

Drinking Water Quality Management System 2.0

MASTER

Operational Plan

**Goderich Water Treatment Plant and
Distribution System**

**Town of Goderich
57 West Street
Goderich, Ontario
N7A 2K5**

Municipal Drinking Water License # 084-101 Drinking water Works Permit # 084-201

Permit to Take Water # 5204-C5JGSY

This Operational Plan defines and documents the Quality Management System (QMS) for the Corporation of the Town of Goderich which is operated by:

Operations Management International Canada Inc. (OMI)

This document sets out the policies and procedures with respect to quality management in accordance with the requirements of the Province of Ontario's Drinking Water Quality Management Standard 2.0 (DWQMS)

System No.

Approved and Authorized for Use – February 18, 2026



Cory Dulong – OMI Project Manager

Top Management

Table of Contents

ELEMENT # 1 – QUALITY MANAGEMENT SYSTEM (QMS) 4

ELEMENT # 2 – QUALITY MANAGEMENT SYSTEM (QMS) POLICY..... 5

ELEMENT # 3 – COMMITMENT AND ENDORSEMENT 6

ELEMENT # 4 – QMS REPRESENTATIVE 8

ELEMENT # 5 – DOCUMENT AND RECORD CONTROL 10

ELEMENT # 6 – DRINKING WATER SYSTEM 11

ELEMENT # 7 – RISK ASSESSMENT 21

ELEMENT # 8 – RISK ASSESSMENT OUTCOMES 28

ELEMENT # 9 – ORGANIZATIONAL ROLES, RESPONSIBILITIES AND AUTHORITIES 29

ELEMENT # 10 – COMPETENCIES 37

ELEMENT # 11 – PERSONNEL COVERAGE 41

ELEMENT # 12 – COMMUNICATIONS 43

ELEMENT # 13 – ESSENTIAL SUPPLIES AND SERVICES 44

ELEMENT # 14 – REVIEW AND PROVISION OF INFRASTRUCTURE 45

ELEMENT # 15 – INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL 46

ELEMENT # 16 – SAMPLING, TESTING AND MONITORING 47

ELEMENT # 17 – MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE 48

ELEMENT # 18 – EMERGENCY MANAGEMENT 51

ELEMENT # 19 – INTERNAL AUDITS 53

ELEMENT # 20 – MANAGEMENT REVIEW 77

ELEMENT # 21 – CONTINUAL IMPROVEMENT 80

APPENDIX “A” - QMS DOCUMENT AND RECORD CONTROL PROCEDURE ERROR! BOOKMARK NOT DEFINED.

APPENDIX “B” – ESSENTIAL SUPPLIES & SERVICES CONTACT LIST ERROR! BOOKMARK NOT DEFINED.

APPENDIX “C” – RISK ASSESSMENT & OUTCOMES TABLE ERROR! BOOKMARK NOT DEFINED.

~~APPENDIX “D” – SAMPLING, TESTING AND MONITORING SUMMARY TABLE ERROR! BOOKMARK NOT DEFINED.~~

ELEMENT # 1 – QUALITY MANAGEMENT SYSTEM (QMS)

The Drinking Water Quality Management Standard (DWQMS) requires an Operating Authority to establish a Quality Management System (QMS) for each system that it operates.

A QMS is a system to establish policies and objectives, achieve those objectives, and assist in the direction and control of the organization with regard to quality.

An Operational Plan is a document or series of documents that outlines the policies, processes and procedures for the overall quality management of the drinking water system, and is the documentation of the QMS.

The QMS is documented in this Operational Plan as part of the effort to ensure clean, safe, and reliable drinking water is supplied to all customers served.

The QMS shall be reviewed annually to ensure that the policies and procedures are correct and current, a Compliance calendar will be used to ensure the QMS is being implemented and continually improved upon. The review may include the QMS Representative, Owner, Operating Authority and Operators of the system.

Refer to Appendix A (QMS Document and Record Control Procedure).

