



**Drinking Water Quality Management System
Operational Plan**
(QMS-ALL-WT-MAN-010)

For the Welland Distribution System

Effective Date: TBD

Version: 1

Owner: QMS Representative

Approver: Director Infrastructure Services

Table of Contents

Drinking Water Quality Management System	1
Operational Plan	1
1. Introduction	6
1.1. Scope	6
1.2. Drinking Water Quality Management Standard and ISO 9001:2015	6
2. Quality Management System Policy	7
2.1. Policy	7
2.2. Access	7
3. Commitment and Endorsement	7
3.1. Standard of Care	7
3.2. Commitments	8
3.3. Top Management	8
3.4. System Owner	8
3.5. System Owner Re-Endorsement and Revisions to the Operational Plan	9
4. QMS Representative	9
5. Document and Records Control	9
6. Drinking Water Systems	10
6.1. Owner and Operating Authority	10
6.2. Description of Overall Drinking Water Distribution System	10
6.3. Critical Upstream and Downstream Processes	12
7. Risk Assessment	12
8. Risk Assessment Outcomes	12
9. Organizational Structure, Roles, Responsibilities, and Authorities	13
10. Competencies	24
11. Personnel Coverage	24
12. Communications	24
13. Essential Supplies and Services	24
14. Review, Rehabilitation, and Renewal of Infrastructure	25
15. Infrastructure Maintenance	25
16. Sampling, Testing, and Monitoring	25



Drinking Water Quality Management System Operational Plan

Document ID: QMS-ALL-WT-MAN-010

Effective Date: <Insert>

Version: 1

17. Measurement and Recording Equipment Calibration and Maintenance	25
18. Emergency Management	25
19. Internal Audits	26
20. Management Review	26
21. Continual Improvement and Quality Objectives	26
Table of Revisions	Error! Bookmark not defined.



List of Tables and Figures

Table 1: Summary of Drinking Water Provision..... 11

Table 2: Roles, Responsibilities, and Authorities 16

Figure 1: Drinking Water System Schematic..... 11

Figure 2: Organizational Structure – System Owner, Top Management, and
Infrastructure Services..... 14

Figure 3: Organizational Structure – Public Works..... 15

List of Appendices

- Appendix 1 Quality Management System Policy (QMS-ALL-WT-PL-020)
- Appendix 2 Top Management Commitment and Endorsement (QMS-ALL-WT-F-030)
- Appendix 3 Council Re-Endorsement Motion (most current)
- Appendix 4 Document and Records Control (QMS-ALL-WWW-P-050)
- Appendix 5 Schedule C Director's Direction for Operations Plans – System Description
- Appendix 6 Risk Assessment (QMS-ALL-WT-P-070)
- Appendix 7 Risk Assessment Outcomes (QMS-ALL-WT-T-080) – CONFIDENTIAL
- Appendix 8 Competencies – Certification and Training Requirements (QMS-ALL-WWW-P-100)
- Appendix 9 Competencies – Certification and Training Table (QMS-ALL-WWW-T-101)
- Appendix 10 Monitoring and Maintaining Water and Wastewater Certification (QMS-ALL-WWW-P-102)
- Appendix 11 Personnel Coverage (QMS-ALL-WT-P-110)
- Appendix 12 Communications (QMS-ALL-WT-P-120)
- Appendix 13 Essential Supplies and Services (QMS-ALL-WT-P-130)
- Appendix 14 Review and Provision of Infrastructure (QMS-ALL-WT-P-150)
- Appendix 15 Maintenance (QMS-ALL-WT-P-150)
- Appendix 16 Sampling, Testing, and Monitoring (QMS-ALL-WT-P-160)
- Appendix 17 Sampling, Testing, and Monitoring Table (QMS-ALL-WT-T-161)
- Appendix 18 Measurement and Recording Equipment Calibration and Maintenance (QMS-ALL-WT-P-170)
- Appendix 19 Emergency Management and Response Manual (ER-ALL-ALL-MAN-001)
- Appendix 20 Internal Auditing (QMS-ALL-WT-P-190)
- Appendix 21 Management Review (QMS-ALL-WT-P-200)
- Appendix 22 Continual Improvement and Quality Objectives (QMS-ALL-WT-P-210)

1. Introduction

1.1.Scope

The City of Welland (City) is committed to establishing, documenting, implementing, and maintaining a Water Quality Management System (QMS) for the Welland Distribution System (Drinking Water System 260003149) and to continually improve its effectiveness. The QMS acts as a framework that supports the provision of safe drinking water, regulatory compliance, established specifications, and consumer satisfaction.

The scope of the City's QMS is limited to the processes and positions that directly affect drinking water as defined within *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities* and associated QMS procedures.

1.2.Drinking Water Quality Management Standard and ISO 9001:2015

The Municipal Drinking Water Licensing Program is established under the Safe Drinking Water Act, 2002. This licensing program requires drinking water System Owners to incorporate the concept of quality management into their operations, as mandated by the Drinking Water Quality Management Standard (DWQMS).

The DWQMS focuses on a proactive and preventive approach for the management of drinking water quality using the four-step "PLAN – DO – CHECK – IMPROVE" process. Under the DWQMS, all municipal residential drinking water systems are required to develop and implement a QMS that must be documented in an Operational Plan.

In addition to DWQMS, the City endeavours to conform to the requirements of ISO 9001; however, third party accreditation will only be obtained for the DWQMS.

