

The Regional Municipality of Niagara

**Water
Quality Management System
Operational Plan**

(QMS-WT-ALL-MAN-010)

For the:

Decew Falls/Niagara Falls Drinking-Water System
Grimsby Drinking-Water System
Port Colborne Drinking-Water System
Rosehill Drinking-Water System
Welland Drinking-Water System

Effective Date: December 12, 2019

Revision Number: 10



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1. Introduction

1.1 *Drinking Water Quality Management Standard*

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 quality management system (QMS) that must be documented in an Operational Plan.

1.2 *Niagara Region*

The Regional Municipality of Niagara (“Niagara Region”) owns and operates five drinking water systems that treat and transmit safe drinking water to eleven area municipalities: the Cities of St. Catharines, Niagara Falls, Welland, Port Colborne; the Towns of Grimsby, Lincoln, Thorold, Pelham, Fort Erie, Niagara-on-the-Lake; and the Township of West Lincoln. The area municipalities own and operate distribution systems that deliver water to the consumers in Niagara.

Niagara Region is committed to producing safe drinking water and has implemented a QMS in support of its drinking water systems.

1.3 *Scope*

This Operational Plan documents the QMS for Niagara Region’s five drinking water systems:

- Decew Falls / Niagara Falls Drinking Water System
- Grimsby Drinking Water System
- Port Colborne Drinking Water System

- Rosehill Drinking Water System
- Welland Drinking Water System

For the purpose of this Operational Plan and associated procedures:

- **All Staff** includes all staff employed by Niagara Region
- **All Operating Authority Staff** includes all staff within the Water and Wastewater Services Division *except* those who only work in wastewater systems (i.e. Wastewater Operators, Managers, and assigned Maintenance staff)
- **Staff who directly affect drinking water quality** include:
 - Associate Director, Water Operations, Maintenance & Staff Development
 - Water Operations Managers & Supervisors
 - Water Operators, Operators-in-Training, and Support Staff
 - System Maintenance Managers & Supervisors (Water)
 - System Maintenance Staff (Water)
 - Manager of Water Quality & Compliance
 - Water Quality and Compliance Staff (including Water-Wastewater Quality Management Specialist)
 - Manager of Technical Trades
 - Skilled Trades Managers
 - Contract Administrators
 - Water-Wastewater Safety Advisor
 - Water-Wastewater Training Advisor
 - Education and Engagement Staff
 - Senior Project Managers, Design and Construction
 - Project Managers, Design and Construction
- **Ministry** refers to the Ministry of the Environment, Conservation, and Parks.

2. Quality Management System Policy

Niagara Region is committed to **WATER** and our QMS Policy is shown below.

Figure 1: Water Quality Management System Policy¹



Niagara Region has implemented a
Quality Management System (QMS)
 to demonstrate our dedication to providing consumers
 with high quality drinking water.

The Region is committed to:

Working to ensure the QMS is maintained and continually improved

abiding by all relevant legislation and regulations

treating and producing water that is clean and safe

educating the public about the importance of water

respecting Niagara's most precious resource – water

Niagara  Region

www.niagararegion.ca

¹ March 31, 2015 – Revision 1

3. Commitment and Endorsement

3.1 Top Management

Each member of Top Management pledges commitment to the Water QMS and endorses the Operational Plan through the signing of a Commitment and Endorsement Memorandum. The Memorandum includes a pledge to ensure the implementation, maintenance and continual improvement of the QMS for each of Niagara Region's drinking water systems as documented in this Operational Plan.

3.2 Owner

As System Owner, Niagara Region shall ensure the implementation, maintenance and continual improvement of the QMS for each of its drinking water systems, as documented in this Operational Plan.

By signing below, Regional Council (represented by the Regional Chair and Clerk) endorse the contents of this Operational Plan.

The Regional Municipality of Niagara

Per:

Regional Chair
Jim Bradley

Date

Regional Clerk
Ann-Marie Norio

Date

3.3 Continued Endorsement

When changes in Top Management occur, the QMS Representative ensures that a Commitment and Endorsement Memorandum is signed by any new members of Top Management. Top Management receives QMS updates as per [Management Review \(QMS-WT-ALL-P-200\)](#).

The System Owner receives QMS updates as per [Communications \(QMS-WT-ALL-P-120\)](#). Continued endorsement of the Operational Plan is demonstrated through the enactment of a confirmatory by-law preceding each Council meeting. The QMS Representative ensures that Council endorsement is received for the most current Operational Plan following changes in Council due to election.

4. QMS Representative

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. In the event that the Water-Wastewater Quality Management Specialist is unable to fulfil the duties of QMS Representative, the Water-Wastewater Quality Management Specialist (reporting to the Manager, Quality & Compliance – Wastewater) will assume the role and responsibilities.

The QMS Representative's responsibilities include, but are not limited to:

- Administering the QMS by ensuring that processes and procedures needed are established and maintained,
- Reporting to Top Management on the performance of the QMS and any need for improvement,
- In cooperation with all Operating Authority staff, ensuring current versions of documents required by the QMS are being used at all times,
- In cooperation with all Operating Authority staff, ensuring that personnel are aware of all applicable legislative and regulatory requirements pertaining to their duties, and

- Promoting awareness of the QMS throughout the Operating Authority.

5. Document and Records Control

Document and records control is an essential part of the QMS. [Document and Records Control \(QMS-WT-ALL-P-050\)](#) 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.

[Document and Records Control \(QMS-WT-ALL-P-050\)](#) is available on Vine.

6. Drinking Water Systems

6.1 Description of Overall Drinking Water Systems

6.1.1 General

Niagara Region owns and operates five drinking water systems including treatment plants, transmission mains and associated reservoirs, elevated tanks, towers, standpipes, pumping and booster stations. Niagara Region supplies eleven area municipalities with safe and treated drinking water.

Table 1 lists the facilities associated with each of Niagara's drinking water systems, along with the local municipal distribution systems supplied from each system. Rechlorination stations are listed in the appropriate Drinking Water Works Permit.

Drinking water system descriptions are available on Vine (see links in Table 1).