ELEMENT # 2 – QUALITY MANAGEMENT SYSTEM (QMS) POLICY

The Operating Authority for The Town of Goderich is committed to comply with all water legislative requirements, regulations, to supply clean safe drinking water that meets the consumers requirements, understands the importance of the maintenance & continual improvement of the QMS and is committed to the principals & objectives set out in the QMS Policy.

The QMS Policy is to:

- *comply with all applicable legislative requirements and regulations*
- *supply clean safe drinking water to meet the consumers' requirements.*
- *maintain and continually improve the effectiveness of the Quality Management System.*
- *provide effective communication between the Operating Authority Personnel, the Owner and the Public.*

The QMS Policy is approved by the Project Manager (Top Management) and is available on The Municipal website and posted at the Water Department.



Date: February 20, 2026

Cory Dulong, Project Manager
OMI Canada Inc. Project Manager

ELEMENT # 3 – COMMITMENT AND ENDORSEMENT

This Operational Plan has been reviewed and endorsed by the Owner representative and the Operating Authority's Top Management. The Owner/Owner Reps commitment to an effective Quality Management System is evidenced by the resources provided during implementation, maintenance and continual improvement of the Operational Plan and the QMS that meets the requirements of the Drinking Water Quality Management Standard.

This Endorsement by the Owner Representative and Top Management acknowledges the need for & supports the provision of sufficient resources to maintain and continually improve the QMS.

Top Management demonstrates their endorsement of the Operational Plan through reporting to the Owner on the results of the Management Review and by key signature(s) below:

Top Management's commitment to an effective QMS is evidenced by:

- *ensuring that a QMS is in place that meets the requirements of the Standard*
- *ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements*
- *communicating the QMS according to the procedure for communications*
- *determining, obtaining, or providing the resources needed to maintain and continually improve the QMS*

The Owner and Top Management will endorse the Operational Plan and re-endorse when there is a major change in the plan's content or when the majority of signing parties are no longer filling positions.

ELEMENT # 3 – COMMITMENT AND ENDORSEMENT SIGNATURES



Owner
Town of Goderich
Mayor
Trevor Bazinet

Date: March 2, 2026



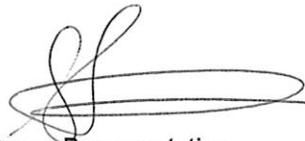
Owner Representative
Town of Goderich
Director of Legislative Services/Clerk
Andrea Fisher

Date: March 2, 2026



Operating Authority
Project Manager- OMI Canada Inc (Jacobs)
Cory Dulong- Top Management

Date: February 23, 2026



Owner Representative
Town of Goderich
Director of Community Services, Infrastructures. And Operations
Sean Thomas

Date: March 2, 2026

ELEMENT # 4 – QMS REPRESENTATIVE

Top Management appoints the role of QMS Representative (as indicated in Element # 10)
The alternate QMS Representative is the Project Manager.

The commitments of the QMS Representative irrespective of other responsibilities are to:

- *administer the Quality Management System by ensuring the processes and procedures needed for the QMS are established, implemented and maintained,*
- *report to Top Management on the performance of the QMS and any need for improvement,*
- *ensure that current versions of documents required by the QMS are being used at all times,*
- *ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system, and*
- *promote awareness of the QMS throughout the Operating Authority.*

The QMS Representative assists with development of the Operational Plan and on-going maintenance of the QMS including re-accreditation, auditing requirements and renewal applications.

Additionally, the QMS Rep will organize QMS training with new staff to understand the content of the Operational Plan, their duties, and legislative requirements regarding the DWQMS.

Notice of Appointment

Quality Management System Representative

Top Management for the Operating Authority OMI Canada Inc. (Jacobs) has appointed the Quality Management System Representative to be:

Sarah Talford



Date: February 18, 2026
Operating Authority
Project Manager- OMI Canada Inc (Jacobs)
Cory Dulong- Top Management

ELEMENT # 5 – DOCUMENT AND RECORD CONTROL

All records and/or documents required to demonstrate compliance and conformance with the legislation, regulations and QMS shall be maintained as per the SDWA; O. Reg 170/03 and also O. Reg 128/04.