For the purposes of ISO 9001 conformance, sections 8.2 Requirements for Products and Services and 8.3 Design and Development of Products and Services are managed through legislated requirements and engineering design guidelines established and maintained by governing bodies. Any required documented information (e.g. procedures, records, etc.) related to these sections are maintained as documented within QMS procedures, as applicable.

The City's QMS is documented as described within this Operational Plan and conforms to both the DWQMS and ISO 9001:2015 (ISO 9001).

2. Quality Management System Policy

A Quality Policy drives the QMS and documents commitments to demonstrate the City's assurance that quality management is integral to the management and operation of the Welland Distribution System.

The policy meets the requirements of ISO 9001:2015 and the DWQMS, is appropriate to the purpose and context of our organization and supports the City's strategic direction.

2.1. Policy

Quality Statement: The City of Welland is committed to providing consumers with safe drinking water, and City Council commits to support the Quality Management System for the City of Welland's Drinking Water System (DWS).

The City of Welland is committed to:

- Safe and clean drinking water
- Adhering and exceeding legislative and customer requirements
- Frequently monitoring and evaluating DWS performance to ensure conformance and continual improvement with our policy commitments
- Ensuring staff competency to continually improve the distribution system

To support our commitments, the City of Welland recognizes the importance of:

- Maintaining and improving our infrastructure
- Involving our personnel
- Providing barrier-free municipal services in a professional, timely and courteous manner.

2.2. Access

Digital or hardcopy versions of the policy are controlled under Quality Management System Policy (QMS-ALL-WT-PL-020).

Text based or branded versions of the policy are available for staff or public access on the City's external website, posted at the City's Public Works facility at 99 Federal Road, and reviewed during routine training.

3. Commitment and Endorsement

3.1. Standard of Care

Standard of Care provisions under the Safe Drinking Water Act, 2002, came into force on January 1, 2013.

These provisions require the System Owner, senior leadership, and every person who, on behalf of the municipality, oversees the accredited Operating Authority or exercises decision-making authority, to “exercise the level of care, diligence and skill that a reasonably prudent person would be expected to exercise in a similar situation” and “act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking-water system.”

Failure to do so could result in an offense under the Safe Drinking Water Act, 2002. A System Owner may rely on a report of an engineer, lawyer, accountant, or other person whose professional qualifications lend credibility to the report.

The Ministry of Environment, Conservation and Parks has prepared a guide for municipal councils with additional information related to standard of care: *Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils* (<https://www.ontario.ca/page/taking-care-your-drinking-water-guide-members-municipal-councils>).

3.2. Commitments

In support of the *Quality Management System Policy (Section 2)* and Standard of Care provisions, the City (Top Management and Owner representatives) is committed to establishing, documenting, implementing, and maintaining a QMS for the Welland Distribution System and to continually improve its effectiveness.

3.3. Top Management

Each member of Top Management pledges commitment to the Water QMS and endorses the Operational Plan through the signing of a Top Management Commitment and Endorsement (QMS-ALL-WT-F-030) form. The form includes Operational Plan endorsement and a pledge to ensure the implementation, maintenance, and continual improvement of the Water QMS.

Members of Top Management and relevant roles, responsibilities, and authorities are identified in *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities*. When changes in Top Management occur, the QMS Representative ensures that a Top Management Commitment and Endorsement (QMS-ALL-WT-F-030) form is signed by the new member within two months.

3.4. System Owner

As the System Owner, Council shall ensure the implementation, maintenance, and continual improvement of the Water QMS as documented in the Operational Plan. *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities* provides

additional details for the roles, responsibilities, and authorities related to the role of System Owner.

3.5. System Owner Re-Endorsement and Revisions to the Operational Plan

The QMS Representative ensures that the Operational Plan is re-endorsed by the System Owner when a new term of Council is elected by providing a formal report and recommendations to Council. The timing for formal endorsement is determined on a case-by-case basis based on business needs. At meetings where the Operational Plan is presented for re-endorsement, the passing of a motion for endorsement by Council formalizes the re-endorsement as System Owner.

Operational Plan revisions following re-endorsement will be approved by the member of Top Management noted as the document owner. In the event the document owner is unable to approve the revised document, a member of Top Management higher in the reporting structure may provide approval. Document revisions are completed in accordance with *Section 5: Document and Records Control*.

Operational Plan revisions and QMS status are regularly communicated in the following ways:

- Top Management – Annual meeting (minimum) as per *Section 12: Communications* and *Section 20: Management Review*
- System Owner – Annual report to Council (minimum) as per *Section 12: Communications*

4. QMS Representative

Top Management has appointed the Water Compliance Supervisor as the QMS Representative for the City of Welland's water QMS. If the Water Compliance Supervisor is unable to fulfil the duties of the QMS Representative, the General Foreman Public Works will assume the role and responsibilities.

Changes to the appointed QMS Representative are communicated to staff via electronic or verbal communication and routine training. The City will endeavor to inform staff of QMS Representative changes within one month.

The QMS Representative's responsibilities and authorities are outlined in *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities*.

5. Document and Records Control

Document and records control is an essential component of the QMS. Document and Records Control (QMS-ALL-WWW-P-050) outlines how documents required by the

QMS are kept current, legible, readily identifiable, retrievable, stored, protected, retained, and disposed of. The procedure also documents how records required by the QMS are kept legible, readily identifiable, retrievable, stored, protected, retained, and disposed of.