Table 1: Niagara Region's Drinking Water Systems

Water System	Niagara Region Drinking Water System Facilities	Municipal System(s) Supplied
Decew Falls/Niagara Falls (DN) – Decew Falls/Niagara Falls Drinking Water System Description (QMS-WT-DN-P-060)	Brock High Lift Booster Pumping Station Carlton Street Reservoir Decew Falls Water Treatment Plant Fifth Ave. Reservoir and Rechlorination Station Glendale Pumping Station Kent Ave. Reservoir and Booster Pumping Station Line 2 Rechlorination Station (Virgil Rechlorination Facility) Lundy's Lane Elevated Tank Niagara Falls Water Treatment Plant Niagara Stone Road Chlorine Analyzer Station Port Robinson Rechlorination Station Queenston Heights Chlorine Analyzer Station St. David's Standpipe St. David's Rechlorination Station Stanley Ave. Rechlorination Station Thorold South Elevated Tank (Zone 3) Vineland Booster Pumping Station Virgil Elevated Tank Zone 2 Standpipe	Lincoln Niagara Falls Niagara-on-the-Lake St. Catharines Thorold
Grimsby (GR) – Grimsby Drinking Water System Description (QMS-WT-GR-P-060)	Grimsby Water Treatment Plant Hixon Street Reservoir & Pumping Station Lincoln/Grimsby Booster Pumping Station Park Rd Reservoir & Booster Pump Stn Smithville Reservoir, Elevated Tank & Pumping Station (London Rd)	Lincoln West Lincoln Grimsby Hamilton ²

² The Town of Grimsby's distribution system is connected to a small portion of the City of Hamilton's distribution system on Main Street West.

Water System	Niagara Region Drinking Water System Facilities	Municipal System(s) Supplied
Port Colborne (PC) – Port Colborne Drinking Water System Description (QMS-WT-PC-P-060)	Barrick Rd. Elevated Tank Fielden Ave. Reservoir & Booster Pumping Station Port Colborne Water Treatment Plant	Port Colborne
Rosehill (RH) – Rosehill Drinking Water System Description (QMS-WT-RH-P-060)	Central Ave. Elevated Tank Erie Rd. Rechlorination Station Ridgeway Standpipe Rosehill Water Treatment Plant Stevensville Reservoir and Pumping Station	Fort Erie
Welland (WE) – Welland Drinking Water System Description (QMS-WT-WE-P-060)	Bemis Elevated Tank Shoalts Dr. Reservoir and Pumping Station Pelham Elevated Tank Welland Water Treatment Plant	Welland Pelham Thorold

6.1.2 Treatment

The following processes are part of Niagara Region's multi-barrier approach for producing safe drinking water:

Pre-Chlorination

All of Niagara Region's drinking water systems pre-chlorinate their raw water. In the summer (i.e. temperature > 12°C), when zebra mussel infestation is a problem, the water is pre-chlorinated at the intake. When the water temperature is less than 12°C, the water is pre-chlorinated after the intake.

Pre-Treatment (Coagulation, Flocculation and Sedimentation)

A coagulant is added to the raw water to help remove the suspended solids through the flocculation process. After flocculation, the water passes through the settling tanks where the floc is able to settle.

Filtration

Filtration removes debris and particulate remaining in the water after pre-treatment. Filter effluent turbidity is measured continuously to monitor the effectiveness of the filtration process and will alarm if the set point values are exceeded.

Primary Disinfection

Primary disinfection ensures that any potentially pathogenic organisms that are remaining in the water are rendered harmless. Niagara Region's drinking water systems achieve primary disinfection through the use of chlorination (with sodium hypochlorite). Some facilities are also equipped with UV (ultraviolet) disinfection. The effectiveness of the primary disinfection process is continuously monitored on SCADA.

Secondary Disinfection

Secondary disinfection prevents regrowth of micro-organisms within the distribution system. Secondary disinfection is accomplished by adding sufficient sodium hypochlorite to the water to maintain a residual throughout the entire distribution system.

Process Waste Management

Process waste from the pre-treatment and filtration processes is collected and treated prior to being discharged to the environment or sewer.

6.1.3 Transmission

In Niagara, treated water is conveyed through transmission systems, including storage facilities and booster stations, to the local municipal distribution systems.

Niagara Region's transmission systems are illustrated in maps on the [Niagara Navigator \(NIIMS\)](#) system. The NIIMS maps, in combination with the drinking water system descriptions (see Table 1) and the drinking water system process schematics (see Section 6.1.4), provide an overview of the five transmission systems owned and operated by Niagara Region.

6.1.4 Process Flow Charts

Process schematics for each of Niagara Region's drinking water systems are available on Vine as follows:

- [Decew Falls/Niagara Falls Drinking Water System Process Schematic \(QMS-WT-DN-V-060\)](#)
- [Grimsby Drinking Water System Process Schematic \(QMS-WT-GR-V-060\)](#)
- [Port Colborne Drinking Water System Process Schematic \(QMS-WT-PC-V-060\)](#)
- [Rosehill Drinking Water System Process Schematic \(QMS-WT-RH-V-060\)](#)
- [Welland Drinking Water System Process Schematic \(QMS-WT-WE-V-060\)](#)

6.2 Water Source

6.2.1 General Characteristics

All of the source water treated by the Niagara Region is surface water.

General characteristics of each of Niagara Region's drinking water systems are included in each system's respective drinking water system description. Drinking water system descriptions are available on Vine (see links in Table 1).

6.2.2 Common Event-driven Fluctuations, Operational Challenges & Threats

Table 2 lists common event-driven fluctuations and resulting operational challenges and threats that may impact Niagara Region's water systems.

Table 2: Common Fluctuations, Challenges & Threats

Type of Fluctuation	Resulting Operational Challenges and Threats	Action / Control Measure
Seasonal temperature fluctuations	Zebra mussels clogging the intake when raw water temperature >12°C	Pre-chlorination at intake when raw water temperature >12°C

Type of Fluctuation	Resulting Operational Challenges and Threats	Action / Control Measure
Seasonal temperature fluctuations (continued)	Possible taste/odour events in late summer/early fall	Granular Activated Carbon (GAC) filters or Powdered Activated Carbon (PAC)
	Frazil ice may occur when water temperature is around 0°C ³	Cleared by contracted diving team
Event-driven fluctuations	High winds and storm events causing increased raw water turbidity	Continual monitoring & process changes if necessary

Further details of event-driven fluctuations common to each of Niagara Region's drinking water systems are included in each system's respective drinking water system description. Drinking water system descriptions are available on Vine (see links in Table 1).

6.3 Critical Upstream & Downstream Processes

Niagara Region actively participates in source protection activities and initiatives; these source protection initiatives protect the Region's upstream water sources.

Local area municipalities own and operate distribution systems downstream of each of Niagara Region's drinking water systems (see Table 1, page 7).

