team Member(s):	Team Leader	Marco Brunato	

Definitions and action required with respect to audit findings

Major Non-conformance:

Based on objective evidence, the absence of, or a significant failure to implement and/or maintain conformance to requirements of the applicable standard. Such issues may raise significant doubt as to the capability of the management system to achieve its intended outputs (i.e. the absence of or failure to implement a complete Management System clause of the standard); or

A situation which would on the basis of available objective evidence, raise significant doubt as to the capability of the Management System to achieve the stated policy and objectives of the customer.

NOTE: The "applicable Standard" is the Standard which SAI Global are issuing certification against, and may be a Product Standard, a management system Standard, a food safety Standard or another set of documented criteria.

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities. Correction and corrective action plan should be submitted to SAI Global prior to commencement of follow-up activities as required. Follow-up action by SAI Global must 'close out' the NCR or reduce it to a lesser category **within 90 days for initial certification and within 60 days for surveillance or recertification audits, from the last day of the audit.**

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of initial certification, failure to close out NCR within the time limits means that the Certification Audit may be repeated.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of an already certified client, failure to close out NCR within the time limits means that suspension proceedings may be instituted by SAI Global.

Follow-up activities incur additional charges.

Minor Non-conformance:

Represents either a management system weakness or minor issue that could lead to a major nonconformance if not addressed. Each minor NC should be considered for potential improvement and to further investigate any system weaknesses for possible inclusion in the corrective action program

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities at the next scheduled audit.

Opportunity for Improvement:

A documented statement, which may identify areas for improvement however shall not make specific recommendation(s).

Action required: Client may develop and implement solutions in order to add value to operations and management systems. SAI Global is not required to follow-up on this category of audit finding.

Audit Type and Purpose - Systems Audit:

A desktop audit of the operational plan for the subject systems to assess whether the documented QMS meets the PLAN requirements of the DWQMS V2.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) of the subject system conforms to the requirements of the Ontario Ministry of the Environment & Climate Change (MOECC) Drinking Water Quality Management Standard (DWQMS V2).

The audit was also intended to gather the information necessary for SAI Global to assess whether accreditation can continue or be offered to the operating authority.

Audit Scope

The operational plan and processes associated with the operating authority's QMS were objectively evaluated to determine a) whether the quality management activities and related results conform with the DWQMS V2 PLAN requirements.

Audit Criteria:

- The Drinking Water Quality Management Standard Version 2
- Current QMS manuals, procedures and records implemented by the Operating Authority
- SAI Global Accreditation Program Handbook

Confidentiality and Documentation Requirements

The SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, the SAI Global will not disclose audit records to a third party without prior written consent of the applicant. The only exception will be that the SAI Global will provide audit and corrective action reports to the Ontario Ministry of the Environment. For more information, please refer to the SAI Global Accreditation Program Handbook.

As part of the SAI Global Terms, it is necessary for you to notify SAI Global of any changes to your Quality Management System that you believe are significant enough to risk non-conformity with DWQMS V2: For more information, please refer to the SAI Global Accreditation Program Handbook.

Review of any changes

There have been no noted changes to the system.

EXECUTIVE OVERVIEW

The objective of this System audit (Stage 1) was to review the management system and processes, confirm the scope for certification, and determine the organization's preparedness for the onsite verification audit (Stage 2). In addition, it allowed for the review of the adequacy of the SAI Global audit program and resources for the audit including confirming and preparing the draft audit plan.

The results of this System (Stage 1) audit indicate that the organization is now ready for an onsite accreditation (Stage 2) audit.

Recommendation

Based on the results of this audit it has been determined that the management system is effectively implemented and maintained and meets the PLAN requirements of the standard relative to the scope of certification identified in this report; a recommendation for continued certification will be submitted to SAI Global review team pending the outcome of the onsite verification audit.

Opportunities for Improvement:

The following opportunities for improvement have been identified for the identified clauses;

- 3 - Consider clarifying the role of the CAO as an Owner representative endorsing the Operational Plan
- 3 - Consider referencing section 9 to identifying/specifying the top management by position title.
- 9 - Consider defining the roles, responsibility and authority of the ORO and an OIT (Operator in Training) if such a role exists or is being planned.
- 10 - Consider expanding the definition of Competency beyond knowledge from (training) requirements defined in the table to also included education, experience and/or skills (as might be defined in position descriptions or job postings)
- 10 - Consider documenting the process by which initial and ongoing competency is assessed.
- 16 - Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities, that may or may not take place, upstream of the subject system (that is before water enters the DWS).
- 18 - Consider reviewing the 5-year frequency to assess if the frequency may be too long between changes of people, processes, equipment, hazards and the frequency of actual events.

It is suggested that the opportunities for improvement be considered by management to further enhance the Operating Authority's Quality Management System and performance.

Management System Documentation

The management systems operational plan Rev 10 was reviewed and found to be in conformance with the PLAN requirements of the standard.

Management Review

The procedure for management review was found to meet the PLAN requirements of the standard.

Internal Audits

The procedure for Internal audits was found ensure conformance to PLAN arrangements, the requirements of the standard and the established management system.

Corrective, Preventive Action & Continual Improvement Processes

The procedure for implementing an effective process for the continual improvement of the management system through the appropriate management of corrective and preventive actions and management reviews was found to meet the PLAN requirement of the standard.

Summary of Findings

1. Quality Management System	Conforms
2. Quality Management System Policy	Conforms
3. Commitment and Endorsement	Conforms/OFI
4. Quality Management System Representative	Conforms
5. Document and Records Control	Conforms
6. Drinking-Water System	Conforms/****
7. Risk Assessment	Conforms
8. Risk Assessment Outcomes	Conforms
9. Organizational Structure, Roles, Responsibilities and Authorities	Conforms/OFI/****
10. Competencies	Conforms/OFI
11. Personnel Coverage	Conforms
12. Communications	Conforms
13. Essential Supplies and Services	Conforms
14. Review and Provision of Infrastructure	Conforms
15. Infrastructure Maintenance, Rehabilitation & Renewal	Conforms
16. Sampling, Testing and Monitoring	Conforms
17. Measurement & Recording Equipment Calibration and Maintenance	Conforms/****
18. Emergency Management	Conforms/OFI
19. Internal Audits	Conforms
20. Management Review	Conforms
21. Continual Improvement	Conforms
Major NCR #	Major non-conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor non-conformities; or (c) a minor non-conformity identified with a corrective action request has not been remedied.
Minor NCR #	Minor non-conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for improvement. Conforms to requirement, but there is an opportunity for improvement.
Conforms	Conforms to requirement.
NANC	Not applicable/Not Covered during this audit.
****	Additional comment added by auditor in the body of the report.

PART D. Audit Observations, Findings and Comments

DWQMS Reference:	1 Quality Management System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 dated Dec 12, 2019
Details: <i>The operational plan details all requirements of the standard</i>	

DWQMS Reference:	2 Quality Management System Policy
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 2
Details: <i>The policy is outlined in its commitments to W-A-T-E-R and addresses all required commitments. The W-A-T-E-R poster is a format that communicates to OA personnel, the Owner and the Public.</i>	

DWQMS Reference:	3 Commitment and Endorsement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 3
Details: <i>Owner Representatives of Niagara Regional Council; The Regional Chair and Regional Clerk endorse the Operational plan through direct sign off the Operational Plan in Section 3. Operating Authority top management representatives sign off via the Commitment and Endorsement Memorandum.</i> <i>Per Section 9 Top Management includes the</i> <i>Commissioner of Public Works</i> <i>Director of Water and Wastewater</i> <i>Associate Director, Water Operations, Maintenance, and Staff Development</i> OFI - Consider clarifying the role of the CAO as an owner representative endorsing the Operational Plan OFI – Consider referencing section 9 to identifying/specifying the top management by position title.	

