

# City of Owen Sound



# **Quality Management System Operational Plan**

For the: Owen Sound Drinking Water System MDWL #094-101

Last updated: January 23, 2025



Ministry of the Environment, Conservation and Parks

#### Schedule C – Director's Directions for Operational Plans (Subject System Description Form) Municipal Residential Drinking Water System

Municipal Residential Drinking

Fields marked with an asterisk (\*) are mandatory.

Owner of Municipal Residential Drinking Water System \* Corporation of the City of Owen Sound

#### Subject Systems

Name of Drinking Water System (DWS) *	Licence Number *	Name of Operating Subsystems (if applicable)	Name of Operating Authority *	DWS Number(s) *
1. Owen Sound Drinking Water System	094-101		Corporation of the City of Owen Sound	220001799

#### **Contact Information for Questions Regarding the Operational Plan**

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# **1.0 Introduction**

This operational plan describes the City of Owen Sound's quality management system (QMS) that:

- 1. meets the requirements of the Drinking Water Quality Management Standard (DWQMS), and
- 2. helps ensure we **consistently achieve the intended outcomes** of our drinking water system's processes and programs.

The <u>City of Owen Sound</u> is the **owner** and the <u>Owen Sound Water & Wastewater Department</u> is the **operating authority** for the Owen Sound Drinking Water System.

Our operational plan, other QMS information (e.g. standard operating procedures, work instructions, forms), and training programs - all support achieving our **QMS Policy commitments to:** 

- provide safe drinking water to consumers,
- comply with legislation and regulations, and
- maintain and **continually improve** our QMS.

Organization and People sections of this manual describe:

- the *commitments* we've made (sections 2 and 3)
- the *people* we have and their *roles, responsibilities and authorities* (section 9)
- how we ensure staff *competencies* and *coverage* (sections 10 and 11)
- the ways in which we *communicate internally* (among staff and to the owner) and *externally* (to essential suppliers and to the public) (section 12)

System Operations and Maintenance sections describe:

- the processes and programs we have in our *drinking water system* (section 6)
- risks associated with our drinking water system (sections 7 and 8)
- *supplies and services essential* to our operations and maintenance (section 13)
- ways in which we annually review the adequacy of our infrastructure (section 14)
- what infrastructure *maintenance, rehabilitation and renewal programs* we have (section 15)
- how we maintain a state of emergency preparedness (section 18)

Support and Performance Evaluation sections describe:

- the ways in which we manage and *control documents and records* (section 5)
- how we sample, test, and monitor for process control and finished water quality, with what calibrated equipment, and how we share results (sections 16 and 17)
- how we *conduct internal audits* to verify we achieved everything we should (section 19)
- the content of our **QMS reports to top management** and to the **Owner** (section 20)

The Continual Improvement section describes:

• how we track and measure continual improvement (section 21)

This operational plan is available for viewing by the public at the City of Owen Sound's Public Works office, located at 1900 20<sup>th</sup> Street East in Owen Sound.



# 2.0 Quality Management System (QMS) Policy

As the owner and operating authority for the Owen Sound Drinking Water System, the *City of Owen Sound* is committed to the continuous supply of *safe drinking water* to all its water users. To fulfill this commitment, every aspect of water operations is guided by three overarching principles:

- Quality: establishing and maintaining a QMS, and being in compliance with all applicable legislation and regulations,
- **Sustainability:** maintaining infrastructure and operations in an environmentally responsible fashion with a reasonable cost without sacrificing performance, and
- Continual improvement: striving always to improve the Drinking Water Quality Management System.

Signed this \_\_\_\_\_th day of \_\_\_\_\_\_, 2025 at Owen Sound, Ontario.

Bryce McDonald, Manager of Water and Wastewater

Troy Pelletier, Water Treatment Superintendent

Ashley Ford, QMS Representative

Mark Hill, Water Distribution Superintendent

These **policy commitments are communicated** to staff through QMS awareness training and made available to the public through our website.

### **3.0 Commitment and Endorsement**

As decision-makers for the drinking water systems and representatives of *top management* and the *owner*, we are committed to:

- a) ensuring that an effective QMS is in place that meets the requirements of the DWQMS,
- b) ensuring that the operating authority is aware of all applicable legislative and regulatory requirements,
- c) communicating the QMS according to the procedure for communications, and
- d) determining, obtaining or *providing the resources needed* to maintain and *continually improve* the QMS.

This Operational Plan is endorsed and supported by the City of Owen Sound Top Management and Owner.

Signed this \_\_\_\_\_th day of \_\_\_\_\_\_, 2025 at Owen Sound, Ontario.

Mayor Ian Boddy, City of Owen Sound

Tim Simmonds, City Manager

Lara Widdifield, Director, Public Works & Engineering

This page's signatures are *updated within six months of changes* to top management and/or the owner.

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### 4.0 QMS Representative

The *Water & Wastewater Administrative Assistant* is appointed and authorized as the Quality Management System (QMS) Representative. A designated water distribution operator is identified as an alternate QMS Representative in the event of an absence. Irrespective of other responsibilities, the *QMS Representative*:

- a) administers the QMS by ensuring that *processes and procedures needed for the QMS* are established and maintained,
- b) reports to Top Management on the performance of the QMS and any need for improvement,
- c) ensures that current versions of documents required by the QMS are being used at all times,
- d) ensures that *personnel are aware of all applicable legislative and regulatory requirements* that pertain to their duties for the operation of the drinking water systems, and
- e) promotes awareness of the QMS throughout the operating authority.

### **5.0 Document and Records Control**

The City of Owen Sound's documented information for the QMS includes this operational plan and other information deemed necessary (e.g. standard operating procedures, work instructions and forms) for the effectiveness of our QMS and to ensure the effective planning, operation and control of our operations.

Documented information also includes evidence of results achieved ("records"), and includes records of:

- risk assessment outcomes;
- **competence** (training, education and/or experience-related);
- communications (internal and external);
- infrastructure reviews;
- infrastructure maintenance, rehabilitation and renewal;
- sampling, testing and monitoring;
- *emergency* training and testing;
- internal audits and external audits (including accreditation audits and Ministry inspections);
- management reviews;
- reports to the owner (e.g. annual & summary and budget reports);
- *continual improvement*, corrective and preventive actions.

For consistency, QMS-related and instructional documents maintain consistent *features*, including the following:

- *identification* and description (e.g. title, revision date, such as in this document's revisions table, header and footer)
- format (e.g. legible, and using a standard format for instructions, i.e. DWQMS 05-01 Document template)
- media (e.g. available electronically and/or on paper)
- *reviewed* and approved for *currency*, suitability, adequacy
  - Any employee may request new documents or changes to existing documents. The QMS Rep evaluates the request and ensures integrity of the QMS when approving changes or new documents.

Related to controlling documents and records, we ensure they are available *where and when needed* and are adequately *protected* (e.g. from loss of confidentiality, improper use, or loss of integrity).

We ensure that our documents and records are:

- kept current (e.g. annual SOP reviews scheduled by the QMS Rep and carried-out by all Operators)
- distributed and accessible, where required (e.g. current info in WTP SCADA office and Public Works shop)
- easily *retrieved* (e.g. whether in hard copy binders or from electronic locations)



- **used**, as required (e.g. latest version)
- stored, preserved, and legible (e.g. fireproof / waterproof storage; no pencil; clear ID of person recording)
- changes *controlled* (e.g. through QMS Rep or Superintendents)
- *retained* for as long as retention timelines dictate (e.g. IT back-ups, properly dated and stored by record type)
- *disposed of* once their retention requirements have been fulfilled (e.g. shredded or deleted, as applicable).

External documents, such as those issued through government regulations and approvals, are controlled and identified to ensure our personnel have access to such compliance obligations. We ensure these requirements are integrated into our documents and record-keeping so that we can provide evidence that we've met these obligations.

Please refer to **Appendix "A"** for a listing of documents and records of internal and external origin, their locations and retention times, as applicable.

### 6.0 Drinking water systems

The <u>City of Owen Sound</u> is the **owner** and the <u>Owen Sound Water & Wastewater Department</u> is the **operating authority** for the Owen Sound Drinking Water System. This section provides an overview of the drinking water system.

#### 6.1 OWEN SOUND DRINKING WATER SYSTEM

The Owen Sound Drinking Water System includes a Class III water treatment facility with rated capacity of 27,276 m<sup>3</sup>/day and a Class III water distribution system. The system serves 24,000 persons from the City of Owen Sound's residential, industrial, commercial and institutional users and some households outside of the city's boundaries with a total number of water services of approximately 7,000.

There are no critical upstream or downstream processes that are relied upon to ensure the provision of safe drinking water.

#### Water source

The raw water intake pipe extends approximately 670 meters into Georgian Bay.

#### General characteristics of the raw water supply

Raw water quality fluctuation results from storm driven or runoff events, which often present operational challenges, caused by elevated turbidity and colour in the raw water. This can result in elevated turbidity and elevated colour in the filtered water.

#### Common event-driven fluctuations and any resulting operational challenges and threats

Elevated filtered water turbidity can indicate a threat to water quality since failure to meet the 1.0 NTU requirement is indicative of less effective filtration. However, adequate disinfection can still be achieved via UV disinfection, as long as the UV units are operated such that the continual pass-through dose of at least 40 mJ/cm2 is maintained as specified in the Drinking Water Works Permit and Municipal Drinking Water Licence.

Elevated treated water colour can be a threat to water quality since it can result in lower ultraviolet transmittance (UVT) in the water. This reduces the effectiveness of the UV units. However, even during past high colour events, despite slightly lower than normal UVT readings, the UV units compensate by increasing power to maintain the dosage.