7. Risk Assessment

A risk assessment procedure has been developed and implemented that:

- 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;

³ Although not all facilities may experience this event, all are equipped to handle it if it should occur.

- 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 three years; and
- Considers the reliability and redundancy of equipment.

[Drinking Water System Risk Assessment \(QMS-WT-ALL-P-070\)](#) is available on Vine.

8. Risk Assessment Outcomes

The Risk Assessment Outcomes 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. [Tracking Critical Control Limit \(CCL\) Deviations \(OP-WT-ALL-P-028\)](#) discusses how CCL deviations are summarized and tracked.

As an output from the Operating Authority's annual Risk Assessment exercises, 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 \(OP-WT-ALL-P-010\)](#)

9. Organizational Structure, Roles, Responsibilities and Authorities

Water and Wastewater Services is a division of Niagara Region's Public Works Department and serves as the Operating Authority for the Region's five drinking water systems and their associated facilities. (Refer to Section 1.3 for exclusions.)

- Our Mission Statement: Through dedicated teamwork and commitment, provide high quality, safe and reliable water and wastewater services, while practicing good stewardship of resources to benefit present and future generations.
- Our Role: To deliver clean, safe drinking water to the municipal water distribution network and to provide effective wastewater treatment for the community.

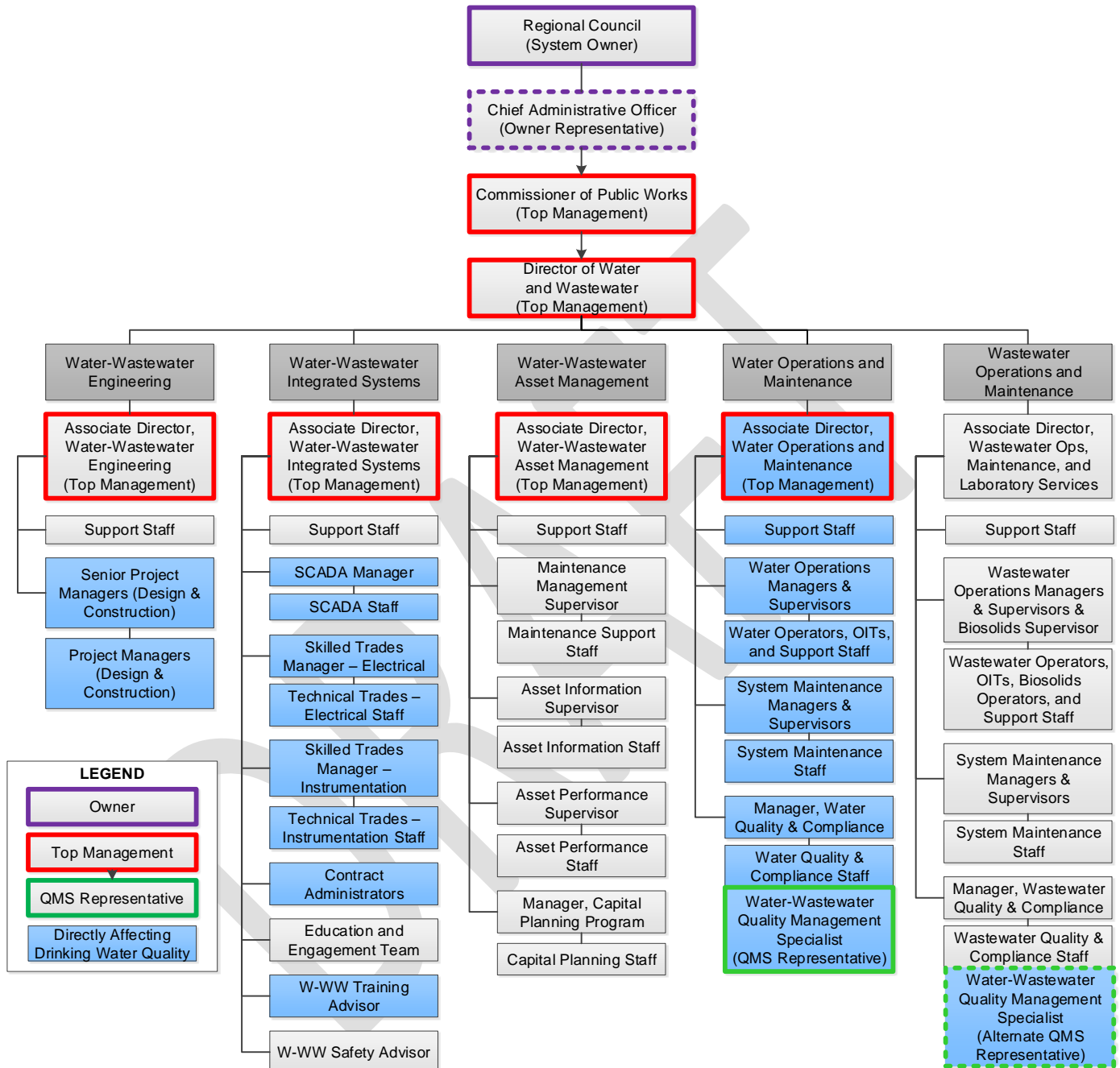
What We Do

The Water and Wastewater Services Division is made up of a dedicated team of approximately 270 employees working throughout the Niagara Region. The Division is divided into **five** groups:

- Water Operations, Maintenance, and Staff Development;
- Wastewater Operations, Maintenance, and Laboratory Services;
- Water-Wastewater Engineering;
- Water-Wastewater Integrated Systems;
- **Water-Wastewater Asset Management.**

The organizational structure of the Water and Wastewater Services Division, including designation/appointment of key QMS roles, is illustrated in Figure 2.

Figure 2: Water and Wastewater Services Division – Organizational Structure



Each of the **five** working groups has varying levels of responsibility for drinking water quality. Core responsibilities of staff in each group, as well as specific duties for those positions that directly impact drinking water quality, are identified in Table 3. Table 3 also identifies

responsibilities of the System Owner, Top Management and the QMS Representative. (NOTE: Positions that are greyed in Table 3 are have been deemed to not directly impact drinking water quality.)