DWQMS Reference:	4 Quality Management System Representative
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 4 & Section 9
Details: <i>Top Management has appointed the Water-Wastewater Quality Management Specialist (reporting to the Manager, Quality & Compliance – Water) as the QMS Representative for Niagara Region's drinking water systems. The representatives' responsibilities with respect to the DWQMS are defined in Section 4. The role is also reflected in Section 9 of the operational plan</i>	

DWQMS Reference:	5 Document and Record Control
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 5 Procedure - Document and Records Control (QMS-WT-ALL-P-050) Rev 8
Details: <i>Section 5 of the Operational plan references the procedure which provides full details of the document and records control.</i> <i>Table 1 of the Procedure identifies "other documents" required in support of the DWQMS i.e. Records Retention Bylaw, Niagara Region Purchasing Bylaw, External Sampling testing & Monitoring Reference documents</i> <i>The Operational Plan includes hyperlinks to references procedures, appendices, tables and forms.</i> <i>The EtQ database is used to track document reviews and approvals.</i> <i>Read only documents are available via the Niagara Region Employee Portal VINE and the SOP & Controlled Document Search page.</i> <i>The procedure also references the Corporate Records Retention By-Law and Schedule. In addition, information outlined in Table 2 of the procedure identifies records relevant to the DWQMS in electronic or printed format, record owner, storage and retention.</i>	

DWQMS Reference:	6 Drinking Water System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 6 Decew Falls DWS QMS-WT-DN-P-060 Rev 7 Grimsby DWS QMS-WT-GR-P-060 Rev 4 Port Colborne DWS QMS-WT-PC-P-060 Rev 5 Rosehill DWS QMS-WT-RH-P-060 Rev 9 Welland DWS QMS-WT-WE-P-060 Rev 7
Details: <u>DECEW Falls DWS includes the following described assets:</u> • Decew Falls Water Treatment Plant (source Lake Erie & Lake Gibson) • Niagara Falls Water Treatment Plant (source Lake Erie, Niagara River via Welland River/Chippewa Creek) • Lundy's Lane Tower (Elevated Tank) • Brock Street (Brock High Lift) Booster Pumping Station • Glendale Pumping Station & Glendale Meter Chamber • Kent Avenue Reservoir & Booster Pumping Station • Vineland Booster Pumping Station • Fifth Avenue Reservoir & Re-Chlorination Station • Montrose Road Re-Chlorination Station • Line 2 Re-Chlorination Station • Niagara-On-The-Lake Analyzer Station • Carlton Street Reservoir (not in service) • Port Robinson Re-Chlorination Station • St. David's Re-Chlorination Station, St. David's Standpipe • Stanley Avenue Re-Chlorination Station • Thorold South Elevated Tank (Zone 3) • Virgil Elevated Tank • Zone 2 Standpipe (St. Catharine's) Source water characteristics are reflected in table 1 and 2. Table 3 describes common event driven fluctuation. Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system. Table 4 identifies distribution systems connected and the Owner/Operating authorities. Process Schematic QMS-WT-DN-V-060 Rev 3 <u>Grimsby DWS assets include:</u> • Grimsby Water Treatment Plant (source Lake Ontario) • Hixon Street Reservoir • Lincoln / Grimsby Booster Pumping Station • Park Road Reservoir & Booster Pumping Station • Smithville Elevated Tank, Reservoir & Booster Pumping Station Source water characteristics are reflected in table 1 Table 2 describes common event driven fluctuation. Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system. Table 3 identifies distribution systems connected and the Owner/Operating authorities. Process Schematic QMS-WT-GR-V-060 Rev 3 <u>Port Colborne DWS assets include:</u> • Port Colborne Water Treatment Plant (source Lake Erie) • Fielden Avenue Reservoir & Pumping Station; • Barrick Road Elevated Tank; Source water characteristics are reflected in table 1 Table 2 describes common event driven fluctuation. Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system. Table 3 identifies distribution systems connected and the Owner/Operating authority (City of Port Colbourne/Distribution System). Process Schematic QMS-WT-PC-V-060 Rev 4 <u>Rosehill DWS assets include:</u> • Rosehill Water Treatment Plant; (Source Lake Erie) • Central Avenue Elevated Tank; • Erie Road Re-Chlorination Station; • Ridgeway Standpipe; • Stevensville Reservoir & Pumping Station. Source water characteristics are reflected in table 1 (Comment: table 1 is duplicate in section 5.2.2 and 5.2.3) Table 2 describes common event driven fluctuation. Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.	

Table 3 identifies distribution systems connected and the Owner/Operating authority (Town of Fort Erie/Fort Erie Distribution)

Process Schematic QMS-WT-RH-V-060 Rev 5

Welland DWS assets include:

- Welland Water Treatment Plant; (source Lake Erie)
- Bemis Park Elevated Tank;
- Pelham Elevated Tank;
- Shoalts Drive Reservoir and Pumping Station;

Source water characteristics are reflected in table 1 (**Comment: table 1 is duplicate in section 5.2.2 and 5.2.3**)

Table 2 describes common event driven fluctuation.

Water treatment process include pre-chlorination, coagulation, flocculation and sedimentation, filtration (activated carbon and silica sand) & UV disinfection, Primary disinfection – chlorination; Secondary disinfection – chlorination in the distribution system.

Table 3 identifies distribution systems connected and the Owner/Operating authorities.

Process Schematic QMS-WT-WE-V-060 Rev 6

Comment: There appears to be no specific mention of lake turnover as seasonal or event driven fluctuations in except for the Rosehill DWS description in Table 2.

DWQMS Reference:	7 Risk Assessment
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 7 Procedure - Drinking Water System Risk Assessment (QMS-WT-ALL-P-070) Rev 9
Details: The procedure outlines the risk assessment method and criteria. Risk assessment outcome are documented in Risk Assessment Outcomes Table (QMS-WT-ALL-T-080) and stored in the EtQ portal. Risk assessment is completed annually. Risk Assessment Review Form - Water (QMS-WT-ALL-F-070 Rev 0) is used to update the completed Risk Assessment Outcomes Table with changes as applicable. A rank of >15 denotes the need for action. Appendix A of the procedure defines the risk assessment scoring criteria; Table A1 Likelihood (1-5; 1=Rare, 5=Very Likely); Table A2 Severity impact water quality (1-5; 1=Insignificant, 5=Catastrophic); Table A3 Severity impact on system capacity (1-5; 1=Insignificant, 5=Catastrophic); Table A4 Severity impact on compliance (1-5; 1=Insignificant, 5=Catastrophic); Table A5 Severity impact on the environment (1-5; 1=Insignificant, 5=Catastrophic); Table A6 Severity impact financial (1-5; 1=Insignificant, 5=Catastrophic); Table A4 Severity impact on reputation (1-5; 1=Insignificant, 5=Catastrophic);	

DWQMS Reference:	8 Risk Assessment Outcomes
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 8
Details: Risk Outcomes Table QMS-WT-ALL-T-080 Rev 4 CCPs for Niagara Region's drinking water systems are identified as: • CCP: Coagulant (Aluminum Sulphate) Feed (OP-WT-ALL-P-006) • CCP: Secondary Disinfection (Distribution Chlorine) (OP-WT-ALL-P-007) • CCP: Filter Effluent Turbidity (OP-WT-ALL-P-008) • CCP: Primary Disinfectant (Sodium Hypochlorite) Feed (OP-WT-ALL-P-009) • CCP: Verification of Primary Disinfection (OP-WT-ALL-P-010)	

DWQMS Reference:	9 Organizational Structure, Roles, Responsibility and Authorities
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section
Details: Roles, responsibilities and authorities are defined in table 3. The organizational chart Figure 2 identifies the interrelationship of the various roles and lines of reporting. Comment: The reverse of the statement actually seems to be true for Figure 2 and table 3 "Positions that are greyed in Table 3 are have been deemed to not directly impact drinking water quality." OFl: Consider defining the roles, responsibility and authority of the ORO and an OIT (Operator in Training) if such a role exists or is being planned. Roles and responsibilities in an emergency are delegated/reflected by title. They are documented in section 4 of ERP-ALL-ALL-P-001.	