6. Drinking Water Systems

6.1. Owner and Operating Authority

The City is the System Owner and Operating Authority for the Welland Distribution System. See *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities* for specific positions or work groups that directly affect drinking water.

6.2. Description of Overall Drinking Water Distribution System

The City purchases wholesale drinking water for the Welland Distribution System from Niagara Region, the owner and operating authority of the Welland Water Treatment Plant, located at 4 Cross Street North in Welland, Ontario. A Schedule C Director's Direction for Operations Plans – System Description has been completed and added to the Appendix to meet regulatory requirements.

The Welland Water Treatment Plant obtains source water indirectly from Lake Erie, via the Welland Canal and the Welland Recreational Waterway (Old Welland canal). The Welland Water Treatment Plant is a conventional surface water treatment plant and, though not used, can operate as a direct filtration plant. The water treatment process uses aluminum sulphate and primary disinfection is achieved using sodium hypochlorite with ultraviolet light as enhancement.

The City operates and maintains two water hauler stations (Federal Road and Doans Ridge Road) and provides water to the City of Thorold and the Highlands Resident's Association distribution systems. Drinking water is conveyed to customers via City owned watermain and Niagara Region owned watermain, which range in size from 50 mm (2") to 750 mm (30") in size. In addition, the Town of Pelham indirectly provides water to the Welland Distribution System via Niagara Region owned transmission mains based on water demand throughout the system.

The City does not add additional chemicals within the distribution system for the purpose of primary or secondary disinfection. Secondary disinfection is maintained as described in *Section 15: Infrastructure Maintenance* and *Section 16: Sampling, Testing, and Monitoring*.

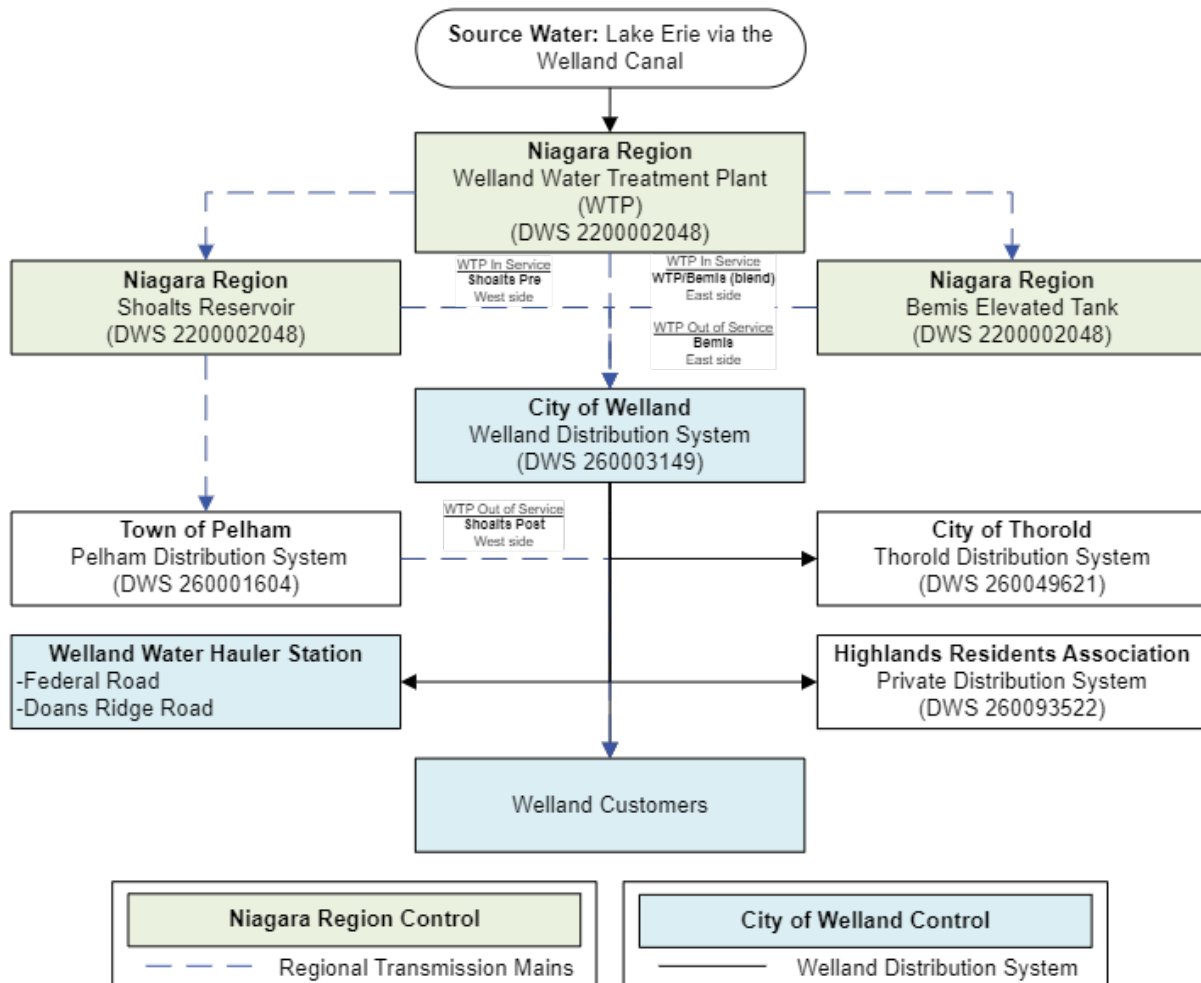
Distribution system components operated and maintained by the City are retrievable through internal GIS applications.