Table 3: Water and Wastewater Services Division – Responsibilities and Authorities

Position/Group	Responsibilities	Authorities
Regional Council (System Owner)	<ul style="list-style-type: none"> – Act as final decision making body for Niagara Region – Ensure the provision of safe drinking water to connected distribution systems of the Local Area Municipalities – Endorse Niagara Region's Water QMS 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate
Chief Administrative Officer	<ul style="list-style-type: none"> – Act as representative for the Owner – Interact with Top Management 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate
Commissioner of Public Works (Top Management)	<ul style="list-style-type: none"> – Establish and implement operating policy and procedures, covering execution of department functions – Manage Public Works Department in its statutory, operational, custodial and advisory responsibilities – Act as a member of the Corporate Management Team – Participate in Management Review 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline staff – Make Engineering decisions – Make administrative decisions related to Public Works – Delegate – Suggest continual improvements
Director of Water and Wastewater (Top Management)	<ul style="list-style-type: none"> – Provide administration and general management of Water and Wastewater Services Division – Ensure mandated delivery of water supply and wastewater treatment meets federal, provincial and municipal requirements – Provide guidance and direction to staff to ensure compliance with provincial standards and the promotion of industry best practices for the operation of the water systems – Participate in Management Review 	<ul style="list-style-type: none"> – Perform listed responsibilities – Establish Divisional priorities; control budgets, costs, and work quality – Take appropriate action to ensure health and safety in emergencies – Delegate

Position/Group	Responsibilities	Authorities
Director of Water and Wastewater (continued)	<ul style="list-style-type: none"> – Manage resources to ensure efficient and effective operations 	<ul style="list-style-type: none"> – Suggest continual improvements
Water Operations and Maintenance		
Associate Director, Water Operations, Maintenance, and Staff Development (Top Management) (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Maintain accountability for execution and direction of all aspects of drinking water system operation and maintenance – Manage Region's water treatment operations and maintenance to ensure compliance with regulatory requirements and ensure due diligence in daily activities – Demonstrate due diligence in daily activities and keep abreast of relevant legislation – Ensure adequate Health & Safety program in place for Water and Wastewater – Analyze and develop annual current and capital budgets to ensure cost-effective operations – Continually review overall function of facilities, personnel, communications and training to achieve high standard of performance – Direct activities related to public relations, evaluating investigations and preparing reports – Ensure staff/personnel issues are dealt with effectively and in a timely manner – Coordinate employee efforts and respond to emergencies and complaints – Provide emergency preparedness leadership – Participate in Management Review – May function as "Overall Responsible Operator (ORO)" as required by O. Reg. 128/04, if appropriately certified to do so 	<ul style="list-style-type: none"> – Perform listed responsibilities – Approve purchases in accordance with approved budget and 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

Position/Group	Responsibilities	Authorities
Water Operations Managers/ Supervisors <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Supervise operation of water treatment plants and regional transmission system – Control area budget; procure material/services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Participate in Public relations, evaluate investigations and preparing reports – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Respond to emergencies and complaints – Function as “Overall Responsible Operator (ORO)” as required by O. Reg. 128/04 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Discipline and deal with minor personnel matters (<i>Managers only</i>) – Suggest continual improvements
System Operator <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Perform operational functions – Maintain written and computer based daily records – Perform routine inspections of plant – Prepare work orders for repairs to equipment – Collect and test water samples to monitor/maintain relevant parameters – Serve as “Operator-In-Charge (OIC)” 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
System Operator-in-Training <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Perform duties of System Operator, with conditions: <ul style="list-style-type: none"> ○ Operators-in-Training must perform some responsibilities at the direction of System Operator, as required by O. Reg. 128/04 ○ When an OIT is operating, the ORO shall be designated as OIC 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Support Staff (<i>Directly Affects Drinking Water</i>)	<ul style="list-style-type: none"> – Maintain appropriate control of documents and records – Assist with communications, public relations, investigations and preparing reports as needed by Operations – Clerical functions – Assist with customer service activities, including responding to complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Water Systems Maintenance Managers (<i>Directly Affects Drinking Water</i>)	<ul style="list-style-type: none"> – Direct and supervise Maintenance staff within area during regular, emergency, standby and on-call hours – Demonstrate due diligence in daily activities and ensure compliance with relevant Regulations and Regional Policies – Control budget for area; monitor expenditures and procurement of materials and services – Prepare and modify maintenance schedules to provide for normal maintenance relief, staff training, vacation, lieu time, and sick time – Participate in activities related to public relations, evaluating investigations and preparing reports – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Respond to emergencies and complaints – Assist in scoping, design and construction of projects 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Discipline and deal with minor personnel matters – Suggest continual improvements
Systems Maintenance Staff (<i>Directly Affects Drinking Water</i>)	<ul style="list-style-type: none"> – Respond to maintenance issues (i.e. general systems maintenance, etc.) – May serve as “Operator-In-Charge (OIC)” in the transmission system 	<ul style="list-style-type: none"> – Authority to perform listed responsibilities – Authority to Suggest continual improvements

Position/Group	Responsibilities	Authorities
Manager of Water Quality and Compliance <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Ensure processes are optimized and maintained – Develop and implement quality sampling program as required in a collection/transmission/distribution system – Act as Lead Auditor – Ensure training program is maintained in order to meet competencies – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Suggest continual improvements
W&WW Quality Management Specialist (QMS Rep) <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – See QMS Representative Responsibilities in Operational Plan (Section 4) 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Quality & Compliance Staff <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Technical Support – Process Optimization – Compliance Support 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Supervisor, W&WW Development Program <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Perform assigned Supervisory functions – Interact with engineering, maintenance, and operations – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure that staff follow safe working practices – Participate in Public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints – Function as “Overall Responsible Operator (ORO)” as required by O. Reg. 128/04 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline and deal with minor personnel matters – Suggest continual improvements – Delegate

Position/Group	Responsibilities	Authorities
Integrated Systems		
Associate Director, Water-Wastewater Integrated Systems	<ul style="list-style-type: none"> – Demonstrate due diligence in daily activities and keep abreast of relevant legislation and regulations – Ensure support of SCADA, Instrumentation, Electrical, Contract Administration, Health and Safety, Training, and Education/Engagement teams and maintenance of related infrastructure and equipment – Analyze and develop annual current and capital budgets to ensure continuity of operations – Continually review overall function of working group to achieve high standard of performance – Direct activities related to public relations, evaluating investigations and preparing reports – Ensure staff/personnel issues are dealt with effectively and in a timely manner – Coordinate employee efforts and respond to emergencies and complaints – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in Management Review 	<ul style="list-style-type: none"> – Perform listed responsibilities – Approve purchases in accordance with approved budget and policies and procedures – Discipline and deal with major personnel matters – Suggest modifications to systems – Recommend purchase of equipment or services involving major expenditures – Delegate – Suggest continual improvements
SCADA Manager <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Manage and administer SCADA resources to achieve Divisional goals and objectives – Control budget for area and procure material and services to provide customers both internal and external, with efficient and cost effective skilled support – Demonstrate due diligence in daily activities and ensure compliance with relevant Regulations and Regional Policies – Participate in activities related to public relations, evaluating investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Suggest continual improvements