DWQMS Reference:	10 Competencies
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 10 Procedure – Competencies QMS-WT-ALL-P-100 Rev 7
Details: Competencies have been documented in the Competency table QMS-ALL-ALL-T-100 Rev 8 <i>OFI – Consider expanding the definition of Competency beyond knowledge from (training) requirements defined in the table to included education, experience and/or skills (as might be defined in position descriptions or job postings)</i> <i>OFI - Consider documenting the process by which initial and ongoing competency is assessed.</i>	

DWQMS Reference:	11 Personnel Coverage
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 11 Procedure - Personnel Coverage QMSWT-ALL-P-110 Rev 8
Details: Coverage of Water Operations Staff, the Manager-on-call and ORO and OIC, Water Maintenance and Technical Trades is defined. Details for schedules are reflected in the Manager-On-Call Schedule. On Call schedule change process is defined per the On-Call Scheduling procedure ADM-ALL-ALL-P-005.	

DWQMS Reference:	12 Communications
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 12 & 3.3 Procedure - Communications QMS-WT-ALL-P-120 Rev 6
Details: Procedure defines communications between top management and • Council (Owner) • Operating Authority Personnel • Suppliers • Area Municipalities • General Public • External Agencies Communication from Top Management to the Owner is conducted through an annual report to Council that summarizes: Operational Plan updates, Internal Audit results, Management Review results. Communications from the Owner to Top Management occur via Public Works Committee meetings. Communications with Suppliers occurs via Niagara Region's Corporate Services Department and the W-WW Contract Administrators to ensure that tendered essential suppliers receive relevant information. Water Servicing Memoranda of Understanding with each are municipality defines the communication expectations between the region and municipality. Communication with the Public occurs via the external newsletter GreenScene and the DWQMS link in the Regions Website. The "Contact us" link on the public website also provides an avenue for public communications with Top management,	

DWQMS Reference:	13 Essential Supplies and Services
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 13 Procedure - Essential Supplies and Services QMS-WTALL-P-130 Rev 9
Details: Procedure references the Essential Supplies and Services page on Vine. Chemical, laboratory and calibration services are included. Sections 5.2, 5.3, 5.4 and 5.5. define the means for ensuring requirements are met. For chemical suppliers the procedure Bulk Chemical Deliveries OP-ALL-ALL-P-001 defines supplier requirements Contract requirements for essential supplies and/or services can be found referenced in the applicable Request for Tender or Request for Quotation from Niagara Region's Purchasing Services. The Purchasing By-Law defines purchasing policies and procedures for Niagara Region. Essential Supplies and Services associated with capital expenses are described in Water-Wastewater Project Design Manual (ENG-PM-ALL-MAN-001).	

DWQMS Reference:	14 Review and Provision of Infrastructure
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 14 Procedure - Review, Rehabilitation, and Renewal of Infrastructure QMS-WT-ALL-P-140 Rev 9
Details: Procedure outlines a process for the annual review of drinking water system infrastructure to ensure its continued adequacy. It details how capitolly-funded drinking-water infrastructure rehabilitation and renewal projects are initiated, approved and communicated to the Owner. Various means for review include • W-WW working group staff meetings (Operations, Maintenance, Quality & Compliance, Engineering, Capital Planning, others) • DLT Meetings • Condition Assessment Studies • Master Servicing Plan (identifies short and long-term infrastructure needs) • Detailed Servicing Studies (can be from lower tier municipalities) • Risk Assessment workshops and reviews • MOECC inspections • Process studies • Observations made during regular system operation Project Initiation Request is used to identify a potential infrastructure need. Annual Capital validation Process defined and reflected in Figure 1 process overview.	

DWQMS Reference:	15 Infrastructure Maintenance, Rehabilitation and Renewal
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 15 Procedure - Maintenance QMS-WT-ALL-P-150 Rev 5
Details: The procedure defines planned and unplanned maintenance requirements per Figure 1. Table 1 defines maintenance service by team. The use of the Operations Work Request Process MTCE-WT-ALL-P-002 is used when staff recognize need for non-emergency work. Area Managers are responsible for development of Preventive maintenance Schedules. Work orders are generated weekly. Procedure for unplanned maintenance and maintenance after hours have been established. i.e. Procedure - Maintenance After-Hours Call-In Process - Water (OP-WT-ALL-V-001)	

DWQMS Reference:	16 Sampling, Testing and Monitoring
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 16 Procedure -Sampling, Testing and Monitoring QMS-WT-ALL-P-160 Rev 5
Details: Details for Sampling, Testing and Monitoring Activities in each DWS are reflected the following procedures; • Rosehill WTP QMS-WT-RH-T-160 Rev 6 • Niagara Falls QMS-WT-NF-T-160 Rev 6 • Welland QMS-WT-RH-T-160 Rev 7 • Port Colborne QMS-WT-PC-T-160 Rev 7 • Grimsby QMS-WT-GR-T-160 Rev 6 • DeCew Falls QMS-WT-DF-T-160 Rev6 The tables within each of the listed procedures includes a column for challenging conditions. OFl: Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities that may or may not take place upstream of the subject system (that is before water enters the DWS). Sample are collected by and analysed by a certified Water Operator according to the procedures. The Operator records internal testing results on the Plant Log Sheet. Which are reviewed at least once every 72 hours. Key process parameters for each drinking water system are continuously monitored using a SCADA system. External testing includes analyses that are performed by an external, Ministry-licenced drinking-water laboratory as defined in the above noted procedures. External testing covers Microbiological, Chemical, Radiological and Inorganic Parameters as defined in the referenced regulations.	

DWQMS Reference:	17 Measurement and Recording Equipment Calibration and Maintenance
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 17 Procedure - Measurement and Recording Equipment Calibration and Maintenance QMS-WT-ALL-P-170 Rev 6
Details: <i>The procedure defines calibration and maintenance programs for instrumentation and equipment used in Niagara Region's drinking water systems. Additional calibration and verification activities are referenced in Table 1 for handheld and benchtop chlorine analyzers and turbidity meters.</i> <i>Table 2 provides maintenance/calibration requirements for verification or calibration (reference vs confirmation vs calibration.</i> <i>Table 3 defines functional uses of equipment (information vs control vs regulatory)</i> <i>The EAM PM Schedule controls and hold calibration and verification records of measuring equipment.</i> <i>In house Instrumentation Technicians are responsible for completion of online instrumentation calibrations and verifications</i> Comment: What are the competency requirements for in house Instrumentation Technicians – see OFI under Clause 10 above	