A summary of connected drinking water systems is provided in *Table 1: Summary of Drinking Water Provision*. For a high-level overview of source to customer drinking water supply, see *Figure 1: Drinking Water System Schematic*.

Table 1: Summary of Drinking Water Provision

Drinking Water System (DWS)	Owner	Operating Authority	Drinking Water System Type
Receives water from the Welland Drinking Water System	Niagara Region	Niagara Region	Large Municipal Residential - 2200002048
Receives water from the Pelham Distribution System (indirect)	Town of Pelham	Town of Pelham	Large Municipal Residential - 260001604
Provides water to the Thorold Distribution System	City of Thorold	City of Thorold	Large Municipal Residential - 260049621
Provides water to the Highlands Resident's Association	Highlands Resident's Association	Highlands Resident's Association	Private Non-Municipal Year-Round Residential - 260093522

Figure 1: Drinking Water System Schematic



6.3. Critical Upstream and Downstream Processes

The City undertakes source protection activities and initiatives required by the Clean Water Act, Niagara Peninsula Source Protection Plan, and Municipal Drinking Water Licence. These efforts contribute to the protection of source water for drinking water.

There are no critical downstream processes related to the Welland Distribution System.

7. Risk Assessment

The Risk Assessment (QMS-ALL-WT-P-070) outlines how the City ensures risk assessments are conducted as required. The procedure:

- Identifies potential hazardous events and associated hazards, including those required by the Ministry;
- Assesses the risks associated with the occurrence of hazardous events;
- Ranks the hazardous events according to their level of risk;
- Identifies control measures;
- Identifies critical control points (CCPs);
- Identifies a method to verify currency of information;
- Ensures a risk assessment is conducted at least once every thirty-six months; and
- Considers the reliability and redundancy of equipment.

8. Risk Assessment Outcomes

The Risk Assessment Outcomes (QMS-ALL-WT-T-080) table identifies hazardous events, associated risk scoring, control measures, CCPs and their respective CCLs, procedures for monitoring CCLs, procedures for responding to CCL deviations, and procedures for reporting and recording deviations.

As an output of the risk assessment exercises, CCPs for the City's drinking water system are identified as:

- Free chlorine < 0.20 mg/L
- Pressure < 20 psi
- Private plumbing lead < 10 ug/L

Individual procedures document how results and deviations from critical control limit discusses are summarized and tracked.

9. Organizational Structure, Roles, Responsibilities, and Authorities

The organizational structure related to the QMS, including designation/appointment of key QMS roles are illustrated in *Figure 2: Organizational Structure – System Owner, Top Management, and Infrastructure Services* and *Figure 3: Organizational Structure – Public Works*.

Figure 2: Organizational Structure – System Owner, Top Management, and Infrastructure Services