It should be noted that by themselves, turbidity and colour are not threats to water quality and are aesthetic objectives in the distribution system; the issues are how turbidity indicates less effective filtration, and how colour can affect UVT and subsequently UV disinfection.

For more information regarding the raw water characterization, refer to the City of Owen Sound Water System Raw Water Assessment Report (Genivar, May 2009).

#### Treatment system processes

The entire distribution system is serviced by one plant. The R H Neath Water Purification Plant is located at 3<sup>rd</sup> Avenue East near 28<sup>th</sup> Street East. The plant is a direct filtration plant using Georgian Bay as the source. The raw water intake pipe extends approximately 670 meters into Georgian Bay.

The plant uses ultraviolet disinfection and gaseous chlorine disinfection.

Pre-chlorination is used for zebra mussel control.

The raw water is screened at the low lift pumping station and then pumped to the rapid mixing tanks by low lift pumps (three (3) available). These pumps transfer raw water through two (2) separate, 350 mm diameter feed pipes to supply both Plant 1 and Plant 2 with raw water (refer to **Appendix "B.1"**). "Plant 1" and "Plant 2" are terms used to describe two (2) parallel treatment trains, consisting of two (2) filters each, and the associated downstream unit processes.

The coagulant chemical is added at the inlet of the rapid mixers of each plant. Coagulated water is divided into two flocculation tanks. Plant 1 uses walking beam flocculation and Plant 2 uses stage tapered turbine mixing. Flocculation tank effluents combine in a channel before splitting into the dual-media gravity filters for filtering. Filtered water is then stored in Clear Wells 1, 2 and 3 (refer to **Appendix "B.1"**). Post-chlorination is done as soon as the water enters the Clear Wells.

Three (3) Industrial High Lift pumps, and four (4) Municipal High Lift pumps are available to pump treated water to the distribution system.

Fluoridation is also practiced and the hydrofluorosilicic acid is injected in the clearwells, near the location where chlorine is dosed.

#### Treatment system process flow chart

A treatment system process flow chart for the Owen Sound Drinking Water System is included in Appendix "B.1".

#### **Distribution system**

The water distribution system consists of approximately 140 km of watermains, consisting of ductile iron, cast iron, asbestos cement (AC) and PVC watermains. About 90% of the system is ductile iron or cast iron main. The remaining 10% is AC and PVC.

The water distribution system consists of six (6) pressure zones: the Municipal Pressure Zone; the Municipal Core Pressure Zone (formerly Spring Pressure Zone); the Industrial Pressure Zone, the East Hill Pressure Zone, the East Hill South Pressure Zone, and the Beattie Street Booster Pumping Station Pressure Zone.

There are two high lift pump systems at the plant. The Municipal High Lift (MHL) pumps supply the Municipal Pressure Zone, the Municipal Core Pressure Zone, East Hill Pressure Zone, East Hill South Pressure Zone, and the Beattie Street Pressure Zone, while the Industrial High Lift (IHL) pumps supply the Industrial Pressure Zone.

#### Municipal Pressure Zone

The Municipal Pressure Zone is the largest zone in the city. This zone is serviced by the Municipal High Lift Pumps directly, and storage is provided by the Norman H. Robertson ("Bay") Reservoir.



#### Municipal Core Pressure Zone

When the spring water system was decommissioned in 1998, these watermains were connected to the Municipal Pressure Zone. The Municipal Core Pressure Zone is now interconnected to the Municipal Pressure Zone by pressure reducing valves at interconnection locations.

#### East Hill Pressure Zone

The East Hill Booster Pumping Station is located on the south side of 8th Street East, across from the Norman H. Robertson Reservoir and provides booster pumping capacity for the East Hill Pressure Zone and the East Hill South Pressure Zone. This station draws directly from the Norman H. Robertson ("Bay") Reservoir, which improves circulation in that reservoir.

#### East Hill South Pressure Zone

The East Hill South Pressure Zone receives water from the East Hill Booster Pumping Station through pressure reducing/pressure sustaining valves under normal circumstances, but reverts back to the Municipal Pressure Zone under greater than Maximum Day flow conditions, in order to prevent overloading the East Hill Booster Pumping Station.

#### Industrial Pressure Zone

The Industrial Pressure Zone is served by the Industrial High Lift Pumps at the Water Treatment Plant. There is currently no equalization storage on this zone. Some of the larger industrial users supply their own on-site fire storage. Pressures are controlled on this zone via pressure-reducing valving at the treatment plant.

#### Beattie Street Booster Station Pressure Zone

The Beattie Street Booster Pumping Station was commissioned in 2006 and provides increased pressure to the southwest quadrant of the city as indicated in **Appendix "B.2"**. The Beattie Street booster pumping station normally operates during the hours of 6:00 a.m. to 11:00 p.m. to boost domestic pressure in the subject area. This operating time period is operator adjustable. Outside of the operating time, the pressure zone reverts to the Municipal Pressure Zone.

In the event of fire flow requirements however, the Beattie Street Booster Pumping Station would activate to provide the fire flows, regardless of the time of day.

The Beattie Street Booster Pumping Station has four (4) 25 HP vertical turbine pumps operating on variable frequency drives, on a rotating duty system.

#### The Norman H. Robertson ("Bay") Reservoir

This reservoir is located near the intersection of 8th Street and 9th Avenue East and provides a total of approximately 22,730 m<sup>3</sup> (5 MIG) of storage for the Municipal Pressure Zone (including the East Hill and East Hill South Pressure Zones, the Municipal Core Pressure Zone and the Beattie Street Booster Pumping Station Pressure Zone; these are sub-pressure zones of the Municipal Pressure Zone).

The reservoir consists of two volumetrically equivalent chambers, north and south. These chambers are linked by a 400 mm diameter interconnection pipe. The flow enters the north chamber and leaves through the south chamber. This pattern is controlled via internal check valves in the dry well between the north and south chambers.

#### Procedures in place to maintain disinfection residuals

Free Chlorine Residuals are maintained in the system in number of ways: (1) Looping Dead Ends (2) Blowoffs on some dead ends to continually flush water at a low rate (3) Annual flushing program including flush hydrants (4) small bypass connections at check valve or flow control valve chambers to allow a small amount of flow between pressure zones.



#### Connections to other drinking water systems

The Leith Water Distribution System is owned and operated by the Municipality of Meaford. A flow meter chamber at the boundary of the City of Owen Sound distribution system provides flow information and the Municipality of Meaford is billed by the City on the basis of the consumption, and then Meaford bills its water users.

### 7.0 Risk assessment

At least once every calendar year, the Owen Sound Water & Wastewater Department conducts a risk assessment review, including a review of the currency of information and validity of the assumptions used in the risk. The updated risk assessment outcomes are presented at the next Management Review meeting for review and approval.

Each of the drinking water system's process and program steps from source water to consumers' taps are evaluated for risks of failure (including a review of potential failures related to source water, water treatment, water distribution).

The Owen Sound Water & Wastewater Department, involving at a minimum all Superintendents and 1-2 operators from each of the areas, re-assesses drinking water system risks using the risk rating criteria included below (adding ratings for likelihood, severity and detectability).

Likelihood		Severity		Detectability	
1	<b>Rare</b> - May occur in exceptional circumstances, and has not occurred in a period of over 10 years OR equipment is new (within warranty period).	1	<b>Insignificant</b> – Little disruption to normal operation.	1	Very detectable – Easy to detect. Online monitoring through SCADA. Operator continuous monitoring.
2	<b>Unlikely</b> – Could occur at some time. Historically, has occurred less than once every 5 or 10 years OR equipment is refurbished or rebuilt.	2	<b>Minor</b> – Some manageable operation disruption OR treatment train out of service.	2	<b>Moderately detectable</b> – Alarm present, but not on SCADA. May require operator to walk by and notice alarm OR problem is indicated by in-house lab test results.
3	<b>Possible</b> - Has occurred or may occur once every 2 to 5 years OR equipment is approaching the end of its life cycle.	3	<b>Moderate</b> – Significant modification to normal operation but manageable.	3	<b>Normally detectable</b> – Visually detectable on operator rounds or during regular maintenance. Third party notification.
4	<b>Likely</b> - Has occurred or may occur on a monthly to quarterly or seasonal basis.	4	<b>Major</b> – Drinking water advisory OR possible reduced production and supply.	4	<b>Poorly detectable</b> – Visually detectable but not inspected on a regular basis OR not normally detected before problem becomes evident OR lab tests are not done frequently (e.g. quarterly) OR only found by chance.
5	Very likely – One or more occurrences on a monthly or more frequent basis OR equipment has exceeded its life cycle.	5	<b>Catastrophic</b> – No water available for distribution, therefore negative pressure in the distribution system OR production and uncontrolled distribution of unsafe water.	5	Undetectable – Cannot detect.



The purpose of the risk assessment is to:

- *identify* potential *hazardous events* and associated *hazards*,
- assess the risks associated with the occurrence of the hazardous events,
- rank the hazardous events according to the associated risk,
- identify control measures to address the potential hazards and hazardous events,
- *identify critical control points*, and
- *identify response procedures* when an identified risk cannot be controlled.

Consideration of the potential hazardous events and associated hazards from the document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems" is included in the risk assessment process.

When reviewing the currency of the risk assessment information, the following may be considered:

- a) process changes.
- b) changes in reliability and redundancy of equipment.
- c) the occurrence of emergency events.
- d) the occurrence of deviations from critical control limits.
- e) non-conformities identified in the QMS or related to standard operating procedures.