DWQMS Reference:	18 Emergency Management
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 18 Water and Wastewater Emergency Response Plan ERP-ALL-ALL-P-001 Rev 7
Details: <i>Section 2 of the ER Procedure lists the procedure in response to the listed specified potential emergency situations</i> <i>Section 3 describes the communication tree per figure 1. In addition, the Emergency Response Contact List (ERP-ALL-ALL-T-002) is also included as part of the ERP Manual. And exists as a separate document.</i> <i>The Emergency & Debrief Reporting Form (ERP-ALL-ALL-F-001) is used to capture debriefing notes following an emergency event. Details of the debriefing process are outlined in procedure Post-Event Debriefing (ADM-ALL-ALL-P-009).</i> <i>Section 6 documents requirements for training which included both orientation sessions and ERP documentation reviews via e-learning and table top workshops.</i> <i>Section 7 documents the requirements for testing (table top of full scale)</i> <i>The procedure documents that drills are held at least every five years and that real emergencies may be used to evaluate and revise emergency response.</i> OFI – Consider reviewing the 5-year frequency to assess if the frequency may be too long between changes of people, processes, equipment, hazards and the frequency of actual events. <i>Niagara Region's Water-Wastewater Services Division has signed a Mutual Aid & Assistance Agreement with OnWARN of which participation requirements are detailed in procedure OnWARN Emergency Response Assistance (OP-ALL-ALL-P-002).</i> <i>Other documentation in support of this element include</i> • <i>Various checklist for spills, contamination within a treatment plant or system, source water quality compromise, inability to meet water demand, adverse water quality results and sewage spills</i> • <i>Evacuation procedures</i> • <i>Watermain shutdown and repair</i> • <i>Watermain breaks</i> • <i>Adverse water quality results handling</i> • <i>Emergency lab services for non-bacteriological sampling</i> • <i>Source water protection zone maps</i> • <i>Sewage spill clean up</i>	

DWQMS Reference:	19 Internal Audits
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 19 Procedure Internal Auditing QMS-WT-ALL-P-190 Rev 9
Details: <i>The procedure documents the criteria (Section 1), scope (Section 5.2) and frequency of internal audits (Section 5.3) ; that all 21 elements are assessed at least every 3 calendar years and that each DWS facility is audited at least every 2 calendar years.</i> <i>Records keeping is defined in section 5.6 reporting and references the Document and Records Control procedure QMS-WT-ALL-P-050.</i> <i>Section 5.4.3 refers to the review of results of previous audits in preparation for the audit.</i> <i>Section 5.6.3 defines the use of the Corrective Action procedure QMS-WT-ALL-P-210 for identification and initiation of corrective actions.</i>	

DWQMS Reference:	20 Management Review
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 20 Procedure - Management Review QMS-WT-ALL-P-200 Rev 7
Details: <i>The procedure specifies a management review once per calendar by means of a Q2 and a Q4 meeting with all requirements discussed over course of the 2 meetings. In section 5.3.1, the procedure defines the specific items to be discussed in each of the respective meetings. All required inputs have been specified.</i>	

DWQMS Reference:	21 Continual Improvement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 21 Procedure - Corrective Action, Preventive Action, and Best Practices QMS-WT-ALL-P-210 Rev 8
Details: <i>EtQ is the Management system software tool used to track and monitor corrective and preventive actions. EtQ is also used record the root cause analysis.</i> <i>Best Practices are also part of the procedure. The procedure specifies that at least once every 36 months the QMS representative will review best practices published by the MECP.</i> <i>The procedure describes activities for handling both corrective actions and preventive actions. Handling of best practices and preventive action are addressed in Section 5.4 of the procedure with Figure 2 providing an overview of the process</i>	

This report was prepared by:



Marco Brunato
SAI Global Management Systems Auditor

The audit report is distributed as follows:

- SAI Global
- Operating Authority
- Owner
- MOECC

Notes

Copies of this report distributed outside the organization must include all pages.

Audit Report

Re Accreditation Audit for

The Regional Municipality of Niagara

1631650-02

Audited Address: 3501 Schmon Parkway, Thorold, Ontario, CAN,
L2V 4T7

Start Date: Jul 06, 2020 End Date: Jul 10, 2020

Type of audit – Re-accreditation Verification Audit

Issue Date: July 24, 2020

Revision Level:

BACKGROUND INFORMATION

SAI Global conducted an audit of The Regional Municipality of Niagara beginning on Jul 06, 2020 and ending on Jul 10, 2020 to DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017.

The purpose of this audit report is to summarise the degree of compliance with relevant criteria, as defined on the cover page of this report, based on the evidence obtained during the audit of your organization. This audit report considers your organization's policies, objectives, and continual improvement processes. Comments may include how suitable the objectives selected by your organization appear to be in regard to maintaining customer satisfaction levels and providing other benefits with respect to policy and other external and internal needs. We may also comment regarding the measurable progress you have made in reaching these targets for improvement.

SAI Global audits are carried out within the requirements of SAI Global procedures that also reflect the requirements and guidance provided in the international standards relating to audit practice such as ISO/IEC 17021-1, ISO 19011 and other normative criteria. SAI Global Auditors are assigned to audits according to industry, standard or technical competencies appropriate to the organization being audited. Details of such experience and competency are maintained in our records.

In addition to the information contained in this audit report, SAI Global maintains files for each client. These files contain details of organization size and personnel as well as evidence collected during preliminary and subsequent audit activities (Documentation Review and Scope) relevant to the application for initial and continuing certification of your organization.

Please take care to advise us of any change that may affect the application/certification or may assist us to keep your contact information up to date, as required by SAI Global Terms and Conditions.

This report has been prepared by SAI Global Limited (SAI Global) in respect of a Client's application for assessment by SAI Global. The purpose of the report is to comment upon evidence of the Client's compliance with the standards or other criteria specified. The content of this report applies only to matters, which were evident to SAI Global at the time of the audit, based on sampling of evidence provided and within the audit scope. SAI Global does not warrant or otherwise comment upon the suitability of the contents of the report or the certificate for any particular purpose or use. SAI Global accepts no liability whatsoever for consequences to, or actions taken by, third parties as a result of or in reliance upon information contained in this report or certificate.

Please note that this report is subject to independent review and approval. Should changes to the outcomes of this report be necessary as a result of the review, a revised report will be issued and will supersede this report.

Standard:	DRINKING WATER QUALITY MANAGEMENT STANDARD VERSION 2 - 2017
Scope of Certification:	Treatment and Distribution System
Drinking Water System Owner:	Regional Municipality of Niagara
Operating Authority:	Regional Municipality of Niagara
Population Services:	400,000
Activities:	Treatment Distribution Decew Falls / Niagara Falls Drinking Water System, Municipal Drinking Water Licence # 007-102, Issue 5 Grimsby Drinking Water System, Municipal Drinking Water Licence # 007-105, Issue 3 Port Colborne Drinking Water System, Municipal Drinking Water Licence # 007-101, Issue 3 Welland Drinking Water System; Municipal Drinking Water Licence # 007-104, Issue 3 Rosehill Drinking Water System, Municipal Drinking Water Licence # 007-103, Issue 5
Drinking Water Systems	
Total audit duration:	Person(s): 1 Day(s): 4.50
Audit Team Member(s):	Team Leader Marco Brunato

Definitions and action required with respect to audit findings

Major Non-conformance:

Based on objective evidence, the absence of, or a significant failure to implement and/or maintain conformance to requirements of the applicable standard. Such issues may raise significant doubt as to the capability of the management system to achieve its intended outputs (i.e. the absence of or failure to implement a complete Management System clause of the standard); or

A situation which would on the basis of available objective evidence, raise significant doubt as to the capability of the Management System to achieve the stated policy and objectives of the customer.

NOTE: The "applicable Standard" is the Standard which SAI Global are issuing certification against, and may be a Product Standard, a management system Standard, a food safety Standard or another set of documented criteria.

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities. Correction and corrective action plan should be submitted to SAI Global prior to commencement of follow-up activities as required. Follow-up action by SAI Global must 'close out' the NCR or reduce it to a lesser category **within 90 days for initial certification and within 60 days for surveillance or recertification audits, from the last day of the audit.**

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of initial certification, failure to close out NCR within the time limits means that the Certification Audit may be repeated.

If significant risk issues (e.g. safety, environmental, food safety, product legality/quality, etc.) are detected during an audit these shall be reported immediately to the Client and more immediate or instant correction shall be requested. If this is not agreed and cannot be resolved to the satisfaction of SAI Global, immediate suspension shall be recommended.