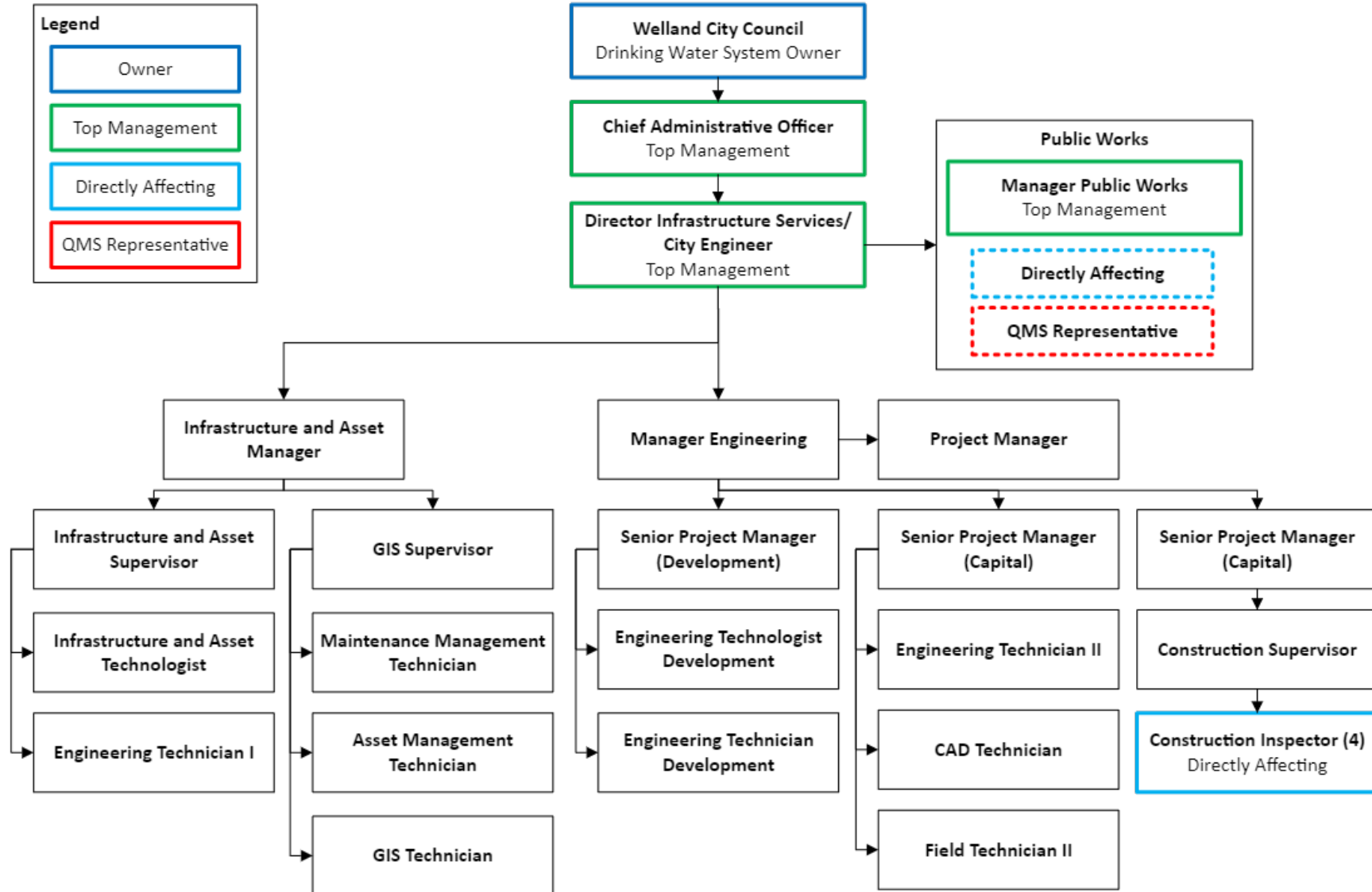


Figure 3: Organizational Structure – Public Works

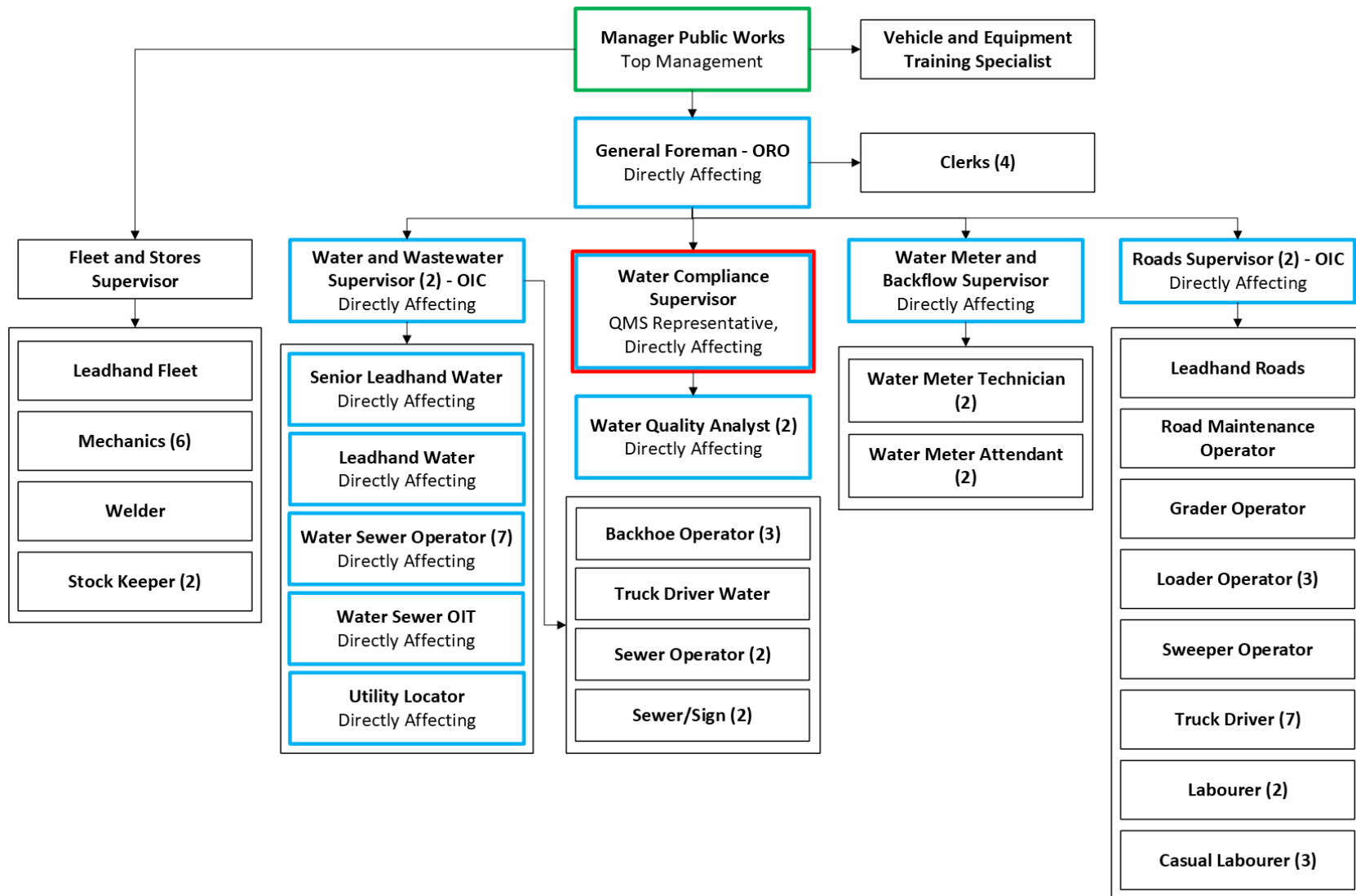


Table 2: Roles, Responsibilities, and Authorities

Role	Responsibilities	Authorities
<p>Welland City Council (System Owner)</p>	<ul style="list-style-type: none"> ▪ Maintain Standard of Care provisions under the Safe Drinking Water Act, ensuring adequate resources for the provision of safe drinking water, including but not limited to s.11 of the Act ▪ Ensure compliance and proper accreditation according to the requirements of the Safe Drinking Water Act, associated regulations, and DWQMS ▪ Pledge commitment and endorse the QMS ▪ Ensure the QMS is implemented, maintained, and continuously improved 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Financial and administrative authority relating to the distribution of safe drinking water
<p>Chief Administrative Officer (Top Management)</p>	<ul style="list-style-type: none"> ▪ Pledge commitment and endorse the QMS ▪ Act as a link between the system Owner and the Operating Authority ▪ Maintain Standard of Care provisions under the Safe Drinking Water Act, including requesting and providing adequate resources for the provision of safe drinking water, including but not limited to s.11 of the Act ▪ Oversee budget and procurement processes ▪ Participate in management review and auditing processes ▪ Consider the results of the management review and identify deficiencies and actions items to address the deficiencies ▪ Oversee and/or implement management review and continual improvement action items as assigned ▪ Ensure the integrity of the QMS is implemented, maintained, and continuously improved as changes to the organization, regulated requirements, or industry best practices occur 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Financial and administrative authority relating to the distribution of safe drinking water ▪ Delegate ▪ Suggest continual improvements



Drinking Water Quality Management System Operational Plan

Document ID: QMS-ALL-WT-MAN-010

Effective Date: <Insert>

Version: 1

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Director Infrastructure Services – City Engineer (Top Management)	<ul style="list-style-type: none"> ▪ Pledge commitment and endorse the QMS ▪ Act as a link between the system Owner and the Operating Authority ▪ Maintain Standard of Care provisions under the Safe Drinking Water Act, including requesting and providing adequate resources for the provision of safe drinking water, including but not limited to s.11 of the Act ▪ Establish Divisional priorities; control budget, cost, quality ▪ Oversee budget and procurement processes ▪ Participate in communications, infrastructure review, management review, and auditing processes ▪ Consider the results of the management review and identify deficiencies and actions items to address the deficiencies ▪ Oversee and/or implement management review and continual improvement action items as assigned ▪ Ensure the integrity of the QMS is implemented, maintained, and continuously improved as changes to the organization, regulated requirements, or industry best practices occur 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Financial and administrative authority relating to the distribution of safe drinking water ▪ Make engineering decisions ▪ Approve purchases in accordance with approved budget, policies, and procedures ▪ Discipline and deal with major personnel matters ▪ Delegate ▪ Suggest continual improvements