A high risk is considered to be a risk assessment score of <u>9</u> or higher.

The recommended *minimum critical control points* are *related to disinfection* requirements; and therefore, regardless of risk assessment scores, any items related to *disinfection* are *automatically considered Critical Control Points*.

### 8.0 Risk assessment outcomes

The outcome of the risk assessment process is summarized in the *Risk assessment outcomes* record which documents:

- a) the identified potential hazardous events and associated hazards,
- b) the assessed risks associated with the occurrence of the hazardous events,
- c) the *ranked* hazardous events,
- d) the identified control measures to address the potential hazards and hazardous events,
- e) the identified critical control points (CCP's) and their respective critical control limits (CCL's),
- f) procedures and/or processes to *monitor the CCL's*,
- g) procedures to respond to deviations from CCL's, and
- h) procedures for *reporting and recording deviations* from CCL's.

#### 8.1 CRITICAL CONTROL POINTS AND CRITICAL CONTROL LIMITS

*Critical control points* (CCP's) identified in the risk assessment and their respective critical control limits (CCL's) are summarized in the following table:

ССР	Condition	High CCL	Low CCL
Filter effluent turbidity	Filter breakthrough (>1.0 NTU)	0.3 + 0.5 NTU	NA
UV disinfection	Failure of UV system (<45 mJ/cm2)	NA	45
Distribution system chlorine residual	Low chlorine residual (<0.20 mg/L)	4.00 mg/L	0.20 mg/L
Distribution system pressure	Low pressure (<20 psi / 138 kPa)	NA	<20 psi / 138 kPa

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**Procedures** listed below describe how CCL's **are monitored** and include **response procedures** for when **CCL's are reached** related to the following situations:

- SOP WTP-18 Surface Run-Off Events
- O&M s.D.30.60 Ultraviolet Disinfection Emergency Provisions
- O&M s.D.30.90 Ultraviolet Disinfection Monitoring and Reporting
- O&M s.D.30.100 Ultraviolet Disinfection Maintenance
- SOP-C15 Flushing watermains
- SOP-C11 Adverse Water Quality Reporting Protocol
- SOP-C12 Adverse Water Quality Action Protocol
- SOP-C10 Loss of EHBPS Zone
- WDSOP 12 Repairing Watermains
- WDSOP 13 Watermain breaks
- ERP 6.6 Loss of pressure and multiple breaks

Requirements for *reporting and recording deviations* from CCL's are included in these CCL response procedures.



# 9.0 Organizational roles, responsibilities, and authorities

The organizational structure related to the City of Owen Sound's Water & Wastewater Department is depicted below:



#### \*ORO - Overall Responsible Operator

The QMS Representative ensures that the responsibilities and authorities for the relevant roles are assigned and communicated throughout the organization (to the owner and operating authority personnel).

The City of Owen Sound's and the Owen Sound Water / Wastewater Department's roles, responsibilities and authorities related to provision of safe drinking water are described in **Appendix "C"**.

### **10.0 Competencies**

Competencies required for personnel performing duties directly affecting drinking water quality are described by organizational role in **Appendix "C"** and generally summarized below for operator roles:

Overall Responsible Operators (ORO's)	Operators-in-Charge (OIC's)		
Minimum Class III WT for ORO of Water Treatment	Minimum Class I WT for OIC's of Water Treatment		
Minimum Class III WD for ORO of Water Distribution	Minimum Class I WD for OIC's of Water Distribution		

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**Competency records** are retained by the respective Superintendent of WT or of WD and used for operator certification renewals or upgrades. While an operator-in-training (OIT) is permitted to carry-out duties of an operator, they are not authorized to act as Operators-in-Charge (OIC's) nor as Overall Responsible Operators (ORO's).

The required number of training hours is specified in *O. Reg.* 128/04 s.29 and is based on the highest type and class of subsystem where the operator works. For Owen Sound, the highest type and class is *Class III Water Treatment* and *Class III Water Distribution*.

The City of Owen Sound recognizes the value of *training and development* of its employees. Furthermore, it is recognized that continuing education is a requirement for certified and licensed staff of the Owen Sound Water / Wastewater Department. The responsibility for such training lies not only with the employer, but also with the individual. The Water/Wastewater Administrative Assistant tracks summaries of training on an ongoing basis in a shared spreadsheet (*DWQMS 10-01 Master Water and Wastewater Training Log & DWQMS 10-02 List of Current Certified Operators*)

*Key training topics for water treatment operators* include water treatment, water disinfection, SCADA; *key training topics for water distribution operators*: watermain break repair, watermain disinfection procedure, water distribution system flushing; and *key training topics for all operators*: the Mandatory Certificate Renewal course, Safe Drinking Water Act and applicable drinking water regulations, and drinking water sampling, testing & monitoring.

The Owen Sound Water / Wastewater Department may administer certain tests, conduct interviews, verify references and/or request specific documentation as part of the hiring process in order to verify skills, experience and knowledge.

In order to meet the ongoing changes to technology, software, the requirements of applicable legislation, and water operations processes, all operators shall receive training as required by compliance obligations. The training may be provided by qualified employees or contracted subject matter experts.

The **DWQMS 10-03 On-the-job practical training form** is used to track on-the-job practical staff training. CEU-accredited training providers issue training certificates as the record of training.

Activities to ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water include: providing access to training on relevant legislation and related regulations; staff meetings and orientation sessions reminding staff of roles and responsibilities related to QMS Policy commitments; and conducting internal audits with staff and interviewing them about the relevance of their duties and how they affect safe drinking water.



### **11.0 Personnel coverage**

This section describes the coverage provided for the City of Owen Sound's Water & Wastewater Department.

- The Water Department is staffed daily (M-F 7:30 am to 4:00 pm) by water operators (designated as *Operators-in-charge*, or *"OIC's"* as long as competencies are met).
- The **Overall Responsible Operators (ORO's)** are the Superintendent of Water Treatment and Superintendent of Water Distribution. ORO's must be available at all times to direct OIC's and operators-in-training (OIT's) on the operations of the system and to respond immediately and effectively to emergencies.
- In the event an ORO is not available, a qualified water operator holding a minimum certification of Class II WT for water treatment or Class II WD for water distribution may be designated ORO by management. When using the one class lower, the number of days must not exceed 150 days per 12-month period.

#### After-hours / weekends/ statutory holiday coverage

- The drinking water system is controlled and monitored by SCADA. Any alarm condition is routed to an automated dialer that is programmed to call the on-call operator whenever conditions warrant.
- A water operator (OIC) is on stand-by based on a weekly rotation. The stand-by operator takes the necessary actions to investigate and address any alarm conditions.
- In the event the ORO is not available, a designated water operator is the ORO (with proper level of certificate)
- An emergency Water & Wastewater dept. contact number directed to a 24-hour answering service is available to the public. The answering service in turn has the emergency contact information for appropriate staff.
- Weekend and Statutory Holiday coverage/ sampling are the responsibility of the designated stand-by operator.
- The DWQMS 11-01 Personnel Coverage Procedure Duty Roster is used to determine stand-by schedule

#### Emergency and vacation coverage

- ORO's ensure that coverage of the City of Owen Sound's Water & Wastewater Department operations is continuous: 24 hours/day, 7 days/week. One designated ORO is available on-call 24 hours/day, 7 days/week. An alternate ORO will be designated as required. The name of the ORO is recorded daily in the logbook.
- O. Reg. 128/04 s.32 Emergency situations allows for Emergency Substitute Operators (ESO's) to be used. The specific conditions under which ESO's are permitted and rules to be followed are described in O. Reg. 128/04 s.33 Emergency situations, operators etc. and O. Reg. 128/04 s.34 Emergency situations, testing.

### **12.0 Communications**

This section describes how the City of Owen Sound's Water & Wastewater Department communicates the Quality Management System (QMS) *between top management and*: the Owner, operating authority personnel, essential suppliers and service providers, and the public.

#### The owner

 Over the course of the year, top management communicates with the owner on a number of items, including: Management Review Meeting minutes, the Annual & Summary report (by March 31<sup>st</sup> every year), capital and operational budgets (when budget requests are due each year), about emergencies and health-related adverse conditions (as they occur).

#### Employees

• ORO's communicate regularly with water operators about their schedules, task assignments, updates to procedures, training opportunities, record-keeping requirements, etc.



• The Water Superintendents provide DWQMS awareness training and updates to all staff.

#### Essential suppliers and service providers

• All essential suppliers and service providers receive through the tender process details on what is expected by the City of Owen Sound's Water & Wastewater Department in the purchase of supplies and/or services (e.g. describing required specifications, item sizes, numbers of, arrangements for delivery, etc.).

#### The public

- The public receives timely information about the drinking water systems' activities, such as: watermain breaks, flushing activities, pressure issues, water advisories, etc. The public may access the City website for updates.
- The City of Owen Sound's website provides instructions on how to report a problem (including phone numbers); backflow prevention; the Water Financial Plan; by-laws; annual reports; and QMS Policy.

Two standard operating procedures (SOP's C11 and C12) describe the requirements for reporting adverse water quality incidents (AWQI's).

### 13.0 Essential supplies and services

Supplies and services essential for the delivery of safe drinking water have been identified in the master contact list included in section 5 of the **City of Owen Sound Water System Emergency Response Plan**.

The following information is included and kept current as it relates to each of the essential supplies and services:

- *identification* of the essential supply or service,
- how procurement of these is ensured,
- providers' contact information of essential supplies and services, and
- description of the *quality requirements* for each.