In the case of an already certified client, failure to close out NCR within the time limits means that suspension proceedings may be instituted by SAI Global.

Follow-up activities incur additional charges.

Minor Non-conformance:

Represents either a management system weakness or minor issue that could lead to a major nonconformance if not addressed. Each minor NC should be considered for potential improvement and to further investigate any system weaknesses for possible inclusion in the corrective action program

Action required: This category of findings requires SAI Global to issue a formal NCR; to receive and approve client's proposed correction and corrective action plans; and formally verify the effective implementation of planned activities at the next scheduled audit.

Opportunity for Improvement:

A documented statement, which may identify areas for improvement however shall not make specific recommendation(s).

Action required: Client may develop and implement solutions in order to add value to operations and management systems. SAI Global is not required to follow-up on this category of audit finding.

Audit Type and Purpose

On-site Verification Audit:

An onsite audit to assess whether a QMS has been implemented for the subject system that meets the “DO” requirements of the DWQMS V2.

This audit was conducted remotely for part of the audit but on site for assessment of the conditions at the treatment plants per the audit plan.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) of the subject system conforms to the requirements of the Ontario Ministry of the Environment & Climate Change (MOECC) Drinking Water Quality Management Standard (DWQMS V2).

The audit was also intended to gather the information necessary for SAI Global to assess whether accreditation can continue or be offered or to the operating authority.

Audit Scope

The facilities and processes associated with the operating authority's QMS were objectively evaluated to obtain audit evidence and to determine a) whether the quality management activities and related results conform with DWQMS V2 requirements, and b) if they have been effectively implemented and/or maintained.

Audit Criteria:

- The Drinking Water Quality Management Standard Version 2
- Current QMS manuals, procedures and records implemented by the Operating Authority
- SAI Global Accreditation Program Handbook

Confidentiality and Documentation Requirements

The SAI Global stores their records and reports to ensure their preservation and confidentiality. Unless required by law, the SAI Global will not disclose audit records to a third party without prior written consent of the applicant. The only exception will be that the SAI Global will provide audit and corrective action reports to the Ontario Ministry of the Environment. For more information, please refer to the SAI Global Accreditation Program Handbook.

As part of the SAI Global Terms, it is necessary for you to notify SAI Global of any changes to your Quality Management System that you believe are significant enough to risk non-conformity with DWQMS V2: For more information, please refer to the SAI Global Accreditation Program Handbook.

Review of any changes

Changes to the Operating Authority since last audit include: No Changes

EXECUTIVE OVERVIEW

The results of this onsite verification audit (Stage 2) indicate that the management system does not fully meet the requirements of the standard based on the area(s) of non-conformance identified during the audit and as documented in the attached Non-conformance Report(s). As discussed during the closing meeting a recommendation for certification to the standard and to the scope of certification identified in this report is on hold pending the receipt, review and acceptance of the corrective action taken. For re-certification, failure to address the nonconformances within the 60-day timeframe may lead to suspension.

Nonconformance

Minor NCR 2020-01

- Element 17 Measurement & Recording Equipment Calibration and Maintenance

Opportunities for Improvement:

The following opportunities for improvement have been identified.

- 6 – Consider the addition of the map indicating the 3 operating areas with the associated assets for which the areas are responsible
- 17 – Consider recording the lot number referenced on decanted PH buffers used to calibrate PH meters/sensors.
- 18 - Consider addition of MetroLinx (GO) to Emergency contacts list considering the increased frequency of trips between Niagara Falls and Hamilton.

It is suggested that the opportunities for improvement be considered by management to further enhance the Operating Authority's Quality Management System and performance.

Management System Documentation

The management systems operational plan(s) was reviewed and found to be in conformance with the requirements of the standard.

Management Review

Records of the most recent management review meetings were verified and found to meet the requirements of the standard. All inputs were reflected in the records and appear suitably managed as reflected by resulting actions and decisions.

Internal Audits

Internal audits are being conducted at planned intervals to ensure conformance to planned arrangements, the requirements of the standard and the established management system.

Corrective, Preventive Action & Continual Improvement Processes

The Operating Authority is implementing an effective process for the continual improvement of the management system through the use of the quality policy, quality objectives, audit results, data analysis, the appropriate management of corrective and preventive actions and management review.

Summary of Findings

1. Quality Management System	Conforms
2. Quality Management System Policy	Conforms
3. Commitment and Endorsement	Conforms
4. Quality Management System Representative	Conforms
5. Document and Records Control	Conforms
6. Drinking-Water System	Conforms/OFI
7. Risk Assessment	Conforms
8. Risk Assessment Outcomes	Conforms
9. Organizational Structure, Roles, Responsibilities and Authorities	Conforms
10. Competencies	Conforms
11. Personnel Coverage	Conforms
12. Communications	Conforms
13. Essential Supplies and Services	Conforms
14. Review and Provision of Infrastructure	Conforms
15. Infrastructure Maintenance, Rehabilitation & Renewal	Conforms
16. Sampling, Testing and Monitoring	Conforms
17. Measurement & Recording Equipment Calibration and Maintenance	Minor NCR 2020-01 & OFI
18. Emergency Management	Conforms/OFI
19. Internal Audits	Conforms
20. Management Review	Conforms
21. Continual Improvement	Conforms
Major NCR #	Major non-conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor non-conformities; or (c) a minor non-conformity identified with a corrective action request has not been remedied.
Minor NCR #	Minor non-conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for improvement. Conforms to requirement, but there is an opportunity for improvement.
Conforms	Conforms to requirement.
NANC	Not applicable/Not Covered during this audit.
****	Additional comment added by auditor in the body of the report.

PART D. Audit Observations, Findings and Comments

DWQMS Reference:	1 Quality Management System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 dated Dec 12, 2019
<i>Details: The operational plan details all requirements of the standard. All systems in place all treatment plants; all plants follow similar sops and for the smaller treatments sites. Policies & procedures established in all locations – few procedures plant specific. Operational Plan Rev 10</i>	

DWQMS Reference:	2 Quality Management System Policy
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 2
<i>Details: The policy is outlined in its commitments to W-A-T-E-R and addresses all required commitments. The W-A-T-E-R poster is a format that communicates to OA personnel, the Owner and the Public.</i> <i>Associate Director Water operations and maintenance John Brunet</i> - Constant updates - Ensure a dedicated resource for policy and procedure updates and understanding by the staff - New policies and engineering (contractors and capital projects) and asset management - Water succession; brain drain in last 5-10years; new young staff with high educational levels i.e. environmental studies - 12 municipal customers/partners and end users - Water quality high, - Still high capacity for growth - Compliance regulations – guides <i>Associate Water & Integration Systems – support group on water and ops, maintenance; specialized tech groups. H&S. Public outreach – campaigns - wastewater flushable; water festival; water wagon at large events (>500 people)</i> <i>Associate Asset Management Richard Pinder</i> <i>Director of Water and waste water services Joe – future development; few complaints; timing of new capital projects; Succession in stable.</i> <i>Communication with the owners; more spend on water services.</i> <i>Owners awareness of need to maintain infrastructure;</i> <i>Sustainability –</i> <i>Risk Assessment – Environmental hazards; GHG, Source protection.</i> <i>Associate Direct Engineering – deliver capital program; ensure budget and funding – meets compliance; asset increasing and budget about; local municipalities</i> <i>Virtual Water Festival – included a 4-day lesson plan</i>	