Role	Responsibilities	Authorities
<p>Manager Public Works (Top Management)</p>	<ul style="list-style-type: none"> ▪ Pledge commitment and endorse the QMS ▪ Act as a link between the system Owner and the Operating Authority ▪ Maintain Standard of Care provisions under the Safe Drinking Water Act, including requesting and providing adequate resources for the provision of safe drinking water, including but not limited to s.11 of the Act ▪ Establish Department priorities; control budget, cost, quality ▪ Oversee budget and procurement processes ▪ Participate in communications, risk assessment, infrastructure review, management review, and auditing processes ▪ Consider the results of the management review and identify deficiencies and actions items to address the deficiencies ▪ Oversee and/or implement management review and continual improvement action items as assigned ▪ Ensure the integrity of the QMS is implemented, maintained, and continuously improved as changes to the organization, regulated requirements, or industry best practices occur 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Financial and administrative authority relating to the distribution of safe drinking water ▪ Approve purchases in accordance with approved budget, policies, and procedures ▪ Discipline and deal with major personnel matters ▪ Suggest modifications to systems and make changes during construction ▪ Recommend purchase of equipment or services involving major expenditures ▪ Delegate ▪ Suggest continual improvements

Role	Responsibilities	Authorities
<p>General Foreman Public Works – ORO (Directly Affecting)</p>	<ul style="list-style-type: none"> ▪ Oversee the daily operations of the drinking water system, serving as Operator-in-Charge (OIC) and the Overall-Responsible-Operator (ORO), fulfilling the responsibilities in O. Reg. 128/04 as defined for the OIC and ORO roles ▪ Ensure the drinking water system is operated in accordance with all applicable legislation and regulations ▪ Act as backup QMS Representative when extended vacancies occur ▪ Monitor and maintain personal and staff operator certification in collaboration with staff and the Water Compliance Supervisor ▪ Monitor and verify staff competencies in accordance with the requirements of the QMS and standard operating procedures ▪ Oversee and perform operational functions in accordance with standard operating procedures ▪ Monitor and maintain written and computer based daily records ▪ Participate in communications, risk assessment, management review, and auditing processes ▪ Oversee and/or implement management review and continual improvement action items as assigned 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Financial and administrative authority relating to the distribution of safe drinking water ▪ Delegate ▪ Discipline and deal with minor personnel matters ▪ Suggest continual improvements ▪ OIC and ORO authority as described in O. Reg 128/04