Operators **verify quality requirements** are met with each delivery of and provision of essential supplies and services. Refer to **DWQMS 13-01 Owen Sound Specifications for Watermain Construction Final**. When quality requirements are not met, the Operator contacts the provider directly so that **corrective action** is initiated. Contact information for back-up providers of essential supplies and services that may be used in emergencies are also included in the water system emergency plan.

### 14.0 Review and provision of infrastructure

At least once per calendar year, the Water & Wastewater Department prepares capital and operational budgets and presents these to the City of Owen Sound. Capital budget items are selected through risk-based decisions made by reviewing: the latest risk assessment outcomes; any issues related to the drinking water system's reliability and redundancy; infrastructure conditions (e.g. age, failure, material, sizing, etc.); and any long-term infrastructure and asset management plans available.

Drinking water system issues may be identified through: various meetings (risk assessment, staff, departmental, W/WW & Engineering, monthly Superintendent, etc.), Ministry inspections or consumer complaints.

The prioritization of capital budget items is documented through the 5-year capital plan and presented through the budget process or other project management process that is further discussed at Management Review.

The capital program is reviewed with operating authority staff and presented to the City of Owen Sound by the Water and Wastewater Manager during budget deliberations. Upon approval of the plan, the Water and Wastewater Manager begins the process of implementing the approved recommendations over the course of the fiscal year.



### 15.0 Infrastructure maintenance, rehabilitation and renewal

A summary of the City of Owen Sound's Water & Wastewater Department's infrastructure maintenance, rehabilitation and renewal programs is available through scheduling & record books, logbooks and the asset management plan.

The scheduling & record book system overseen by the WT and WD Superintendents serves as a reminder system to carry-out *preventive maintenance* activities at their required timelines; and keeps records of these maintenance activities. The preventive maintenance program is based on industry best practices, compliance obligations and on original equipment manufacturer recommendations included as part of equipment manuals.

The following preventive maintenance programs are regularly scheduled for Owen Sound's drinking water system:

- <u>Water treatment</u>: measurement and recording device calibrations, chemical dosing pump maintenance, large pump maintenance, SCADA component and hardware replacements, clearwell and reservoir inspections.
- <u>Water distribution</u>: hydrant inspections / flushing / maintenance; valve chamber maintenance; leak detection; water meter repairs; drawings updates: services and WDS; lead sampling; valve turning / replacement / repair; watermain age and condition tracking; valve box repair; flush hydrant flushing / pumping; frozen / hydrant lists.

Service agreements exist with qualified contractors for priority items such as SCADA system maintenance.

When equipment or systems breakdown, *reactive maintenance* is carried-out and records are maintained using the scheduling & record book system in water treatment and logbooks & field books in water distribution. Measures to prepare for and expedite emergency maintenance include: equipment redundancy (back-up units), spare parts inventory, availability of updated plans, as well as documented repair and safety procedures.

*Larger and longer-term maintenance activities* that are carried out less frequently (e.g. pump rehabilitation or replacements, filter media replacement, watermain rehabilitation or watermain reconstruction, reservoir cleaning) are tracked through asset management plans, capital budget processes and administered by the City's Engineering dept.

Top Management and ORO's communicate the *summary of* and reports on *the effectiveness of* regular and longterm infrastructure maintenance, rehabilitation and renewal programs to the City of Owen Sound *at least once per calendar year* through the annual budget process and through annual water quality reports.

Indicators of maintenance *effectiveness for WT* include: daily comparisons of online analyzers against bench lab equipment readings; filter effluent turbidity is indicator of filter media effectiveness; reservoir inspections indicators of effectiveness of cleaning activities and distribution residuals indicators of improved disinfection processes in WT.

Indicators of maintenance *effectiveness for WD* include: improved turbidity and chlorine residual readings post flushing; number of leaks found and repaired; identification of hydrant issues and their repair before end of year; and water meter accuracy checks confirm effectiveness of water meter maintenance program.

**Documenting Additions, Modifications and Alterations:** To ensure all forms and notifications of additions, modifications and alterations to our drinking water, wastewater and storm water systems are completed, the Manager of Water and Wastewater will maintain a project tracking spreadsheet and send scheduled reminders to project leads for status updates. As projects approach completion, commissioning dates and/or other deadlines specified in the forms the Manager of Water and Wastewater will work with project leads/consultants to ensure completion and compliance. Copies of the forms will be saved on SharePoint and file maintained by the DWQMS Rep.

# 16.0 Sampling, testing and monitoring

The sampling, testing and monitoring programs are carried out to provide operators with knowledge to *proactively operate* the drinking water system; *ensure water quality* is maintained; and *ensure compliance obligations* are met.



Sampling requirements are *planned by the ORO for water treatment* and carried-out by operational staff. All staff who sample, test and monitor for water quality have received *appropriate training and are qualified* to do so.

**Additional sampling** may be conducted **for challenging conditions** in addition to the regular schedule to account for out-of-ordinary conditions (e.g. sudden changes to raw water characteristics due to extreme weather); or may be requested **related to projects**.

**Records of sampling, testing and monitoring activities** are reviewed by the Water Distribution and Water Treatment Superintendents to ensure compliance obligations and safe drinking water quality requirements are consistently met.

There are no relevant sampling, testing and monitoring activities that take place upstream of the City's water system.

The following describes *how the sampling, testing, and monitoring* program supports process control and finished drinking water quality:

- Regular sampling of water quality for chemical, physical, and bacteriological parameters is performed in accordance with the *Laboratory Manual* as well as relevant Water Treatment SOP's.
- Water quality monitoring which takes place in the water distribution system during the performance of fire hydrant flushing and flush hydrant flushing is performed in accordance with the relevant Water Distribution SOP's.
- The lead sampling procedure followed is as per the most recent MECP Guidelines and as outlined in the MDWL.
- With respect to bacteriological sampling, samples are taken in accordance with O. Reg. 170/03 and the accredited laboratory's protocols (sampling, transportation and holding time, etc.) are also followed.
- Note that **only trained and certified Operators are authorized** to take handheld measurements or to take samples for laboratory analysis.
- Additionally, only an accredited laboratory may be utilized as per the regulations.
- Currently, online analyzers are installed at the Water Treatment Plant and the East Hill Booster Pumping Station. The online analyzers are connected to the SCADA and alarmed.

Sample frequency	Sample program description				
	<b>Bacti Sampling – 30 distribution samples required per month</b> 8 distribution samples + 1 per 1,000 people (current population 21,612 (2021 Census), along with a Raw and Treated sample from the Water Plant.				
	Testing is required for the following;				
Weekly	Raw Sample – E. Coli (EC) and Total Coliform (TC)				
	Treated Sample (Municipal Header) – EC, TC, and Heterotrophic Plate Count (HPC)				
	8 Distribution samples – EC, TC, and once a month HPC's for all distribution samples				
	(distribution residuals are continuously monitored at the Leith Boundary and East Hill Pumping Station)				
Monthly	1 x Free Chlorine Residual on Wastewater Tank Decant Line				
	1. 1 x Total Suspended Solids (TSS) composite sample on backwash water				
Quarterly	<ol> <li>1 x Trihalomethanes (THMs) one distribution sample taken at a point where there is likely an elevated potential for the formation of THM's</li> </ol>				

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Sample frequency	Sample program description		
	3. 1 x Haloacetic Acid (HAA) taken from the entrance point to the distribution system		
	4. 1 x Nitrate & Nitrite, taken from the entrance point to the distribution system		
	EXTRA:		
	1 x THM at the Municipal Header		
	1 x Aluminum at the Municipal Header		
	<ol> <li>Raw Water Testing – This testing is not required as per any water regulation but tested to monitor Raw water quality entering the water plant.</li> </ol>		
	1 x Polycyclic Aromatic Hydrocarbon (PAH)		
	1 x Mercury		
	1 x Metal Scan		
Semi-annually	<ol> <li>Lead Testing (distribution) - 4 distribution samples are tested for pH and Alkalinity in two sampling periods between Dec. 15 – April 15, and June 15-October 15.</li> </ol>		
	<b>NOTE:</b> Only tested for Lead every three years.		
	<ol> <li>1 x Aluminum – 1 sample from the point of entrance to the distribution system.</li> <li>* this is done quarterly.</li> </ol>		
Annually	<ol> <li>1 x Inorganic Scan – (Schedule 23 of O Reg. 170/03) – taken from the entrance point to the distribution system</li> </ol>		
	<ol> <li>1 x Organic Scan – (Schedule 24 of O Reg. 170/03) – taken from the entrance point to the distribution system</li> </ol>		
36-month	<ol> <li>Lead Testing (distribution) – 4 distribution samples are tested for pH, Alkalinity and Lead in two sampling periods (December 15 – April 15, June 15-October 15)</li> </ol>		
	1. Sodium – (taken from the entrance point to the distribution system)		
60-month	2. Fluoride – (taken from the entrance point to the distribution system)		

#### **Communication of results**

The sampling and testing results are summarized in the annual report. As required by regulation, the City of Owen Sound is provided with a copy of the **DWQMS 16-01 and DWQMS 16-02 Annual & Summary Report** which includes these results.

More immediate communications of sampling and testing results take place when *adverse water quality incidents* are identified (see SOP's C11 and C12).

# **17.0 Measurement and recording equipment calibration and maintenance**

Calibration, verification and maintenance of measurement and recording equipment is described in this section.

• Measuring and recording equipment is provided and maintained by a *qualified third-party service provider*.