DWQMS Reference:	3 Commitment and Endorsement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 3
<i>Details: Owner Representatives of Niagara Regional Council; The Regional Chair and Regional Clerk endorse the Operational plan through direct sign off the Operational Plan in Section 3. Operating Authority top management representatives sign off via the Commitment and Endorsement Memorandum.</i> <i>Per Section 9 Top Management includes the</i> • Commissioner of Public Works • Director of Water and Wastewater • Associate Director, Water Operations, Maintenance, and Staff Development <i>Commitment & endorsement from the Regional Level and divisional level from the Water Services</i> <i>PW 19-2019 March 19, 2019 Request for Endorsement;</i> <i>Ownership; Regional Chair, PW Commissioner; carried by council March 19, 2019</i> <i>Per Memorandum submitted by R Whyte QMS Oct 11, 2019</i> <i>Top Management i.e. Rich Pinder Associate Director Asset management Oct 15, 2019</i>	

DWQMS Reference:	4 Quality Management System Representative
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 4 & Section 9
Details: <i>Top Management has appointed the Water-Wastewater Quality Management Specialist (reporting to the Manager, Quality & Compliance – Water) as the QMS Representative for Niagara Region’s drinking water systems. The representatives’ responsibilities with respect to the DWQMS are defined in Section 4. The role is also reflected in Section 9 of the operational plan</i> <i>WW QM Specialist responsible for the system maintenance</i> <i>Interface with all departments i.e. Integrated Systems; Asset Management</i> <i>Least connected with Engineering; interface needs to be managed by the WW Specialist</i> <i>Compliance awareness shared with water compliance specialist; Communications via training course “This is how we do it” mandatory compliance course</i> <i>Displayed Rev June 2019</i> <i>Revised – look at the responsibilities of the various work groups; aligned the learning objectives</i> <i>Contractors and Consultants also receive awareness training of Quality & Compliance - completed</i> <i>Standard of Care for top Management, Ops Managers & Mtce Managers; once per council cycle and as required.</i>	

DWQMS Reference:	5 Document and Record Control
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 5 Procedure - Document and Records Control (QMS-WT-ALL-P-050) Rev 8
Details: <i>Vine portal demonstrated; Public services link is home page – Water Wastewater Services Division links EtQ login – to Reliance</i> <i>Link to SOP & Controlled Document Search (Pulls from EtQ)</i> <i>Emergency Response documents also linked as a main</i> <i>EtQ indicates the current approved and revision level</i> <i>QMS Records retained in EtQ records management module from the Portal link to Records Management; index identifies the disposition/retention dates; management review and internal audits also available and retained for up to 10 years</i> <i>Bylaw 63-2013 Region Niagara retention and destruction of records</i>	

DWQMS Reference:	6 Drinking Water System
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 6 Decew Falls DWS QMS-WT-DN-P-060 Rev 7 Grimsby DWS QMS-WT-GR-P-060 Rev 4 Port Colborne DWS QMS-WT-PC-P-060 Rev 5 Rosehill DWS QMS-WT-RH-P-060 Rev 9 Welland DWS QMS-WT-WE-P-060 Rev 7
Details: <i>Physical onsite observations were made of the assets located below. All sites are consistent with the drinking water description provided</i> <u><i>DECEW DWS assets observed included;</i></u> <i>Niagara Falls Water Treatment Plant (source Lake Erie, Niagara River via Welland River/Chippewa Creek)</i> <i>Lundy’s Lane Tower (Elevated Tank)</i> <i>Kent Avenue Reservoir & Booster Pumping Station</i> <i>Stanley Avenue Re-Chlorination Station</i> <i>Queenston Heights Pumping Station</i> <i>Process Schematic QMS-WT-DN-V-060 Rev 3</i> <u><i>Grimsby DWS assets observed included;</i></u> <i>Grimsby Water Treatment Plant (source Lake Ontario)</i> <i>Hixon Street Reservoir</i> <i>Lincoln / Grimsby Booster Pumping Station</i> <i>Process Schematic QMS-WT-GR-V-060 Rev 3</i> <u><i>Welland DWS assets observed included;</i></u> <i>Welland Water Treatment Plant; (source Lake Erie)</i> <i>Bemis Park Elevated Tank;</i> <i>Shoalts Drive Reservoir and Pumping Station;</i> <i>Process Schematic QMS-WT-WE-V-060 Rev 6</i>	

DWQMS Reference:	7 Risk Assessment
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 7 Procedure - Drinking Water System Risk Assessment (QMS-WT-ALL-P-070) Rev 9
Details: The procedure outlines the risk assessment method and criteria. Risk assessment outcome are documented in Risk Assessment Outcomes Table (QMS-WT-ALL-T-080) and stored in the EtQ portal. Risk assessment is completed annually. Risk Assessment Review Form - Water (QMS-WT-ALL-F-070 Rev 0) is used to update the completed Risk Assessment Outcomes Table with changes as applicable. A rank of >15 denotes the need for action. Appendix A of the procedure defines the risk assessment scoring criteria; Table A1 Likelihood (1-5; 1=Rare, 5=Very Likely); Table A2 Severity impact water quality (1-5; 1=Insignificant, 5=Catastrophic); Table A3 Severity impact on system capacity (1-5; 1=Insignificant, 5=Catastrophic); Table A4 Severity impact on compliance (1-5; 1=Insignificant, 5=Catastrophic); Table A5 Severity impact on the environment (1-5; 1=Insignificant, 5=Catastrophic); Table A6 Severity impact financial (1-5; 1=Insignificant, 5=Catastrophic); Table A4 Severity impact on reputation (1-5; 1=Insignificant, 5=Catastrophic); Risk assessment completed as per procedure.	

DWQMS Reference:	8 Risk Assessment Outcomes
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 8
Details: Risk Outcomes Table QMS-WT-ALL-T-080 Rev 4 CCPs for Niagara Region's drinking water systems are identified as: • CCP: Coagulant (Aluminum Sulphate) Feed (OP-WT-ALL-P-006) • CCP: Secondary Disinfection (Distribution Chlorine) (OP-WT-ALL-P-007) • CCP: Filter Effluent Turbidity (OP-WT-ALL-P-008) • CCP: Primary Disinfectant (Sodium Hypochlorite) Feed (OP-WT-ALL-P-009) • CCP: Verification of Primary Disinfection (OP-WT-ALL-P-010) Discussions with the control room/SCADA operator confirmed alarms established per the critical control points. No incidents of alarm conditions were observed during the on-site audit of the treatment plants visited as identified in element 6 above	

DWQMS Reference:	9 Organizational Structure, Roles, Responsibility and Authorities
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section
Details: Roles, responsibilities and authorities are defined in table 3. The organizational chart Figure 2 identifies the interrelationship of the various roles and lines of reporting. Regional Council CAO – Owner representative Comm. of Public works Manager Water & Quality Compliance – position will not be filled WW specialist report directly to the AD Water Operations & Maintenance All ADs sit in the Environmental Centre (Schmon Parkway) Water Ops includes – 3 operating areas defined by 3 Operations Manager and Maintenance Manager responsible for 3 plants each Area 1 NF & Rosehill Area 2 Welland & PC Area 3 Decew (3 plants on one site) & Grimsby	

DWQMS Reference:	10 Competencies
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 10 Procedure – Competencies QMS-WT-ALL-P-100 Rev 7
Details: Competencies have been documented in the Competency table QMS-ALL-ALL-T-100 Rev 8 Interview with the Training Advisor Reg 128 – operators require set hours of training “Director approved” – reviewed by MECP and approved + on the job training 150 hours, with up to 108 of those as “on the job”	

*"On the Job hours" – i.e. organized class room, lunch and learned, commissioning training form project managers, tail gate talks.
i.e. Tail gate talks*

Learning Calendar Winder Spring 2020 issued 2x per year.