Position/Group	Responsibilities	Authorities
SCADA Manager (continued)	<ul style="list-style-type: none"> – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Scoping, design and construction of projects 	
Skilled Trades Managers (Instrumentation and Electrical) (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Manage and administer skilled trades resources to achieve Divisional goals and objectives – Control budget for area and procure material and services to provide customers both internal and external, with efficient and cost effective skilled support – Demonstrate due diligence in daily activities and ensure compliance with relevant Regulations and Regional Policies – Participate in activities related to Public relations, evaluating investigations and preparing reports – Respond to emergencies and complaints – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Scoping, design and construction of projects 	<ul style="list-style-type: none"> – Perform listed responsibilities – Supervise daily activities of Technical Trades staff – Delegate – Suggest continual improvements
SCADA and Technical Trades Staff (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Respond to maintenance issues (i.e. electrical problems, SCADA issues, etc.) 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Contract Administrators (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Review, amend and administer annual contracts for Water-Wastewater Services – Prepare authorizations and approvals for contract and bid awards – Monitor and supervise maintenance projects 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
W-WW Training Advisor <i>(Directly Affects Drinking Water)</i>	<ul style="list-style-type: none"> – Develop and maintain divisional training programs 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
W-WW Safety Advisor	<ul style="list-style-type: none"> – Develop and maintain divisional health & safety programs 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Education and Engagement Team	<ul style="list-style-type: none"> – Manage divisional communications and public outreach activities 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Engineering		
Associate Director Engineering <i>(Top Management)</i>	<ul style="list-style-type: none"> – Hold accountability for scoping, design and construction of engineering projects connected with Region's water and wastewater systems – Analyze and develop annual current and capital budgets to ensure that operation plans are cost effective – Manage & administer capital project resources to achieve Divisional goals and objectives – Demonstrate due diligence in daily activities and keep abreast of relevant legislation and regulations – Communicate project progress with other working groups within and outside of Water-Wastewater Services – Direct and supervise Senior Project Management staff – Participate in infrastructure planning and review activities – Participate in Management Review – Participate in public relations, evaluations, investigations, and report preparation 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest modifications to systems and make changes during construction – Delegate – Discipline and deal with major personnel matters – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Associate Director Engineering (continued)	<ul style="list-style-type: none"> – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Respond to emergencies and complaints 	
Senior Project Manager, Design and Construction (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Lead the scoping, design and construction of large scale projects related to Region's systems – Infrastructure planning and review – Communicate project progress with Management – Control budget for projects and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements including assisting with the preparation of applications for approvals and amendments with the Ministry – Participate in infrastructure planning and review activities – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints – Assist PMs with issues as required 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Project Manager, Design and Construction (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – Lead the scoping, design and construction of projects related to Region's systems – Infrastructure planning and review – Communicate project progress with Management – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements including assisting with the preparation of applications for approvals and amendments with the Ministry 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Project Manager, Design and Construction (continued)	<ul style="list-style-type: none"> – Participate in infrastructure planning and review activities – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	
Engineering Support Staff	<ul style="list-style-type: none"> – Maintain appropriate control of documents and records – Assist with communications, public relations, investigations and preparing reports as needed by Engineering – Complete clerical functions – Assist with customer service activities, including responding to complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Asset Management		
Associate Director, Asset Management (Top Management)	<ul style="list-style-type: none"> – Establish and maintain a divisional asset management plan, capital planning, and infrastructure data management for the Region's water and wastewater systems – Oversee collection, review and analysis of operational and maintenance data to ensure all information relating to W-WW infrastructure is acquired, stored, and made available to those in other sections and departments – Develop capital plans for W-WW infrastructure – Develop the 10-year capital forecast – Demonstrate due diligence in daily activities and keep abreast of relevant legislation and regulations – Communicate project progress with other working groups within and outside of Water-Wastewater Services – Direct and supervise Asset Management staff – Participate in Management Review – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Discipline and deal with major personnel matters – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Supervisor, Water- Wastewater Maintenance Management	<ul style="list-style-type: none"> – Manage and administer support resources to achieve Divisional goals and objectives – Control budget for area and procure material and services to provide customers both internal and external, with efficient and cost effective skilled support – Demonstrate due diligence in daily activities and ensure compliance with relevant Regulations and Regional Policies – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Maintain CMMS program 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline and deal with minor personnel matters – Suggest continual improvements
Maintenance Support Staff (CMMS, Clerks)	<ul style="list-style-type: none"> – Maintain appropriate control of documents and records – Assist with communications, public relations, investigations and preparing reports as needed by Maintenance staff – Complete clerical functions – Assist with customer service activities, including responding to complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Asset Information Supervisor	<ul style="list-style-type: none"> – Manage and administer Water & Wastewater GIS (Geographic Information Systems) and IMS (Information Management Systems) to achieve Divisional goals and objectives – Direct and supervise Asset Information staff – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline and deal with minor personnel matters – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Asset Information Staff	<ul style="list-style-type: none"> – Coordinate the locating of sub-surface Water & Wastewater assets – Review engineering drawings and resolve discrepancies – Tracking and updating asset lifecycle data – Assist with the administration of the Water & Wastewater GIS and IMS 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Supervisor Asset Performance Management	<ul style="list-style-type: none"> – Direct and supervise Asset Performance staff – Manage and administer asset performance resources to achieve Divisional goals and objectives – Participate in infrastructure planning and review activities – Communicate project progress with Management – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline and deal with minor personnel matters – Suggest continual improvements
Asset Performance Staff	<ul style="list-style-type: none"> – Collect flow measurements, dimensional analysis and visual resources for wastewater systems – Conduct field inspections of assets – Perform emergency locates – Collect spatial coordinates for inclusion into the Water & Wastewater GIS systems – Monitor, maintain and update environmental systems and conduct evaluations for flow and weather 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Manager, Water- Wastewater Capital Planning Program	<ul style="list-style-type: none"> – Manage and administer infrastructure planning and review to achieve Divisional goals and objectives – Direct and supervise Capital Planning staff – Communicate project progress with Management – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Discipline and deal with minor personnel matters – Suggest continual improvements
Project Manager, Capital Planning	<ul style="list-style-type: none"> – Lead the scoping, design and construction of projects related to Region's systems – Infrastructure planning and review – Communicate project progress with Management – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements including assisting with the preparation of applications for approvals and amendments with the Ministry – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Support Staff	<ul style="list-style-type: none"> – Maintain appropriate control of documents and records – Assist with communications, public relations, investigations and preparing reports as needed by Engineering – Complete clerical functions – Assist with customer service activities, including responding to complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Wastewater Operations, Maintenance, and Laboratory Services		
Associate Director of Wastewater Operations, Maintenance, and Laboratory Services	<ul style="list-style-type: none"> – Accountable for execution and direction of all wastewater operations – Manage Region's wastewater treatment operations to ensure compliance with regulatory requirements and ensure due diligence in daily activities – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed Analyze and develop annual current and capital budgets to ensure that operations are cost effective – Continuously review overall function of facilities, personnel, communications and training to achieve high standard of performance – Direct activities related to Public relations, evaluating investigations and preparing reports – Ensure staff/personnel issues are dealt with effectively and in a timely manner – Coordinate employee efforts and respond to emergencies and complaints – Participate in Management Review – May function as "Overall Responsible Operator (ORO)" as required by O. Reg. 129/04 	<ul style="list-style-type: none"> – Perform listed responsibilities – Approve purchases in accordance with approved budget and 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