- Flow measuring devices and measuring instrumentation that form part of the CT monitoring system (e.g. on-line chlorine analysers, turbidimeters) are calibrated and/or verified at least once every 12 months (or more frequently, if specified) using the method specified by the manufacturer.
- The ORO or designate is responsible for coordinating appropriately *trained and qualified personnel* or a *qualified third-party* for the required calibration and / or verification of the measurement and recording equipment.
- The *certificates of calibration and/or records of verification* are retained on file, and the instruments bear a record of the *most recent calibration / verification date*.

### **18.0 Emergency management**

We maintain a state of emergency preparedness by:

- a) maintaining a list of potential emergency situations or service interruptions (see *Risk assessment outcomes*),
- b) identifying processes for emergency response and recovery (see DWQMS 18-01 Water System Emergency Response Plan),
- c) conducting emergency training and testing activities,
- d) identifying City of Owen Sound and Water & Wastewater Department *responsibilities* during emergency situations,
- e) referring to *municipal emergency planning* measures for larger-scale incidents, and
- f) having an *emergency communication protocol* in place and an up-to-date list of emergency contacts included as a master contact list in the *Water System Emergency Response Plan*.

For potential environmental emergencies, Emergency Management Ontario's five core components of emergency management are considered:



- **Prevention** actions taken to prevent an emergency or disaster.
- Mitigation actions taken to reduce the effects of an emergency or disaster.
- **Preparedness** actions taken prior to an emergency or disaster to ensure an effective response.
- **Response** actions taken to respond to an emergency or disaster.
- **Recovery** actions taken to recover from an emergency or disaster.

In the context of our QMS, "emergencies or disasters" can contribute to potential adverse impacts.

Where possible, we plan actions to *prevent* or *mitigate* these adverse impacts and their consequences.

Where we cannot prevent or mitigate impacts and their consequences; we prepare *planned response actions* in advance of an emergency to ensure we are effective in our response.

When emergencies do occur, we *respond* and take actions to *recover* from them (returning to normal operations).

In order to be prepared for potential emergencies, we *share our Water System Emergency Response Plan* with staff, interested parties and persons working under our control; *test* our planned response actions and *train* our staff



on a yearly basis to ensure that established emergency procedures are well-understood by those responsible for carrying out response activities. Training can be in the form of a mock / desktop exercise or an actual emergency.

When emergency situations arise, we take the opportunity to assemble a cross-functional team to host a *debrief session* which includes the discussion of the following key questions:

- 1 *Why* did the emergency event / failure occur?
- 2 What went well? (to identify which practices and planned actions we should continue with)
- 3 What *didn't go well*? (to identify opportunities for improvement so that we are better prepared in a similar situation in the future)
- 4 Other opportunities for improvement / lessons learned.

The information gained from the debrief session would then contribute to the *review and revision* of emergency plans and contribute to continual improvement of emergency preparedness and response.

## 19.0 Internal audits

We conduct internal audits at least once every calendar year to provide information on whether our QMS:

- **conforms** to our own QMS requirements and to the requirements of the Drinking Water Quality Management Standard (DWQMS); and
- is effectively implemented and maintained.

At a minimum, the *audit criteria* includes the DWQMS. Various elements of the DWQMS can be evaluated as part of each internal audit conducted, as it applies to the specific process or program being audited. *At least once every three calendar years*, <u>all DWQMS elements</u> are evaluated for conformity.

The **scope** of the internal audit considers existing situations (e.g. system weaknesses have been recognized; process failures or emergency situations have occurred) as well as the original plan for auditing drinking water system processes and programs. *At least once every three calendar years*, <u>all drinking water system processes and programs</u> are internally audited.

The standard for conducting management system audits, *ISO 19011:2018 Guidelines for auditing management systems* is used as the method to carry-out internal audits. If a sector-specific internal audit training program is available, the methods presented in the training program can also be followed (e.g. Internal auditing for the DWQMS).

#### For each internal audit conducted, we:

- define what processes and programs form part of that audit's criteria and scope;
- **select auditors** and conduct audits so that we **ensure objectivity and impartiality** of the audit process (for example, no one is auditing their own work);
- *review previous* internal and external *audit results* (to ensure previous actions taken continue to be effective); and
- ensure that *results of audits are reported* (through Management Review meetings).

Following each audit conducted, an *internal audit report* is prepared as the record of the audit. The audit report summarizes details of the audit conducted, along with the summary of findings, as applicable: positive findings, non-conformities, and opportunities for improvement.

The *findings summarized* in the internal audit report are linked to the *continual improvement system* (see section 21.0). Any non-conformities and opportunities for improvement identified through the internal audit are recorded in the *continual improvement report and tracking system* established under section 21.0. A future internal and external audit will review the effectiveness of these actions taken.

The results of the audit are provided to Top Management and the Owner.



### 20.0 Management review

Top management reviews our QMS at planned intervals (at least once every calendar year) to ensure the continuing *suitability, adequacy and effectiveness of our QMS*. At a minimum, the following personnel (or their alternates) will attend Management Review meetings: QMS Representative, Top Management (City Manager and Director of Public Works & Engineering), Manager of Water and Wastewater, and the Water Treatment Plant and Distribution Superintendents.

The Management Review Meeting is normally held in the first quarter of each calendar year.

The QMS Representative prepares the required information using the **DWQMS 20-01 Management Review Meeting Memo form** which includes consideration of items required for Management Review meetings and prompts for the required outputs of these meetings (a summary of which is documented in **DWQMS 20-02 Management Review Meeting Minutes Template**).

#### Management Review Inputs

The QMS Representative coordinates information and data relevant to the following items, for the review:

- 1. incidents of regulatory non-compliance (by ORO's),
- 2. incidents of adverse drinking water tests (by ORO's),
- 3. deviations from critical control point limits and response actions (by ORO's),
- 4. the effectiveness of the risk assessment process (by QMS Rep),
- 5. internal and third-party party audit results (by QMS Rep),
- 6. results of emergency response testing (by QMS Rep),
- 7. operational performance (by QMS Rep),
- 8. raw water supply and drinking water quality trends (by ORO's),
- 9. follow-up on action items from previous management reviews (by Director / QMS Rep).
- 10. the status of management action items identified between reviews (by QMS Rep),
- 11. changes that could affect the QMS (by QMS Rep),
- 12. consumer feedback (by ORO's),
- 13. the resources needed to maintain the QMS (by QMS Rep),
- 14. the results of the infrastructure review (by QMS Rep),
- 15. operational plan currency, content and updates (by QMS Rep), and
- 16. staff suggestions (All).

#### Management Review Outputs

- a) ensure management review is conducted at least once every calendar year,
- b) consider the results of the management review and identify deficiencies and action items to address the deficiencies,
- c) provide a record of any decisions and action items related to the management review including the personnel responsible for delivering the action items and the proposed timelines for their implementation, and
- d) report the results of the management review, the identified deficiencies, decisions and action items to the owner (by Top Management to council).

## 21.0 Continual improvement

We are committed to tracking and measuring continual improvement by:

- a) reviewing and considering applicable best management practices,
- b) documenting a process for identification and management of **QMS Corrective Actions** that includes:



- i. *investigating the cause(s)* of an identified non-conformity,
- ii. **documenting the action(s)** that will be taken to correct the non-conformity and prevent the non-conformity from re-occurring, and
- iii. reviewing the action(s) taken to correct the non-conformity, verifying that they are implemented and are effective in correcting and preventing the re-occurrence of the nonconformity.
- c) documenting a process for identifying and implementing *Preventive Actions* to eliminate the occurrence of *potential non-conformities* in the QMS that includes:
  - i. *reviewing potential non-conformities* that are identified to determine if preventive actions may be necessary,
  - ii. documenting the outcome of the review, including *the action(s), if any,* that will be taken to prevent a non-conformity from occurring, and
  - iii. reviewing the action(s) taken to prevent a non-conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity.

We have established a spreadsheet to track and measure continual improvement, available as **DWQMS 21-01 Continual Improvement tracking spreadsheet.** 

When a non-conformity occurs, we use the **DWQMS 21-02 Continual Improvement form**, and:

- a) react to the non-conformity and, as applicable:
  - 1. take action to control and correct it;
  - 2. deal with the consequences, including mitigating adverse conditions;
- b) evaluate the need for action to eliminate the causes of the non-conformity in order that it does not recur or occur elsewhere, by:
  - 1. reviewing the non-conformity;
  - 2. determining the causes of the non-conformity;
  - 3. determining if similar non-conformities exist, or could potentially occur;
- c) implement any action needed;
- d) review the effectiveness of any corrective action taken;
- e) make changes to the QMS, if necessary.

Corrective actions taken are appropriate to the significance of the effects of the non-conformities encountered, including the adverse impact(s).

We retain documented information as evidence of:

- the nature of the non-conformities and any subsequent actions taken;
- the results of any corrective action.