*Class 4 facilities – require for highest level for facility level
Approximately 175 certified water and Wastewater*

*Peoplesoft notifies staff via email flags several times to notify the operator.
Learning calendar published.
Mandatory related to OHS requirements*

*1 course counted 1 once in the three year renewal
Quality & Compliance 101
Q & C in water Operations*

*Competencies for all staff confirmed during the audit
i.e. Grimsby Jeff Carl Level IV #58702 Expire Sept 2021
i.e. N. fall B. Weaver Level III #16433 Expiry April 2022
i.e. Welland A. Ritter, J Carl, B. Haley verified IV*

*Certifications verified on the daily log sheets used in each of the SCADA control rooms; log sheet indicates class and expiry
Training requirements verified for operators specifically designated for sampling and for maintenance operators designated for instrumentation calibration. i.e. R. Bochaar Instrumentation Technician verified per Competency table Rev 8; Job Description ID 6TE4J*

Memo MECP March 24, 2020 re Certified Operator Relief Blanket MECP per O. Reg 75/20

DWQMS Reference:	11 Personnel Coverage
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 11 Procedure - Personnel Coverage QMSWT-ALL-P-110 Rev 8
Details: Coverage of Water Operations Staff, the Manager-on-call and ORO and OIC, Water Maintenance and Technical Trades is defined. Details for schedules are reflected in the Manager-On-Call Schedule. On Call schedule change process is defined per the On-Call Scheduling procedure ADM-ALL-ALL-P-005. Niagara Falls WTP -minimum 1 person on shift -on call ORO -2020 Ops/MTCE schedules reviewed – 4 operators on different shifts -N Falls dedicated staff + floaters may be called in -2020 Area 2 Ops + MTCG schedule Jul-Dec 2020 COVID 19 coverage – self isolation impact – no sampler & no A shift; 3 operators self-isolated COVIS SharePoint site developed; communications included memo on Temporary absence and work from home plans. Welland WTP Area 2 Schedule 2020 reviewed Grimsby WTP Area 3 Schedule 2020 reviewed	

DWQMS Reference:	12 Communications
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 12 & 3.3 Procedure - Communications QMS-WT-ALL-P-120 Rev 6
Details: <i>Procedure outlines means to communicate policy and procedures</i> <i>Interview with Engagement & Education Coordinator</i> <i>Management to Owner</i> - annual report to council – late Nov/Dec. – public document; regional website; report is attached as - public works memos to communications to municipality - councilor standard of care – changeover of councilor <i>Internal communication of QMS</i> - intranet policy and links, QMS Rep; verified on VINE. - Controlled document portal. - Posters at facilities - Security ide cards included policy - Divisional newsletter 3 X per year. Dec 2019 - Employee portal to communication to top management - suggestions for CI and concerns <i>VINE – And suggestion screens shared Think Tank for suggestions; suggestions reviewed by area responsible manager and then divisional leadership; reviewed monthly</i> <i>These feed the management review suggestions from employees</i> <i>Vine is main portal for electronic communication</i> - Provided link to all procedures (EtQ) and ESS - Water compliance page <i>Niagara Region webpage – used for public communications – DWQMS</i> <i>Water quality reports</i> <i>Newsletter – Green Scene</i>	

DWQMS Reference:	13 Essential Supplies and Services
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 13 Procedure - Essential Supplies and Services QMS-WTALL-P-130 Rev 9
Details: <i>Interview with Security and Contracts Administrator</i> <i>Chemicals, calibration services, lab services</i> <i>CofA for chemicals required – AWWA standards. Sample and C of A.</i> <i>Liquid Alum tender just closed; RFT 2018 Appx D includes specifications and CofA requirements; response to chemical spills.</i> <i>Work with procurement to develop scopes</i> <i>Stakeholders provided the specific product or service requirements; into a tender document;</i> <i>Corporate services group – Procurement; most 1 year with option for 2 years;</i> <i>Lowest compliant bid</i> <i>W & WW Emergency Contact list includes water haulers and main break repairs and suppliers</i> <i>Hazardous waste – spill responders</i> <i>Emergency fuel suppliers are also on the ESS effective Sept 25, 2019; Canada Clean Fuels is supplier – fuel purchase consortium</i>	

DWQMS Reference:	14 Review and Provision of Infrastructure
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 14 Procedure - Review, Rehabilitation, and Renewal of Infrastructure QMS-WT-ALL-P-140 Rev 9
Details: Procedure outlines a process for the annual review of drinking water system infrastructure to ensure its continued adequacy. It details how capital-funded drinking-water infrastructure rehabilitation and renewal projects are initiated, approved and communicated to the Owner. Capital budget completed in Jan EAM system input Meeting with ops and maintenance; process works End of life; Parts availability considered Capital projects some years off; what is the mitigation to keep asset operational Year capital plan approved by council; with a 10-year plan; 2020 approved Nov 2019 Condition assessment studies – update yearly; last completed Municipalities meeting annually to discuss infrastructure work and number of projects PtC – second source of water – as connections between NFalls and PtC Master Servicing Plan – currently being update and based on growth of the systems and new developments (infrastructure planning group) look at sustainability DECEW – several projects in next 3 years – \$90 Million worth. 10 Year plan for water Operations Draft 2021 Rosehill Ne Intake New Fort Erie Elevated Tank Chemical system upgrade program Generator replacement program Roof replacements Master meter replacement program Watermain evaluation and replacement program	

DWQMS Reference:	15 Infrastructure Maintenance, Rehabilitation and Renewal
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 15 Procedure - Maintenance QMS-WT-ALL-P-150 Rev 5
Details: The procedure defines planned and unplanned maintenance requirements per Figure 1. Table 1 defines maintenance service by team. The use of the Operations Work Request Process MTCE-WT-ALL-P-002 is used when staff recognize need for non-emergency work. Area Managers are responsible for development of Preventive maintenance Schedules. Work orders are generated weekly. Procedure for unplanned maintenance and maintenance after hours have been established. i.e. Procedure - Maintenance After-Hours Call-In Process - Water (OP-WT-ALL-V-001) Interview with Associate Director for Asset Management Maintenance – EAM work management – tracks assets and work performed generates the work orders., replacement allows retire of old piece – warranty tracking Capital upgrades tracked. Criticality for each asset – Id which are run to failure; maintain shelf spares Maintenance has up to 80% of asset included; remaining 20% up to facilities; Facilities now under responsibility of Asset Management Replacement of assets – i.e. Anger Avenue WW Plant. 4 of 6 intakes require replacement – approvals are in, Rosehill intake – age failure; Grimsby, Niagara Falls	

DWQMS Reference:	16 Sampling, Testing and Monitoring
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 16 Procedure -Sampling, Testing and Monitoring QMS-WT-ALL-P-160 Rev 5

Details:

Details for Sampling, Testing and Monitoring Activities in each DWS are reflected the following procedures;

- Rosehill WTP QMS-WT-RH-T-160 Rev 6
- Niagara Falls QMS-WT-NF-T-160 Rev 6
- Welland QMS-WT-RH-T-160 Rev 7
- Port Colborne QMS-WT-PC-T-160 Rev 7
- Grimsby QMS-WT-GR-T-160 Rev 6
- DeCew Falls QMS-WT-DF-T-160 Rev6

The tables within each of the listed procedures includes a column for challenging conditions.

OFI: Consider including within the scope of each procedure a clarification regarding relevant sampling, testing or monitoring activities that may or may not take place upstream of the subject system (that is before water enters the DWS).

Sample are collected by and analysed by a certified Water Operator according to the procedures. The Operator records internal testing results on the Plant Log Sheet. Which are reviewed at least once every 72 hours.

Key process parameters for each drinking water system are continuously monitored using a SCADA system.

External testing includes analyses that are performed by an external, Ministry-licenced drinking-water laboratory as defined in the above noted procedures. External testing covers Microbiological, Chemical, Radiological and Inorganic Parameters as defined in the referenced regulations.