The documents and records received are reviewed, acted upon if needed, and retained as per Appendix A.

Under the Directors Direction, Section 4.0 (made under the authority of subsection 15 (1) of the SDWA) Operational Plans that are the subject of an audit by an auditor for the accrediting body shall be retained for ten (10) years by the Owner and Accredited Operating Authority for the subject system to which the Operational Plans apply.

The Municipal Drinking Water License specifies that records related to the License and/or the Drinking Water Works Permit are retained for a minimum of five (5) years, unless otherwise specified – such as for MECP Form 1's, Form 2's and Form 3's- which are to be retained for a minimum of ten (10) years.

The process also ensures that documents and records are legible, are properly stored, and can be easily located and identified.

Relevant MECP Forms can be retrieved from the Ministry's "Central Forms Repository" at: <https://forms.mgcs.gov.on.ca/en>

Refer to: Appendix "A" – QMS Documents & Records Control

ELEMENT # 6 – DRINKING WATER SYSTEM

6.1.General

- 6.1.1. The Goderich Water Treatment System, located at 100 Cove Road, Goderich, Ontario. The system is operated by OMI Canada Inc. (Jacobs), the Operating Authority, and provides a potable water supply to the residents and businesses of the Corporation of the Town of Goderich. The system also provides water to a commercial development and a distribution sub-system serving an institutional complex (Property Management Group) in the Municipality of Central Huron, at the eastern edge of the Town.
- 6.1.2. The facilities, consisting of a Class III conventional design Water Treatment Plant having an approved capacity of 12,000 m³/d,(cubic meters per day) and a Class III water distribution system, are owned by the Town of Goderich and operated by OMI Canada Inc. (Jacobs), the Operating Authority.
- 6.1.3. The raw water for the treatment process is drawn from a surface water source (Lake Huron) located directly west of the town. The raw water is treated by the following processes:
- 6.1.3.1. Pre-chlorination
 - 6.1.3.2. Flash Mixing, Flocculation, Coagulation, and Sedimentation
 - . Filtration and Backwash
 - 6.1.3.4. Post-chlorination
 - 6.1.3.5. Fluoridation
 - 6.1.3.6. Distribution system chlorination
- 6.1.4. This multiple barrier approach helps to ensure consistently compliant drinking water quality, and ultimately improves the level of public health protection.

6.2. Raw Water Supply and Source Water Description

6.2.1. Water is drawn from Lake Huron, from a depth of approximately 5.5 m, approximately 518 m west of the Water Treatment Plant, and is fed by gravity through a 750 mm pipeline to a high traveling raw water screen in the Water Treatment Plant. The water then flows to a two celled concrete low lift pump well.

6.2.2. The major influences on raw water quality are rough lake conditions which can increase turbidity levels rapidly, and weather conditions which can cause a plume of turbid discharge from the Maitland River, which empties into the lake north of the Water Treatment Plant intake, to be directed over the intake.

6.2.3. Additional potential impacts on raw water could come from operations at the Goderich Harbour located north of the intake, and the outfall from the Goderich Sewage Treatment Plant located south of the intake.

6.2.4. The intake of the Plant is situated upstream (north) from the outfall of the Goderich sewage treatment plant and is not influenced by it. The characterization of the raw water from the lake is very good and chemical contamination is not a factor. A complete list of the contents of the source water is available from BM Ross Engineering who completed the First Engineer's Report.

A Raw Water Assessment was also carried out in February 2015 by BM Ross in preparation for the Municipal Drinking Water License (MDWL) Renewal. It was concluded that the characterization of the Goderich water supply has remained the same.

6.2.5. Chlorine gas is used from two on-line gas cylinders, with auto switch-over, to treat the water intake for zebra mussel control and to provide primary and secondary disinfection. The addition of chlorine gas to the raw water supply is referred to as prechlorination and serves primarily as a measure to prevent microbiological growth within the raw water pipeline and the two celled low lift pump well. Pre-chlorine residual is measured continuously in the water leaving the filters.