### **Revision History**

#	yyyy-mm-dd	<b>Description</b> (current version details plus two previous revisions' details)	Ву
01	2024-11-26	Updated with OFI's from Internal Audit	Ashley Ford
02	2025-01-16	Added section regarding Documenting Additions, Modifications, and Alterations	Ashley Ford

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03	2025-01-23	Added CCP Decision Tree into Element 8.0	Ashley Ford
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# Appendix "A" Documents and records listing

Internal Documents					
Document Title	Document #	Location (Person Responsible) or File Path			
Operational Plan (Master Copy)	094-401	SharePoint + hard copies: fireproof cabinet in Water Shop (QMS Rep), copies at Director's office, WTP SCADA office			
Operations & Maintenance Manual ("O&M Manual", including equipment manuals)	NA	WTP SCADA office (WT Superintendent)			
SOP Binder: Water Treatment	NA	SharePoint + WTP SCADA office (WT Superintendent)			
SCADA Manual	NA	Water Treatment Plant SCADA office (WT Superintendent)			
SOP Binder: Water Distribution	NA	SharePoint + Water Distribution Shop (WD Superintendent)			
Water Treatment Plant Drawings	NA	Front office of the Water Treatment Plant			
Distribution System Drawings	NA	Sharepoint + Hard Copies in Water Distribution Shop			
Water System GIS	NA	GIS (City IT Department, work in progress)			
Bylaw to Regulate Supply and to Prohibit Wrongful Use of Water /// Backflow Prevention by-law	1988-106 /2022-003	Master at Clerk's office with copies in the O&M Manual appendices (Clerk's Department) (Water Use By-Law – work in progress)			
Water Emergency Plan	NA	SharePoint + hard copies: Director's OP binder, WD SOP binder and WT SOP binder			
Laboratory Manual	NA	WTP – Laboratory (WT Superintendent)			



External Documents						
Document Title	Document #	Location, Person Responsible or File Path				
Drinking Water Quality Management Standard	DWQMS 2.0	ontario.ca/page/drinking-water				
Accreditation certificate	C0122170-DWQ7	Posted on Water Admins wall at Public Works				
Operators' Certificates	Various	WT Operators in WTP SCADA office (WT Superintendent), WD Operators in WD Super.'s office (WD Superintendent)				
Classification Certificates for the Water Treatment facility and Water Distribution System	NA	Originals on the Water Distribution Superintendents office wall, and Water Treatment Plant front foyer wall				
Municipal Drinking Water Licence	094-101 Issue 5	MECP issues, WTP SCADA office (WT Superintendent)				
Drinking Water Works Permit	092-202 Issue 5	MECP issues, WTP SCADA office (WT Superintendent)				
Permit to Take Water	PTTW	MECP issues, WTP SCADA office (WT Superintendent)				
Financial Plan	092-101	Water and Wastewater Department   City of Owen Sound				
Regulations / Legislation (incl. list below), Procedure for Disinfection of Drinking Water in Ontario	Binder	WTP SCADA office (WT Superintendent)				
AWWA Standards	Various	WTP SCADA office and WD Superintendent's office				
Safe Drinking Water Act, 2002	SDWA, 2002	ontario.ca/laws/statute/02s32				
O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts	O. Reg. 128/04	ontario.ca/laws/statute/02s32				
O. Reg. 169/03 Ontario Drinking Water Quality Standards	O. Reg. 169/03	ontario.ca/laws/statute/02s32				
O. Reg. 170/03 Drinking Water Systems	O. Reg. 170/03	ontario.ca/laws/statute/02s32				
O. Reg. 205/18 Municipal Residential Drinking Water Systems in Source Protection Areas	O. Reg. 205/18	ontario.ca/laws/statute/02s32				
O. Reg. 248/03 Drinking Water Testing Services	O. Reg. 248/03	ontario.ca/laws/statute/02s32				

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Record Name	Filing Method	Location	Retention Period (years)	Maintained by
Operational Plan – as audited	Hard copy and electronic	Water shop fireproof cabinet + SharePoint	10 years	QMS Representative
Risk assessment outcomes and CCP table	Hard copy and electronic	Water shop fireproof cabinet + SharePoint	10 years	QMS Representative
Competence / training	Hard copy and electronic	WTP SCADA office WD Superintendent's office	E + 3 years (E = Operator's last day)	WT Superintendent for WT WD Superintendent for WD
Communications with interested parties	Hard copy and electronic	WTP SCADA office Public Works front desk	5 years - confirm	WT Superintendent QMS Representative
Financial records (purchasing, budgets, reports)	Hard copy and electronic	Accounts Payable	7 years	Finance dept.
Infrastructure records (as-built drawings, distribution system map, DWWP records – Forms 1, 2, 3)	Hard copy and electronic	WTP SCADA office (WT) Engineering + WD shop (WD)	Permanent: as-builts 10 years: maps, forms	WT Superintendent WD Superintendent
Infrastructure maintenance	Hard copy and electronic	Work Order System / Water Ops Logbook	15 Years	QMS Representative
Calibration records (flow meters)	Hard copy and electronic	WTP SCADA office	15 years	WT Superintendent
Calibration records (online analyzers)	Hard copy and electronic	WTP Laboratory	15 years	WT Superintendent
Infrastructure review meeting minutes	Electronic	SHAREPOINT	10 Years	QMS Representative



Record Name	Filing Method	Location	Retention Period (years)	Maintained by
Sampling, testing, monitoring (chains of cust., results)	Hard copy and electronic	WTP SCADA office and Low Lift storage (older)	15 years (chemical indefinitely)	WT Superintendent
Adverse reports: water treatment	Hard copy and electronic	WTP SCADA office	15 years	WT Superintendent
Adverse reports: water distribution	Hard copy and electronic	WD Super's office + WTP SCADA office (in Adverse Results Records)	15 years	WD Superintendent WT Superintendent
Emergency preparedness training and testing	Hard copy and electronic	Sharepoint	10 years	QMS Representative
Audit reports (internal, external, Ministry inspections)	Electronic	Audits on Sharepoint MECP inspections on Sharepoint	10 years	QMS Representative WT Superintendent (MECP)
Management review minutes	Electronic	Sharepoint	10 years	QMS Representative
Annual & Summary reports to City of Owen Sound's website, Municipality of Meaford and Township of Georgian Bluffs	Hard copy and electronic	City website, Clerk's office, PW office, library, WTP SCADA office	15 years	QMS Representative
Continual improvement (tracking, completed forms)	Electronic	Sharepoint	10 years	QMS Representative
Owen Sound System Raw Water Assessment Report	Hard copy	WTP SCADA office	Permanent	WT Superintendent
Engineer's Reports	Hard copy	WTP SCADA office	Permanent	WT Superintendent
WTP Logbooks WD Logbooks	Hard copy	WTP SCADA office and Low Lift storage (older) Distribution workshop	15 years	WT Superintendent WD Superintendent



## Appendix "B" Treatment system process flow charts



#### **B.1 OWEN SOUND WATER TREATMENT PLANT**

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#### **B.2 OWEN SOUND WATER DISTRIBUTION SYSTEM**





# Appendix "C" Roles, responsibilities, authorities and competencies

Role	Responsibilities	Authorities	Competencies
Owner – Mayor & Council	Provide the resources needed to maintain effectiveness and continual improvement of the drinking water system (DWS) and quality management system (QMS). Ensure the operating authority (OA) is accredited. Endorse the Operational Plan (OP). Make decisions based on OA reports to Owner.	Report to the public on matters required by legislation. Approve major infrastructure projects that may impact drinking water quality. Approve and select OA, including Top Management.	Responsibilities under the Statutory Standard of Care training Emergency Operations Centre training
Top Management – City Manager	Endorse the OP and carry-out the commitments in OP sections 2 and 3. Make recommendations to the Owner ensuring the necessary DWS / QMS resources are provided. Oversee the administration of the Public Works & Engineering Department to implement the City's policies and procedures as set by Council through by-law, resolution or as otherwise established. Participate in Management Reviews.	Report to council and the public. Hire management staff. Allocate operations and maintenance budgets across all City Departments.	Responsibilities under the Statutory Standard of Care training Emergency Operations Centre training Training in Emergency Management and Response Work Instructions At least 10 years related experience



Role	Responsibilities	Authorities	Competencies
Top Management – Director of PW & Engineering	<ul> <li>Carry-out commitments described in OP s.2 and 3.</li> <li>Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)</li> <li>Oversee operation of the DWS and report on its performance to the City Manager.</li> <li>Attend meetings with the Owner, as required.</li> <li>Endorse the OP and ensure the QMS is effective.</li> <li>Ensure OA staff are aware of applicable legislation and regulations in the provision of safe drinking water.</li> <li>Communicate the QMS per the communication procedure.</li> <li>Ensure resources required for the QMS are available, manage departmental budgets /resources.</li> <li>Provide oversight of the manager(s) in accordance with current policies and applicable laws.</li> <li>Establish goals, policies and programs for the dept.</li> <li>Consult legal counsel to ensure policies, procedures, and practices comply with federal, provincial, and local laws.</li> <li>Review reports authored by the superintendents and/or manager(s)</li> <li>Participate in Management Reviews.</li> </ul>	Allocate water treatment and distribution operations and maintenance budgets Hire operations and maintenance staff Manage and evaluate performance of staff	Responsibilities under the Statutory Standard of Care training Emergency Operations Centre training Training in Emergency Management and Response Work Instructions At least 10 years related experience



Role	Responsibilities	Authorities	Competencies
	Carry-out commitments described in OP s.2 and 3.	Reports to Ministry, Owner, City Manager,	Responsibilities under the Statutory Standard of Care training
	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)		Emergency Operations Centre training
-	Oversee DWS operations & maintenance (O&M) and optimization activities.		Bachelor of Science Degree in Civil Engineering with a P.E.O. designation or a post secondary education inclusive of a certificate and or diploma in civil, environmental science or chemical engineering with a C.E.T. designation would be an asset. Class III Water Treatment
	Ensure the DWS is operating effectively within the guidelines and standards set by the City and all applicable Ministries and regulatory bodies.		
/astewat	Identify appropriate materials and equipment, provide technical standards for the same and recommend the approvals and acquisition: Take action to correct substandard equipment.	Manage and evaluate staff performance	
and M	Prepare annual water capital budget and monitor conformity with	method and priority	Class II Water Distribution Certification
Water	the approved budget. Prepare and present in-house WD and WT-specific training and	Evaluate RFP's and tenders and report to Top Management / Owner	Five (5) years experience with water distribution
ıger of	information for water staff and other staff as required.	Direct Superintendents, Lead Hands, and Operators when required	Three (3) years minimum of supervisory and project management experience
Participate in the r	Participate in the review process of all water projects as they relate to modification and/or expansions of the system.	Purchasing Authority for capital projects in accordance with purchasing bylaw	Knowledge and experience in water distribution and water treatment
	Promote public awareness of water conservation.		Strong leadership and management skills
	Responsible for the water section, secondary pumping station, collection and treatment facilities.		Excellent oral and written communication skills
	Report on the performance of the QMS and continual improvement opportunities to Top Management.		
	Prepare and present reports for Management Reviews.		