For each of Niagara Falls WTP, Welland WTP & Grimsby WTP the daily log sheets as maintained by the control room operator were review Jan – March 2020, indicating checks every 8 hours; including CI residuals, turbidity and water chemistry.

Sampling completed as per schedule and include weekly Bacteriological and microcystin. testing

DWQMS Reference:	17 Measurement and Recording Equipment Calibration and Maintenance
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 17 Procedure - Measurement and Recording Equipment Calibration and Maintenance QMS-WT-ALL-P-170 Rev 6

Details:

The procedure defines calibration and maintenance programs for instrumentation and equipment used in Niagara Region's drinking water systems. Additional calibration and verification activities are referenced in Table 1 for handheld and benchtop chlorine analyzers and turbidity meters.

Table 2 provides maintenance/calibration requirements for verification or calibration (reference vs confirmation vs calibration).

Table 3 defines functional uses of equipment (information vs control vs regulatory)

The EAM PM Schedule controls and hold calibration and verification records of measuring equipment.

In house Instrumentation Technicians are responsible for completion of online instrumentation calibrations and verifications

Niagara Falls WTP equipment calibrations

- Turbidity meter on inlet to UV 7/209
- UV 3/2020
- CI Analyser 42722 4/2020 wo 689253
- Ph analyser 39878 4/2020 wo 689255 (buffer 4 & 7 lot?)
- CI analyser 38783 4/2020
- Inline Alum injection #41448 – PM not completed
- Lab alum analyser 6/2020

NCR 2020-01 Alum flow meters have not been calibrated annually (as per PM10511) since installation in 2017

Stanley Ave. CI Booster Station

- 2019 log verified for CI residuals, Hypo pump check and tank level
- Maintenance logs indicate quarterly chlorine analyser calibration
- Post CI analyser \$427224 cal 7/2020
- Pre CI-analyser #42193
- Ph meter

Lundy's lane ET

- 2019 log – CI residuals free & total checked every other day
- Maintenance log chamber inspections and monthly station checks

Kent Street Booster & ReChlor station

- Maintenance log CI analyser cal Apr 3, 2020
- Hypo tank vented
- CI analyser # 38688 cal 7/2020
- CI Hach #36192 cal May 2020

Queenston Heights Station

- CI analyser #42895 cal 4/2020
Welland WTP
- Lab spectrophotometer #41455 cal 5/2020 - Lab Turbidity meter #9259 cal 5/2020 wo 683000 - UV bulbs #42121 wo 705627 - Post CI analyser 42394 cal 4/2020 wo 689542 - Ph meter 42123 cal 4/2020 - Turbidity meter 42169 wo 690964
Beamis
- CI analyser cal 4/2020 per logbook quarterly
Shoalts Dr Reservoir
- Mtce logbook up to date - Post CI analyser 36798 cal 4/2020
Grimsby WTP
- Flow meter 42857 wo 9328 - Alum flow side B41906 cal 12/2019, flow side A 41907 cal 12/2019; asset numbers reversed - See NCR 2020-01 - Raw water turbidity meter 32935 cal 4/2020 - Settled water turbidity meter 36144 cal 4/2020 wo 691491 - CI analyser contact tank outlet 15442 cal 4/2020 - Venturi flowmeter 45531 WO 694456 - CI analyser reservoir outlet 15771 cal 5/2020 wo 690934
Lincoln Booster pumping station
- CI analyser 14972 cal 7/2020 wo 692358 - Mtce logbook include generator inspection, degas hypo tank and CL analyser calibration; CI residuals every other day - Ops logbook up to date
Hixon Reservoir
- CI analyser 36846 cal 2/2020 wo 684698

DWQMS Reference:	18 Emergency Management
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 18 Water and Wastewater Emergency Response Plan ERP-ALL-ALL-P-001 Rev 7
Details: ERP manual for Water & Wastewater systems ERPs individual for each potential emergency Per manual 5-year frequency but in practice done annually. Done off site as a desk top involving all personnel and with the municipalities i.e. 2019 Held at Balls Falls March 22, 2019 - Niagara Region EOC - Emergency Drinking Water Provision Plan - Town of Grimsby Lessons Learned Mock Emergency Workshop modules/scenarios - Communication breakdown - Blame it of the rain - Gone, gone, gone – (Pelham ET) - I want to break free – water main break - Help I need somebody 2018 Mock Drill – water on road close to CN rail tracks OFI Consider addition of MetroLinx (GO) to Emergency contacts list considering the increased frequency of trips between Niagara Falls and Hamilton. Actual Events - June 19, 2019 – Emergency & Debriefing Reporting Form actual event May 31, 2019 Lincoln BPS– inability to meet water demand – watermain break	

DWQMS Reference:	19 Internal Audits
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 19 Procedure Internal Auditing QMS-WT-ALL-P-190 Rev 9
Details: <i>The procedure documents the criteria (Section 1), scope (Section 5.2) and frequency of internal audits (Section 5.3) ; that all 21 elements are assessed at least every 3 calendar years and that each DWS facility is audited at least every 2 calendar years. Records keeping is defined in section 5.6 reporting and references the Document and Records Control procedure QMS-WT-ALL-P-050. Internal audit conducted all at once – with all requirements covered. Initiated planning Jan 2020 Meeting held to develop audit plan; training refresher on audit objectives Determine what areas need to be audited based 3 processes selected; Competencies & training, Top Management Communications and Capital Projects All elements once every 3 years; All 3 areas covered; each plant once every 2 years. Audit Report March 2-12, 2020 issued April 7, 2020 by the WW & Q Specialist. Audits conducted in pairs one more experienced audit and one less experienced</i>	

DWQMS Reference:	20 Management Review
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 20 Procedure - Management Review QMS-WT-ALL-P-200 Rev 7
Details: <i>The procedure specifies a management review once per calendar by means of a Q2 and a Q4 meeting with all requirements discussed over course of the 2 meetings. In section 5.3.1, the procedure defines the specific items to be discussed in each of the respective meetings. All required inputs have been specified.</i>	

DWQMS Reference:	21 Continual Improvement
Client Reference:	Operational Plan QMS-WT-ALL-MAN-010 Rev 10 Section 21 Procedure - Corrective Action, Preventive Action, and Best Practices QMS-WT-ALL-P-210 Rev 8
Details: <i>EtQ is the Management system software tool used to track and monitor corrective and preventive actions. EtQ is also used record the root cause analysis. Best Practices are also part of the procedure. The procedure specifies that at least once every 36 months the QMS representative will review best practices published by the MECP. The procedure describes activities for handling both corrective actions and preventive actions. Handling of best practices and preventive action are addressed in Section 5.4 of the procedure with Figure 2 providing an overview of the process</i> <i>Currently 25 open in the system with 8 open from the internal audits QMR follows up for implementation and verification of the actions Annual update includes internal audit results</i> <i>WTCAR-20-008 Element 15 PWC -c-8-2020 Internal Audit Findings Per report PW-67-2019 Council update – of CA progress Dec 3, 2019</i> <i>WTCAR-20-006 open WTCAR-19-007 completed Jan 31, 2020 CAR Action 247 & 248 WTCAR-19-025 RCA and action developed CAR Action 172 completed Dec 1, 2017; CAR Action 173 completed April 27, 2018; CAR Action 174 completed April 29, 2020.</i> <i>Compliance obligations/MECP Inspections Adverse i.e. AWQI 150198; Notice of Adverse June 10, 2020, Resolution June 12, 2020 Noncompliance – Beamis disinfection issue April 8, 2019 Event log 247</i>	

Details regarding the personnel interviewed and objective evidence reviewed are maintained on file at SAI Global.

This report was prepared by:

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