6.3. Flash Mixing / Flocculation / Coagulation / Sedimentation

- 6.3.1. Water is pumped from the two celled concrete pump well to the flash mixing tank, using low lift pumps.
- 6.3.2. A coagulant is added to the incoming raw water in the flash mixing tank which is mixed and then flows to two flocculation tanks equipped with walking beam flocculation mechanisms. Detention time allows the formation of floc masses which attract and gather debris present in the source raw water.
- 6.3.3. The suspension then flows to two settling tanks equipped with chain and flight sludge collectors. The detention time here allows large particles to settle by gravity in the settling tanks.
- 6.3.4. Supernatant (the clear liquid above the settled floc) overflows from the settling tanks to the top of the dual media filters.
- 6.3.5. Most of the particulate matter that was present in the raw water is captured by the floc particles and is removed by gravity in the settling tanks, however, during normal operations, some floc passes from the settling tanks to the top of the filters.

6.4. Filtration

- 6.4.1. The water treatment plant has two parallel dual media filters. The top layer of the filter is granular anthracite, while the filter media below the anthracite layer is sand. As debris accumulates in the filters and limits flow, the filters must be cleaned by reversing the flow (referred to as backwashing) and directing the backwash to a waste holding tank (settling tank and two sludge lagoons).
- 6.4.2. Turbidity, a measure of the cloudiness of water, is measured continuously in the effluent from each filter to monitor the effectiveness of the filtration process. If the turbidity rises above a set point value, an alarm warns staff that corrective actions are needed.
- 6.4.3. Filtered water passes through the filter under-drain into the treated water clearwells. The clearwells are tanks located beneath the filters and are used to store filtered water prior to entering the chlorine contact reservoir.

6.5. Disinfection (Chlorination)

- 6.5.1. Primary disinfection (post-chlorination) occurs following filtration, immediately upstream from the treated water Clearwell. Primary chlorination disinfects the filtered water, ensuring that any potential pathogenic organisms that may remain after sedimentation and filtration are rendered harmless prior to distribution to consumers. Consistent disinfection is ensured by continuous monitoring of the chlorine residual in the treated water leaving the facility. If the residual drops below a safe level, pumping to the distribution system is automatically interrupted and an operator is notified to correct the problem.
- 6.5.2. Secondary disinfection is accomplished during post-chlorination by adding sufficient chlorine at the water treatment plant to maintain a residual throughout the entire distribution system. Secondary disinfection prevents regrowth of micro-organisms within the distribution system. Chlorine residual analyzers allow continuous monitoring of chlorine residual in the treatment plant effluent, and in the water upstream of the flash mixer (seasonally, in conjunction with zebra mussel control operation). A provision is available to top up residual chlorine levels using sodium hypochlorite injection at the booster station when required.
- 6.5.3. A two celled in-ground reservoir containing inlet and outlet diffusers and a baffle wall in each cell is also designed into the system to provide chlorine contact time for CT (Chlorine Contact Time) requirements. When calculating CT, the baffle factor is 0.6.

6.6. Other Processes

- 6.6.1. Fluoridation: The raw water source is low in naturally occurring fluoride, and hydrofluosilicic acid is added at the post-chlorination point. Equipment onsite is also to provide continuous monitoring of fluoride concentrations in the treatment plant effluent, and includes a high level alarm.
- 6.6.2. Powdered Activated Carbon: Taste and odour control facilities are installed consisting of a powdered activated carbon feed system at the flash mixing tank.
- 6.6.3. Stand-By Power Facilities: Standby power is provided by a diesel generator and automatic transfer switch.

6.7. Process Waste Residuals Management

Filter backwash water and accumulated floc from the sedimentation tanks is directed to an equalization tank from where they are pumped to a residuals thickening process. The sludge collected within the thickening process is pumped to the holding lagoons. The clarified effluent from the thickener is pumped back to the holding lagoons as space is available.