Role	Responsibilities	Authorities	Competencies
- W/WW Administrative stant	ResponsibilitiesCarry-out commitments and responsibilities in OP sections 2 and 4 and continually improve the QMS.Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)Promote awareness of the QMS to all personnel in the Water Department.Ensure OA staff are aware of applicable legislative and regulatory 	Authorities Coordinate Water Operator training Represent the OA in inspections, source protection activities and internal / external audits.	Competencies DWQMS course
QMS Representative – Assis	drinking water. Ensure current versions of documents related to the QMS are in use at all times. Coordinate SOP reviews and QMS updates including: risk assessments, QMS communications, emergency management training, auditing programs, management reviews. Scribe in Management Review Meetings	Manage all processes and procedures associated with QMS operation and performance. Implement required changes in QMS documentation and procedures.	QMS related experience



Role	Responsibilities	Authorities	Competencies
Water Treatment Plant Superintendent (ORO)	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement) Plan, schedule, assign staff to undertake water treatment (WT) O&M programs on a daily basis and other projects. Complete O&M reports, records and information. Maintain and ensure all drawings are current. Maintain and ensure SCADA system is secure. Ensure staff training and certifications are current. Provide in-house WT specific training & programs. Respond to consumer calls (e.g. water quality) Inventory control and approve accounts payable. Ensure maintenance of all tools, vehicles and equipment. Arrange and coordinate all WTP shutdowns. Carry-out sampling, testing and monitoring programs (e.g. chlorine residuals, daily checks). Emergency preparedness and effective response. Participate in Management Reviews.	Overall Responsible Operator for water treatment plant (WTP) O&M and legislative requirements. Assist in interviews, manage and evaluate performance of WT staff Direct WTP operators' work in line with utility and industry standards, ensuring effectiveness & efficiency. Schedule and train staff to ensure familiarity with all aspects of WTP operations, equipment & facilities. Provide input for the preparation of operating and capital budgets. Coordinate capital projects in WT. Purchasing for WT in accordance with Purchasing By-law. Author annual reports to Ministry. All other authorities under "WT Operator".	Ontario Secondary School Diploma (OSSD) with a Class III Water Treatment Operators Certificate and several years experience in all aspects of water treatment Demonstrate leadership ability and management skills Good communication skills, oral and written Good planning and organization skills Good public relation skills Thorough understanding of water treatment systems, utility policies, practices and equipment Valid first aid/CPR Certificate Valid Workplace Hazardous Material Information System training Valid Driver's Licence



QMS	<b>Operational</b>	Plan
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Role	Responsibilities	Authorities	Competencies
			OSSD, Class III WD.
Water Distribution Superintendent (ORO)	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement) Complete O&M reports, records and information. Maintain and ensure field info./drawings are current. Ensure staff training and certifications are current. Respond to consumer calls (e.g. pressures, issues) Inventory control and approve accounts payable. Oversee O&M of vehicles & equipment for tasks. Participate in / oversee installation, maintenance, repairs: watermains, valves, hydrants, remote sites. Work with consultants, Engineering Services, other staff re: O&M and capital upgrading of the water distribution system (WDS). Troubleshoots, locates, repairs leaks in the WDS and works with WTP staff re: water quality issues. Carry-out sampling, testing & monitoring programs (e.g. chlorine residuals, daily checks). Assist Owen Sound work crews in emergencies. Participate in Management Reviews.	Overall Responsible Operator for water distribution (WD) O&M and legislative req'ts. Assist in interviews, manages and evaluates performance of WD staff Direct WD operators' work in line with utility and industry standards, ensuring effectiveness & efficiency Schedule and train staff to ensure familiarity with all aspects of WD operations, equipment & facilities May be required to participate in standby duty roster. Provide input for the preparation of operating and capital budgets. Coordinate capital projects in WD. Purchasing for WD in accordance with Purchasing By-law. Author WDS reports to Ministry. All other authorities under "WD Operator".	Sound understanding of the operational requirements of the Owen Sound WDS and the applicable regulations governing the operation of waterworks in Ontario. Good understanding of the OHSA and Ministry of Transportation regulations as required for WDS operations requirements Proficient in the use with all equipment utilized and associated with the maintenance and operation of the WDS Ability to train and mentor WD staff in areas of maintenance, operation, repair, and new procedures for work pertaining to the WDS Valid Ontario Class "D" drivers' licence with "Z" endorsement Ability to work with min. supervision from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagrams Promotes and encourages a positive / professional image to the public at all times and applies positive public relation skills Good organizational, communication, and computer skills



Role	Responsibilities	Authorities	Competencies
	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)		
	Inspect and test meter installations, as required.		
	Repair /replace /install meters and appurtenances.	Provides relief and assistance to WD Lead Hand, as required.	OSSD with a certificate of competency in Water Distribution Operation II
	Communicate with contacts re: billing issues.		
ator	Retain electronic meter data / water meter records.	Participate in stand-by duty roster.	Good mechanical skills
rdina	Monitor & maintain water meter & equipment inventory	WDS O&M under direction of ORO	Computer knowledge and experience
Cool	Record meter information incl. reading checks.	Shut-off water service for non-payment or other reason Purchase water meter stock and equipment Electrical locates (streetlight and traffic	Good communication skills, both oral and
ution	Locates for water and electric distribution systems and ensure		written
tribu	water locate records are kept current.		Ability to work with others and maintain
. Dis	Perform water service turnings and minor service box		good relationships
ater	maintenance.	light)	Ability to develop and maintain good
N	Inspect customers' portion of service lateral.	Commission mains in accordance with	customer relations.
	Respond to water quantity (pressure) problems.	AwwwA/MECP procedures	Possess a valid Ontario Class "D" drivers
	Assist WD operators in repairs/service interruptions.	All other authorities under "WD Operator"	
	Monitor contractors during watermain construction projects to ensure proper construction, disinfection, flushing, and sampling procedures are followed.		



Role	Responsibilities	Authorities	Competencies
Role	Responsibilities         Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)	Authorities	Competencies OSSD or General Educational Development (GED) certificate Min. Class II WD certification or one level below the Classification of the Water Distribution System, whichever is highest. Knowledge of proper methods, tools and
Water Distribution Lead Hand	<ul> <li>Familiar with WDS specifications and standards.</li> <li>Ensure safe and proper work practices are followed</li> <li>Provide basic training for WD staff in the performance of tasks related to the WDS.</li> <li>Obtain training and upgrading per O. Reg. 128/04.</li> <li>Participate in review of WD projects re: modifications and/or expansions of WDS</li> <li>Participate in a work crew engaged in installing and maintaining services, mains, hydrants &amp; equipment</li> <li>Arrange for utility locates.</li> <li>O&amp;M of motorized vehicles/equipment, e.g. truck mounted crane, pumps and generators.</li> <li>Troubleshoot and repair water leaks in the WDS.</li> <li>Provide assistance to WD staff in emergencies.</li> </ul>	Assist in the identification of WDS capital needs, e.g. lead service replacements, watermain deficiencies, and equipment needs Participate in stand-by duty roster. WDS O&M under direction of ORO May be designated (by mgmt.) as ORO per O. Reg. 128/04 s.23. Coordinate repairs and order necessary materials. Direct other operators at worksite. Direct contractors.	<ul> <li>Knowledge of proper methods, tools and equipment used in waterworks maintenance and construction</li> <li>Ability to communicate effectively with supervisors, co-workers, contractors, other City employees, and the general public</li> <li>Knowledgeable and experienced in the operation of the Owen Sound Water Distribution System</li> <li>Valid Class "D" drivers licence with "Z" endorsement</li> <li>Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagrams</li> <li>Work in a safe manner and must have knowledge and use proper work methods</li> </ul>
			<ul><li>that relate to the safety of co-workers and</li><li>the general public</li><li>Basic knowledge and ability relating to</li><li>computer systems and software</li></ul>