Drinking Water Quality Management System Operational Plan

Document ID: QMS-ALL-WT-MAN-010

Effective Date: <Insert>

Version: 1

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Water Compliance Supervisor (QMS Representative, Directly Affecting)	<ul style="list-style-type: none"> ▪ Ensure that the QMS conforms to DWQMS and ISO 9001 requirements ▪ Carryout QMS Representative responsibilities required by DWQMS and ISO 9001: <ul style="list-style-type: none"> ▪ Administer the QMS by ensuring that processes and procedures needed for the QMS are established and maintained, and delivering their intended outputs ▪ Report to Top Management on the performance of the QMS and any need for improvement ▪ Ensure that current versions of documents required by the QMS system are being used at all times ▪ Ensure that personnel are aware of all applicable legislative, regulatory, and customer requirements that pertain to their duties for the operation of the subject system ▪ Promote awareness of the QMS throughout the Operating Authority ▪ Oversee the hand-held instrument calibration, risk assessment, auditing, accreditation, management review, and continual improvement processes ▪ Oversee operator certification and relevant training processes in collaboration with Supervisors and certified staff ▪ Monitor and verify staff competencies in accordance with the requirements of the QMS and standard operating procedures ▪ Oversee the water quality program collection and testing of water samples to monitor/maintain relevant parameters and following maintenance activities, taking appropriate action where required ▪ Oversee and perform functions in accordance with standard operating procedures ▪ Monitor and maintain written and computer based daily records 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Delegate ▪ Discipline and deal with minor personnel matters ▪ Suggest continual improvements

Role	Responsibilities	Authorities
<p>Water and Wastewater Supervisor – OIC (Directly Affecting)</p>	<ul style="list-style-type: none"> ▪ Monitor and maintain personal and staff operator certification in collaboration with staff and the Water Compliance Supervisor ▪ Monitor and verify staff competencies in accordance with the requirements of the QMS and standard operating procedures ▪ Oversee and perform operational functions in accordance with standard operating procedures ▪ Monitor and maintain written and computer based daily records ▪ Oversee routine inspections and maintenance activities (planned and emergency response) of distribution system components ▪ Oversee the collection and testing of water samples to monitor/maintain relevant parameters and following maintenance activities, taking appropriate action where required ▪ Assist with and participate in risk assessment, management review, and auditing processes when requested ▪ Daily – Serve as Operator-In-Charge (OIC) and fulfill the responsibilities in O. Reg. 128/04 as defined for the OIC role ▪ As delegated – Serve as Overall-Responsible-Operator (ORO) and fulfill the responsibilities in O. Reg. 128/04 as defined for the ORO role 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Delegate ▪ Discipline and deal with minor personnel matters ▪ Suggest continual improvements ▪ OIC and ORO authority as described in O. Reg 128/04
<p>Roads Supervisor – OIC (Directly Affecting)</p>	<ul style="list-style-type: none"> ▪ Perform Water and Wastewater Supervisor responsibilities and authorities when on-call or overseeing work requiring a certified operator in accordance with the <u>Personnel Coverage (QMS-ALL-WT-P-110)</u> procedure 	<ul style="list-style-type: none"> ▪ See Water and Wastewater Supervisor

Role	Responsibilities	Authorities
<p>Water Meter and Backflow Supervisor (Directly Affecting)</p>	<ul style="list-style-type: none"> ▪ Monitor and maintain staff operator certification in collaboration with staff and the Water Compliance Supervisor ▪ Monitor and verify staff competencies in accordance with the requirements of the QMS and standard operating procedures ▪ Oversee and perform operational functions in accordance with standard operating procedures ▪ Monitor and maintain written and computer based daily records ▪ Oversee the backflow prevention program ▪ Assist with and participate in risk assessment, management review, and auditing processes when requested 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Delegate ▪ Discipline and deal with minor personnel matters ▪ Suggest continual improvements
<p>Senior Leadhand Water and Leadhand Water (Directly Affecting)</p>	<ul style="list-style-type: none"> ▪ Maintain operator certification in collaboration with the Water Compliance Supervisor ▪ Monitor and verify staff competencies in accordance with the requirements of the QMS and standard operating procedures ▪ Oversee and perform operational functions in accordance with standard operating procedures ▪ Oversee and perform routine inspections and maintenance activities (planned and emergency response) of distribution system components ▪ Oversee and perform the collection and testing of water samples to monitor/maintain relevant parameters and following maintenance activities, taking appropriate action where required ▪ Monitor and maintain written and computer based daily records ▪ Participate in risk assessment and auditing processes when requested ▪ Daily - Serve as Operator-In-Charge (OIC) and fulfill the responsibilities in O. Reg. 128/04 as defined for the OIC role 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Suggest continual improvements



Drinking Water Quality Management System Operational Plan

Document ID: QMS-ALL-WT-MAN-010

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Water Sewer Operator – OIC, Water Sewer OIT, and Water Quality Analyst – OIC (Directly Affecting)	<ul style="list-style-type: none"> ▪ Maintain operator certification in collaboration with the Water Compliance Supervisor ▪ Perform operational functions in accordance with standard operating procedures ▪ Maintain written and computer based daily records ▪ Perform routine inspections and maintenance activities of distribution system components ▪ Collect and test water samples to monitor/maintain relevant parameters and following maintenance activities, taking appropriate action where required ▪ Participate in risk assessment and auditing processes when requested ▪ Serve as Operator-In-Charge (OIC) and fulfill the responsibilities in O. Reg. 128/04 as defined for the OIC role as directed by the ORO ▪ An Operator-in-Training must perform some responsibilities at the direction of System Operator, as required by O. Reg. 128/04. When an OIT is performing operational functions, the Lead hand or Supervisor will be designated as OIC and oversee their work. 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Suggest continual improvements
Utility Locator (Directly Affecting)	<ul style="list-style-type: none"> ▪ Perform infrastructure locate functions in accordance with standard operating procedures ▪ Maintain written and computer based daily records 	<ul style="list-style-type: none"> ▪ Perform listed responsibilities ▪ Suggest continual improvements

10. Competencies

City staff performing duties directly affecting drinking water must understand the importance of their actions. In addition, they must be competent in their jobs and have appropriate education, training, skills, and/or experience.