Position/Group	Responsibilities	Authorities
Wastewater Operations Managers & Supervisors	<ul style="list-style-type: none"> – Supervise operation of wastewater treatment plants and regional collection system – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in Public relations, evaluate investigations and preparing reports 	<ul style="list-style-type: none"> – Perform listed responsibilities – Approve purchases in accordance with approved budget and policies and procedures – Discipline and deal with minor personnel matters – Suggest continual improvements
Wastewater Operations Managers & Supervisors (continued)	<ul style="list-style-type: none"> – Respond to emergencies and complaints – Function as “Overall Responsible Operator (ORO)” as required by O. Reg. 129/04 	<ul style="list-style-type: none"> – Issue notice of non-compliance – Delegate
Wastewater Systems Maintenance Managers	<ul style="list-style-type: none"> – Direct and supervise Maintenance staff within area during regular, emergency, standby and on-call hours – Demonstrate due diligence in daily activities and ensure compliance with relevant Regulations and Regional Policies – Control budget for area; monitor expenditures and procurement of materials and services – Prepare and modify maintenance schedules to provide for normal maintenance relief, staff training, vacation, lieu time, and sick time – Participate in activities related to public relations, evaluating investigations and preparing reports – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Respond to emergencies and complaints – Assist in scoping, design and construction of projects 	<ul style="list-style-type: none"> – Perform listed responsibilities – Delegate – Discipline and deal with minor personnel matters – Suggest continual improvements

Position/Group	Responsibilities	Authorities
System Operator	<ul style="list-style-type: none"> – Perform operational functions – Maintain written and computer based daily records – Perform routine inspections of plant – Prepare work orders for repairs to equipment – Collect and test wastewater samples to monitor/maintain relevant parameters – Serve as “Operator-In-Charge (OIC)” 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
System Operator-in-Training (OIT)	<ul style="list-style-type: none"> – Perform duties of System Operator, with conditions: <ul style="list-style-type: none"> ○ Operators-in-Training must perform some responsibilities at the direction of the System Operator, as per O. Reg. 129/04 ○ When an OIT is operating, the ORO shall be designated as OIC 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Biosolids Program Manager	<ul style="list-style-type: none"> – Supervise operation of biosolids treatment facility and lagoons – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Participate in Public relations, evaluate investigations and preparing reports – Respond to emergencies and complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Approve purchases in accordance with approved budget and policies and procedures – Discipline and deal with minor personnel matters – Suggest continual improvements – Delegate
Biosolids Residual Solids Operator	<ul style="list-style-type: none"> – Perform operational functions – Maintain written and computer based daily records – Prepare work orders for repairs to equipment – Collect and test process samples to monitor/maintain relevant parameters 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

Position/Group	Responsibilities	Authorities
Support Staff	<ul style="list-style-type: none"> – Maintain appropriate control of documents and records – Assist with communications, Public relations, investigations and preparing reports as needed by Operations – Clerical functions – Assist with Customer Service activities including responding to complaints 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Manager of Quality and Compliance, Wastewater	<ul style="list-style-type: none"> – Ensure processes are optimized and maintained – Develop and implement quality sampling program as required in a collection system – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed – Administer environmental enforcement program 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements – Discipline and deal with minor personnel matters – Issue notice of non-compliance – Delegate
W&WW Quality Management Specialist (Alternate QMS Rep) (Directly Affects Drinking Water)	<ul style="list-style-type: none"> – See QMS Representative Responsibilities in Operational Plan (Section 4) 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Environmental Laboratory Supervisor	<ul style="list-style-type: none"> – Supervise Environmental Laboratory Staff – Control budget for area and procure material and services as needed to ensure efficient operation – Ensure due diligence in daily activities and compliance with regulatory requirements – Ensure staff follow safe work practices as outlined in Health and Safety procedures; provide PPE and training as needed 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements – Discipline and deal with minor personnel matters – Delegate

Position/Group	Responsibilities	Authorities
Environmental Laboratory Staff	<ul style="list-style-type: none"> – Conduct analytical wastewater and biosolids testing – Follow established protocols for sampling and testing – Provide notification if there is an exceedance 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements
Environmental Enforcement Staff	<ul style="list-style-type: none"> – Determine sampling locations and methods, and collect water or wastewater samples for analysis – Inspect wastewater treatment, and disposal facilities and systems for compliance to federal, provincial, or local regulations (including Environmental Compliance Approvals) – Examine permits, licences, applications, and records to ensure compliance with licencing requirements – Prepare, organize, and maintain inspection records – Monitor follow-up actions in instances where violations were found, and review compliance monitoring reports. – Execute relief operational duties 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements – Recommend notice of non-compliance
Process & Compliance Staff, Wastewater	<ul style="list-style-type: none"> – Process optimization – Technical support – Compliance support – Sampling program development assistance – Benchmarking – Maintain appropriate control of documents and records 	<ul style="list-style-type: none"> – Perform listed responsibilities – Suggest continual improvements

10. Competencies

Niagara Region personnel performing duties directly affecting drinking water must understand the importance of their actions. Furthermore, they must be competent in their jobs and have appropriate education, training, skills and/or experience.