PerformanceOSSD or a General Education Development (GED) certificateInformed of City policies and procedures, legislative /regulatory reg'ts, how they affect O&M of the WDS.O&M of the WDS under OROOIC's as permitted, O. Reg. 128/04; Direct other operators, if OICOISSD or a General Education Development (GED) certificateTraining and upgrading per provincial regulations.OBAM of the WDS under OROOIC's as permitted, O. Reg. 128/04; Direct other operators, if OICOIS must achieve Level 1 as soon as oriteria can be met.Natinatin records (logs, forms) re: WDS activities.Participate in standby duty roster.Knowledge of proper methods, tools and equipment used in waterworks maintenanceO&M of the WDS to ensure proper operation.Order materials / chemicals needed Respond to complaintsAbility to communicate effectively with supervisors, co-workers, contractors, other City employees and the general publicVarious sizes), and appurtenances, i.e. valves, pressure regulating valves.Oxden a freaji water leaks in the WDS. Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.Bypass or shutdown of the WDS in mergencies or maintenance. Report AWQI's per O. Reg. 170/03Ability to work from winck orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsVarious water system sites including reservoirs, and pumping stations.Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as requiredAbility to work from work orders, sketches and diagrams <th>Role</th> <th>Responsibilities</th> <th>Authorities</th> <th>Competencies</th>	Role	Responsibilities	Authorities	Competencies
Outor Dation Data provious and provide and procedures, legislative /regulatory reg'ts, how they affect O&M of the WDS.       O&M of the WDS under ORO       Class II WD Certification is the objective.         Training and upgrading per provincial regulations.       OlC's as permitted, O. Reg. 128/04; Direct other operators, if OIC       OIT's must achieve Level 1 as soon as criteria can be met.         Maintain records (logs, forms) re: WDS activities.       Participate in standby duty roster.       Knowledge of proper methods, tools and equipment used in waterworks maintenance         O&M of the WDS to ensure proper operation.       Order materials / chemicals needed       Ability to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public         Navies.       O&M of the WDS to ensure proper operation.       Operation of valves and hydrants       Knowledge of the operation of the Owen Sound Water Distribution System         Valves.       O&M whicles / equipment re: WD maintenance.       Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.       Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.       Bypass or shutdown of the WDS in easter winters and inspections at various water system sites including reservoirs, and pumping stations.       Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as required       Work in a safe method and use proper work method and use proper work method shaft relate to the safety of co-workers and the general public	Water Distribution Operator	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement)		OSSD or a General Education Development (GED) certificate
Informed of City policies and procedures, legislative /regulatory reg'ts, how they affect O&M of the WDS.OIC's as permitted, O. Reg. 128/04; Direct other operators, if OICOIT's must achieve Level 1 as soon as criteria can be met.Training and upgrading per provincial regulations.Participate in standby duty roster.Knowledge of proper methods, tools and 			O&M of the WDS under ORO	Class II WD Certification is the objective.
Participate in standby duty roster.       Knowledge of proper methods, tools and equipment used in waterworks maintenance         Obtain and maintain Operator certification to the level of the WDS in a reasonable time period.       May be designated (by mgmt.) as ORO per O. Reg. 128/04 s.23.       Ability to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public         O&M of the WDS to ensure proper operation.       Order materials / chemicals needed       Ability to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public         Install and ensure proper O&M of fire hydrants, watermains valves.       Operation of valves and hydrants       Knowledge of the operation of the Owen Sound Water Distribution System         O&M vehicles / equipment re: WD maintenance.       Respond to alarms.       Bypass or shutdown of the WDS in emergencies or maintenance.       Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagrams         Assist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.       Make decisions about repairs in the absence of LH or Superintendent       Work in a safe method and use proper work methods that relate to the safety of co-workers and the general public		Informed of City policies and procedures, legislative /regulatory req'ts, how they affect O&M of the WDS.	OIC's as permitted, O. Reg. 128/04; Direct other operators, if OIC	OIT's must achieve Level 1 as soon as criteria can be met.
Obtain and maintain Operator certification to the level of the WDS in a reasonable time period.       May be designated (by mgmt.) as ORO per O. Reg. 128/04 s.23.       equipment used in waterworks maintenance         Maintain records (logs, forms) re: WDS activities.       Order materials / chemicals needed       Ability to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public         Nastal and ensure proper O&M of fire hydrants, watermains (various sizes), and appurtenances, i.e. valves, pressure regulating valves.       Operation of valves and hydrants       Knowledge of the operation of the Owen Sound Water Distribution System         O&M vehicles / equipment re: WD maintenance.       Respond to alarms.       endorsement         Troubleshoot and repair water leaks in the WDS.       Bypass or shutdown of the WDS in emergencies or maintenance.       Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagrams         Assist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.       Make decisions about repairs in the absence of LH or Superintendent       Work in a safe method and use proper work methods that relate to the safety of co-workers and the general public		Training and upgrading per provincial regulations.	Participate in standby duty roster.	Knowledge of proper methods, tools and equipment used in waterworks maintenance
Naintain records (logs, forms) re: WDS activities.Order materials / chemicals neededAbility to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public0&M of the WDS to ensure proper 0&M of fire hydrants, watermains (various sizes), and appurtenances, i.e. valves, pressure regulating valves.Operation of valves and hydrantsKnowledge of the operation of the Owen Sound Water Distribution System0&M vehicles / equipment re: WD maintenance.Respond to clarms.Bypass or shutdown of the WDS in emergencies or maintenance.Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsAssist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Report AWQI's per O. Reg. 170/03 Make decisions about repairs in the absence of LH or Superintendent convorkers and the general publicWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public		Obtain and maintain Operator certification to the level of the WDS in a reasonable time period.	May be designated (by mgmt.) as ORO per O. Reg. 128/04 s.23.	
O&M of the WDS to ensure proper operation.Respond to complaintsCitractors, co-workers, co-wo		Maintain records (logs, forms) re: WDS activities.	Order materials / chemicals needed	Ability to communicate effectively with supervisors, co-workers, contractors, other City employees and the general public
Unperformed by the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Operation of valves and hydrantsKnowledge of the operation of the Owen Sound Water Distribution SystemUndertake system flushing, regulatory valves.O&M vehicles / equipment re: WD maintenance.Nespond to alarms.Valid Class "D" drivers licence with "Z" endorsementTroubleshoot and repair water leaks in the WDS.Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.Bypass or shutdown of the WDS in emergencies or maintenance.Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsMake decisions about repairs in the absence of LH or SuperintendentWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public		O&M of the WDS to ensure proper operation.	Respond to complaints	
Image: Note: N		Install and ensure proper O&M of fire hydrants, watermains (various sizes), and appurtenances, i.e. valves, pressure regulating	Operation of valves and hydrants	Knowledge of the operation of the Owen Sound Water Distribution System
Values.Sampling.Valid Class "D" drivers licence with "Z" endorsement0&M vehicles / equipment re: WD maintenance.Respond to alarms.endorsementTroubleshoot and repair water leaks in the WDS.Bypass or shutdown of the WDS in emergencies or maintenance.Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsAssist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as requiredWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public			Undertake system flushing, regulatory	
DescriptionOeal wencies / equipment re: WD maintenance.Respond to alarms.endorsementTroubleshoot and repair water leaks in the WDS.Bypass or shutdown of the WDS in emergencies or maintenance.Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsAssist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Make decisions about repairs in the absence of LH or SuperintendentWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public			sampling.	Valid Class "D" drivers licence with "Z"
<ul> <li>Troubleshoot and repair water leaks in the WDS.</li> <li>Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.</li> <li>Assist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.</li> <li>Clear snow, inspect and perform winter maintenance on fire</li> </ul>		O&M vehicles / equipment re: WD maintenance.	Respond to alarms.	endorsement
Respond to customer calls re: flooding, water service, leaks, low pressure, frozen lines, etc.emergencies or maintenance.specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagramsAssist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as requiredWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public		Troubleshoot and repair water leaks in the WDS.	Bypass or shutdown of the WDS in emergencies or maintenance. Report AWQI's per O. Reg. 170/03	Ability to work from work orders, specifications, standards, and instructions, and to interpret plan/profile drawings, sketches and diagrams Work in a safe method and use proper work methods that relate to the safety of
pressure, frozen lines, etc.Report AWQI's per O. Reg. 170/03and to interpret plan prome drawings, sketches and diagramsAssist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as requiredWork in a safe method and use proper work methods that relate to the safety of co-workers and the general public		Respond to customer calls re: flooding, water service, leaks, low		
Assist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations. Make decisions about repairs in the absence of LH or Superintendent Call-in support contractors as required Clear spow inspect and perform winter maintenance on fire.		pressure, frozen lines, etc.		
stations. Clear spow inspect and perform winter maintenance on fire		Assist in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations.	Make decisions about repairs in the absence of LH or Superintendent	
Clear snow inspect and perform winter maintenance on fire			Call-in support contractors as required	
Clear show, inspect and periorities maintenance of file Advise contractors of City requirements		Clear snow, inspect and perform winter maintenance on fire hydrants.	Advise contractors of City requirements	
hydrants.			Advise contractors of City requirements	and CPR-Level C. Fall Arrest Certificate
Confined Space Entry Certificate				Confined Space Entry Certificate



Role	Responsibilities	Authorities	Competencies
Water Distribution Student	Ensure QMS policy commitments are consistently met (safe drinking water, compliance, improvement) O&M of the WDS to ensure proper operation. O&M vehicles / equipment re: WD maintenance. Obtain and maintain Operator certification, a minimum of an Operator-in-Training Water Distribution System is required. Maintain records (logs, forms) re: WDS activities. Assists in the performance of routine duties and inspections at various water system sites including reservoirs, and pumping stations. Performs routine water analyses.	Works under the direction of the WD LH or ORO Flush the system as directed and record results, and undertake traffic control Report adverse test results to supervisor for reporting by ORO Not generally authorized to operate mainline valves, directly report AWQI's, or participate in repairs. Authority generally limited to the flushing program and associated work only.	A minimum of an Ontario Secondary School Diploma or a General Education Development (GED) certificate Ministry of the Environment Water Distribution System Certification (OIT – Operator-In-Training) Ability to communicate effectively with supervisors, co-workers, contractors, other City employees or and general public Valid Class Minimum G-2 Driver's Licence. Work in a safe method and use proper work methods that relate to the safety of co-workers and the general public Basic computer knowledge