The Competencies – Certification and Training Table (QMS-ALL-ALL-T-101) documents competencies required for Public Works and Community Services staff, including those identified as directly affecting drinking water in *Section 9: Organizational Structure, Roles, Responsibilities, and Authorities*.

The Competencies – Certification and Training Requirements (QMS-ALL-WWW-P-100) procedure documents activities to develop and maintain the required competencies for staff. The procedure also documents activities to ensure that all Operating Authority staff are aware of the relevance of their duties.

The Monitoring and Maintaining Water and Wastewater Certification (QMS-ALL-WWW-P-102) procedure documents how water and wastewater certification is monitored and maintained.

11. Personnel Coverage

The City ensures that sufficient staff, meeting identified competencies, are available for duties that directly affect drinking water as documented in Personnel Coverage (QMS-ALL-WT-P-110).

12. Communications

Effective communication is essential to ensuring a successful QMS. Communications (QMS-ALL-WT-P-120) describes how relevant aspects of the QMS are communicated between Top Management and the Owner, Operating Authority personnel, Suppliers, and the Public.

13. Essential Supplies and Services

The City requires a number of essential supplies and services for the production of safe drinking water. A general overview of essential supplies and services, methods to ensure their procurement, and procedures for quality assurance is provided in Essential Supplies and Services (QMS-ALL-WT-P-130).

14. Review, Rehabilitation, and Renewal of Infrastructure

Review and Provision of Infrastructure (QMS-ALL-WT-P-150) describes how the City reviews the adequacy of infrastructure necessary to operate and maintain the Welland Distribution System. It also details how infrastructure rehabilitation and renewal projects that are funded from the capital budget are initiated, approved, and communicated to the Owner.

15. Infrastructure Maintenance

The City has implemented and maintains a maintenance program for Welland Distribution System assets. The maintenance program includes planned and unplanned infrastructure maintenance, renewal, and rehabilitation activities that are typically funded from the current operating budget.

Maintenance (QMS-ALL-WT-P-150) describes the maintenance program, long-term maintenance, rehabilitation, and renewal plans, the means to monitor maintenance effectiveness, and how maintenance programs are communicated to the Owner.

16. Sampling, Testing, and Monitoring

Sampling, testing, and monitoring activities are essential to confirm water quality and to maintain compliance with legislation and regulations. The Sampling, Testing, and Monitoring (QMS-ALL-WT-P-160) procedure described these activities and how results are recorded and shared.

The Sampling, Testing, and Monitoring Table (QMS-ALL-WT-T-161) outlines the sampling, testing, and monitoring activities undertaken by the City.

17. Measurement and Recording Equipment Calibration and Maintenance

The measurement and recording equipment used in the City's drinking water system is calibrated and maintained according to the Measurement and Recording Equipment Calibration and Maintenance (QMS-ALL-WT-P-170) procedure.

18. Emergency Management

Emergency preparedness is achieved by following the Emergency Management and Response Manual (ER-ALL-ALL-MAN-001). The plan includes response and recovery procedures for potential emergencies that could impact drinking water quality. Each procedure includes action steps and clearly notes responsibilities of those involved.

Required training for QMS process, including emergency management, are identified in *Section 10: Competencies*. Emergency Management testing will be conducted, at minimum, once every five years. A real emergency event that has been debriefed will satisfy testing requirements.

An Emergency Response Contact List (Niagara Region document ID ERP-ALL-ALL-T-002) is also included as part of the ERP Manual and is updated by Niagara Region on a quarterly basis.

19. Internal Audits

Internal audits add value to the City's operations by providing feedback about the QMS and its effectiveness. The Internal Auditing (QMS-ALL-WT-P-190) procedure describes:

- How to evaluate the conformity of the City's QMS with the requirements of the DWQMS and ISO 9001:2015;
- Audit criteria, frequency, scope, methodology and record keeping requirements;
- How previous internal and external audit results are considered; and
- How corrective actions are identified and initiated (see *Section 21: Continual Improvement and Quality Objectives*).

20. Management Review

Management review is performed to ensure the continuing suitability, adequacy, and effectiveness of the QMS. The Management Review (QMS-ALL-WT-P-200) procedure documents minimum review requirements including topics, participants, timing, and how action items are monitored and reported.

21. Continual Improvement and Quality Objectives

The City maintains and continuously improves its QMS through established quality objectives, annual audits, management reviews, implementation of best management practices, process optimization, and staff development; the City also measures the effectiveness of these continual improvement efforts.

Continual Improvement and Quality Objectives (QMS-ALL-WT-P-210) describes the processes for maintaining and improving the QMS including corrective and preventive actions, best practices, and staff suggestions.