The [Competencies Table \(QMS-ALL-ALL-T-100\)](#) documents competencies required for personnel performing duties directly affecting drinking water quality.

[Competencies \(QMS-WT-ALL-P-100\)](#) documents activities to develop and maintain the required competencies for personnel performing duties directly affecting drinking water quality. The Competencies Procedure also documents activities to ensure that all Operating Authority personnel are aware of the relevance of their duties.

Both the procedure and table are available on Vine.

11. Personnel Coverage

Niagara Region ensures that sufficient personnel meeting identified competencies are available for duties that directly affect drinking water quality as documented in [Personnel Coverage \(QMS-WT-ALL-P-110\)](#).

[Personnel Coverage \(QMS-WT-ALL-P-110\)](#) is available on Vine.

12. Communications

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

[Communications \(QMS-WT-ALL-P-120\)](#) is available on Vine.

13. Essential Supplies and Services

Niagara Region's drinking water systems require a number of essential supplies and services for the production of safe drinking water. These supplies and services are categorized as:

- Chemical supplies
- Calibration services
- Laboratory services
- Miscellaneous supplies/services

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 \(QMS-WT-ALL-P-130\)](#); the procedure is available on Vine.

Essential supplies and services for both water and wastewater are identified on the ["Essential Supplies and Services" Vine page](#). The table can be filtered to show only those supplies and services used in respect of Niagara Region's drinking water systems.

NOTE: Only drinking water system supplies and services fall within the scope of this Operational Plan.

14. Review, Rehabilitation and Renewal of Infrastructure

[Review, Rehabilitation, and Renewal of Infrastructure \(QMS-WT-ALL-P-140\)](#) describes how Niagara Region reviews the adequacy of infrastructure necessary to operate and maintain its drinking water systems. It also details how infrastructure rehabilitation and renewal projects that are funded from the capital budget are initiated, approved and communicated to the Owner.

[Review, Rehabilitation, and Renewal of Infrastructure \(QMS-WT-ALL-P-140\)](#) is available on Vine.

15. Infrastructure Maintenance

Niagara Region maintains an effective maintenance program. The maintenance program includes planned and unplanned **infrastructure** maintenance, renewal, and rehabilitation **activities that are** typically funded from the current budget. [Maintenance \(QMS-WT-ALL-P-150\)](#) 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.

[Maintenance \(QMS-WT-ALL-P-150\)](#) is available on Vine.

16. Sampling, Testing and Monitoring

Sampling, testing and monitoring activities are essential to confirm water quality and to be compliant with legislation and regulations. [Sampling, Testing and Monitoring \(QMS-WT-ALL-P-160\)](#) describes these activities and how results are recorded and shared.

To complement the procedure, the following tables outline the sampling, testing, and monitoring activities undertaken at each WTP:

- [Sampling, Testing & Monitoring Activities – DeCew Falls WTP \(QMS-WT-DF-T-160\)](#)
- [Sampling, Testing & Monitoring Activities – Grimsby WTP \(QMS-WT-DF-T-160\)](#)
- [Sampling, Testing & Monitoring Activities – Niagara Falls WTP \(QMS-WT-DF-T-160\)](#)
- [Sampling, Testing & Monitoring Activities – Port Colborne WTP \(QMS-WT-DF-T-160\)](#)
- [Sampling, Testing & Monitoring Activities – Rosehill WTP \(QMS-WT-DF-T-160\)](#)
- [Sampling, Testing & Monitoring Activities – Welland WTP \(QMS-WT-DF-T-160\)](#)

All of the above documents are available on Vine.

17. Measurement & Recording Equipment Calibration & Maintenance

The measurement and recording equipment used in Niagara Region's drinking water systems is calibrated and maintained according to [Measurement and Recording Equipment Calibration and Maintenance \(QMS-WT-ALL-P-170\)](#).

[Measurement and Recording Equipment Calibration and Maintenance \(QMS-WT-ALL-P-170\)](#) is available on Vine.

18. Emergency Management

Emergency preparedness is achieved by following Niagara Region's Emergency Response Procedures (ERP) Manual for Water and Wastewater Systems. The ERP Manual includes response and recovery procedures for potential emergencies that could impact drinking water quality. Each procedure is laid out step by step and clearly notes responsibilities of those involved. Training and testing requirements are specified in [Water and Wastewater Emergency Response Plan \(ERP-ALL-ALL-P-001\)](#). An [Emergency Response Contact List \(ERP-ALL-ALL-T-002\)](#) is also included as part of the ERP Manual.

The ERP Manual is available on the Vine's [Water-Wastewater Services Division Page](#) under "W-WW Emergency Response Plan".

19. Internal Audits

Internal audits add value to Niagara Region's operations by providing feedback about the QMS and its effectiveness. [Internal Auditing \(QMS-WT-ALL-P-190\)](#) describes:

- How to evaluate the conformity of Niagara Region's QMS with the requirements of the Standard;
- 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 of this Operational Plan).

[Internal Auditing \(QMS-WT-ALL-P-190\)](#) is available on Vine.

20. Management Review

Management Reviews are performed to ensure the continuing suitability, adequacy and effectiveness of the QMS. [Management Review \(QMS-WT-ALL-P-200\)](#) documents the process followed in undertaking the review.

[Management Review \(QMS-WT-ALL-P-200\)](#) is available on Vine.

21. Continual Improvement

Niagara Region maintains and continually improves its Water QMS through annual audits, management reviews, implementation of best management practices, process optimization, and staff development, and measures the effectiveness of these continual improvement initiatives.

Through the internal audit process, corrective actions and preventive actions/opportunities for improvement are identified and reported in order to detect and eliminate non-conformances.

[Corrective Action, Preventive Action, and Best Practices \(QMS-WT-ALL-P-210\)](#) outlines the Operating Authority's corrective and preventive action processes.

Deficiencies identified as part of the management review are discussed and action plans are created to improve the QMS.

Niagara Region reviews and considers best practices from a multitude of sources, including but not limited to the Ministry's published list, regulatory inspections, benchmarking activities, and networking with peers. Implemented best practices are tracked as preventive actions/opportunities for improvement.

Niagara Region staff efforts are critical for continual improvement of the QMS. We are committed to providing effective staff development opportunities (i.e. courses, workshops, on the job training) in an effort to continually improve our operations.

[Corrective Action, Preventive Action, and Best Practices \(QMS-WT-ALL-P-210\)](#) is available on Vine.

DRAFT

Table of Revisions:

Revision	Date	Description of Revision	Updated By
0	Oct. 29, 2008	Operational Plan created	Heather Sim
1	Oct. 5, 2009	Administrative revisions include: (i) the addition of new Associate Director positions for Water and Wastewater Operations, and the removal of the Manager, Water Operations, following Organizational change; (ii) the addition of Support Staff to each area; (iii) the addition of Manager of Quality & Compliance, Process & Development Staff and Water Support Staff to the "directly impacting water quality" group; (iv) the revision of procedure numbers following revision to the Document Naming Convention Procedure; and (v) the addition of the Table of Revisions.	Jocelyn Koteles (Authorized by Commissioner of Public Works, Ken Brothers)
<i>Entered into EtQ – October 27, 2011</i>			
2	Sep. 24, 2012	Revised procedure to include: (i) updated links to relevant documents; (ii) administrative changes to positions/titles and added the Contract Administrator/Security Coordinator to the table of positions affecting the quality of drinking water (CAR#00019); (iii) identification of the Coordinator W&WW Quality Management as the QMS Representative; (iv) removed individual risk assessment outcome records and added reference to the risk assessment outcome table (QMS-WT-ALL-080-F1) and the respective CCP response procedures; (v) Removed " <i>The Drinking-Water System Risk Outcomes Summary is available on Sherpa</i> " from section 8.0 Risk Assessment Outcomes	Jen Croswell
3	Jan. 2, 2013	Revised procedure to include: (i) Table 3: Responsibilities and Authorities, will include "directly affects drinking water" under titles/groups which are listed in Figure 1: Water and Wastewater Services Division Organizational Chart as directly affecting the drinking water; (ii) Figure 1: Water and Wastewater Services Division Organizational Chart will be revised to include a blue box, in addition to the red box, around the Associate Director, Water Operations to indicate that the position directly affects drinking water and a member of Top Management; (iii) To provide clarity for external audiences, the Operational Plan, Table 3: Responsibilities and Authorities will be revised to include a list of maintenance staff group categories under the Title/Group column. The above revisions were made in response to external CARs J0322584-3 and J0322584-5. Additional revisions include: (i) An update to the current mission statement; (ii) updated the document ID for the Risk Assessment Outcomes Table, from QMS-WT-ALL-080-F1 to QMS-WT-ALL-081, to reflect that the Risk Assessment Outcomes Table is a living document and not a form.	Jen Croswell

Revision	Date	Description of Revision	Updated By
4	Apr. 22, 2014	Administrative revisions include: (i) the addition of the Approval, License and Amendment Procedure (QMS-ALL-ALL-021) and Ministry of Environment Inspection Document Request Procedure (QMS-WT-ALL-022) to section 2, Quality Management System Policy; (ii) the addition of Tracking Critical Control Limit (CCL) Deviations (OP-WT-ALL-807) to section 8, Risk Assessment Outcomes; (iii) the removal of Integrated Solutions Support Manager and the revisions of Process & Development Staff to Quality & Compliance Staff to section 9, Organizational Structure, Roles, Responsibilities and Authorities; (iv) revisions to Table 1: Niagara Region's Drinking-Water Systems in section 6, Drinking-Water Systems; (v) identification of a backup QMS Representative to section 4, QMs Representative; and (vi) Minor administrative edits throughout.	Jen Croswell
5	Jun. 29, 2015	Operational Plan endorsed by the System Owner and Top Management – Signature sheet to be added to document endorsement, no further revisions.	Jen Croswell
6	Jan. 7, 2016	Revisions to: <ul style="list-style-type: none"> Section 2 – updated QMS Policy poster graphic (Mar 31, 2015 Rev 1) Section 3 – revised how written records of commitment and endorsement are obtained and updated Section 9 – added the Associate Director Engineering to Top Management (OFI 2015-002-Internal); expanded Engineering and Wastewater Operations staff to reflect positions in the Wastewater Operational Plan; added Supervisory Development Program position; included additional responsibilities in regards to “scoping, design and construction of projects” maintenance manager positions (OFI-14-02) Minor administrative revisions throughout 	Jen Croswell
7	Oct. 31, 2016	<ul style="list-style-type: none"> Identified Engineering staff (Senior Project Managers and Project Managers) as staff whose work directly affects drinking water quality. Revised organizational structure and position titles to reflect reorganization of W-WW Services Division and results of the Corporate Job Evaluation Process. Updated procedure links Updated document IDs in accordance with revised document numbering conventions 	Rachel Whyte

Revision	Date	Description of Revision	Updated By
8	Aug. 24, 2018	<ul style="list-style-type: none"> Changed “Sherpa” to “Vine” to reflect implementation of new Regional intranet. Removed reference to controlled document “Essential Supplies and Services Table (QMS-WT-ALL-T-130)” and included reference to “Essential Supplies and Services” Vine page. Removed references to Regulatory Updates (ADM-WT-ALL-P-003), Drinking Water System Licence and Permit Amendments (ADM-WT-ALL-P-004), and MOECC Inspection Document Requests (ADM-WT-ALL-P-005). These procedures align with the MECP inspection process and are not considered to fall directly within the scope of the Drinking Water Quality Management System. Operational Plan. Updated list of drinking water facilities in Table 1 (page 7). Added discussion of best practice review and preventive actions as forms of continual improvement, and noted that effectiveness of continual improvement initiatives is measured. Changed staff title from Manager, Infrastructure Planning & Asset Management to Manager, Capital Planning (as per Divisional memo, 4Dec2017). Updated procedure hyperlinks as required. 	Rachel Whyte
9	Mar. 28, 2019	<ul style="list-style-type: none"> Updated to align with requirements of <i>Drinking Water Quality Management Standard</i>, v.2.0 (February 2017). <i>Operational Plan endorsed by 2018-2022 term of Regional Council.</i> 	Rachel Whyte
10	Dec. 12, 2019	<ul style="list-style-type: none"> Specified that W-WW QM Specialist reporting to Manager, Q&C – Water is the QMS Rep for the DWQMS; W-WW QM Specialist reporting to Manager, Q&C – Wastewater is the alternate/backup Removed Crescent Park Elevated Tank from Rosehill DWS and King Street Elevated Tank from Port Colborne DWS (both have been decommissioned) Updated organizational chart and roles & responsibilities table following divisional restructuring Added AD Asset Management and W-WW Quality Management Specialist (Wastewater) roles and responsibilities Defined “Ministry” as Ministry of the Environment, Conservation, and Parks. <i>Operational Plan endorsed by 2018-2022 term of Regional Council.</i>	Rachel Whyte