6.8. Distribution System and Elevated Storage Tank

- 6.8.1. Treated water is pumped from the high lift pump wells into the distribution sub-system. Distribution has approximately 77,000 meters of watermain with piping typically ranging in size from 100 mm to 400 mm, and may consist of cast iron, ductile iron, concrete, or PVC, depending on the location and date of installation.
- 6.8.2. One ground level, two cell storage reservoirs provide reserve storage. The attached booster station is used to ensure adequate system pressure to zone 1.
- 6.8.3. The booster station is used to provide water to zone 2 and in addition supplies water to zone 1 when the Water Treatment Plant is not operational. An elevated storage tank is also an integral part of the distribution system and used to provide relatively constant pressure for zone 1.
- 6.8.4. Typical system pressure ranges from 45 P.S.I. to 80 P.S.I., depending on zone and elevation.

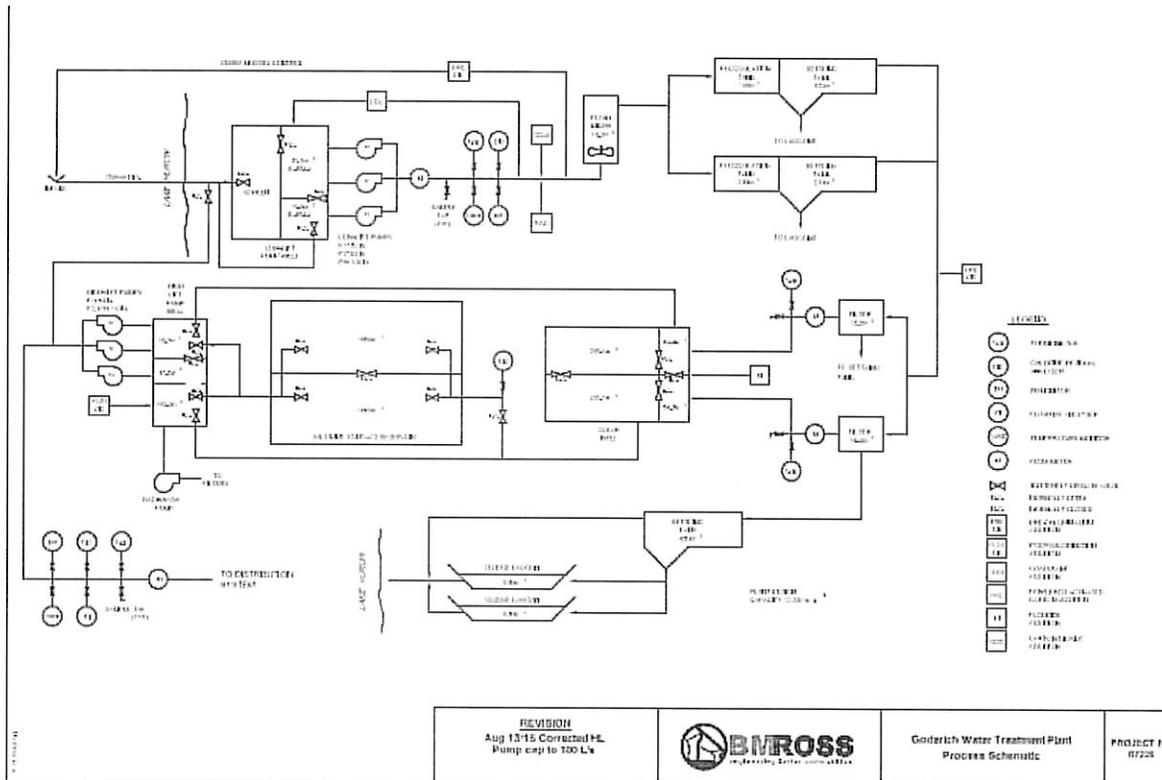
6.9. Sample Analysis

- 6.9.1. Provincial regulations dictate the sampling and monitoring requirements for the system. Water quality is tested throughout the treatment process and from dedicated sampling sites located at the extremities of the distribution system. Where required by regulation, samples are submitted to an accredited laboratory for analysis.

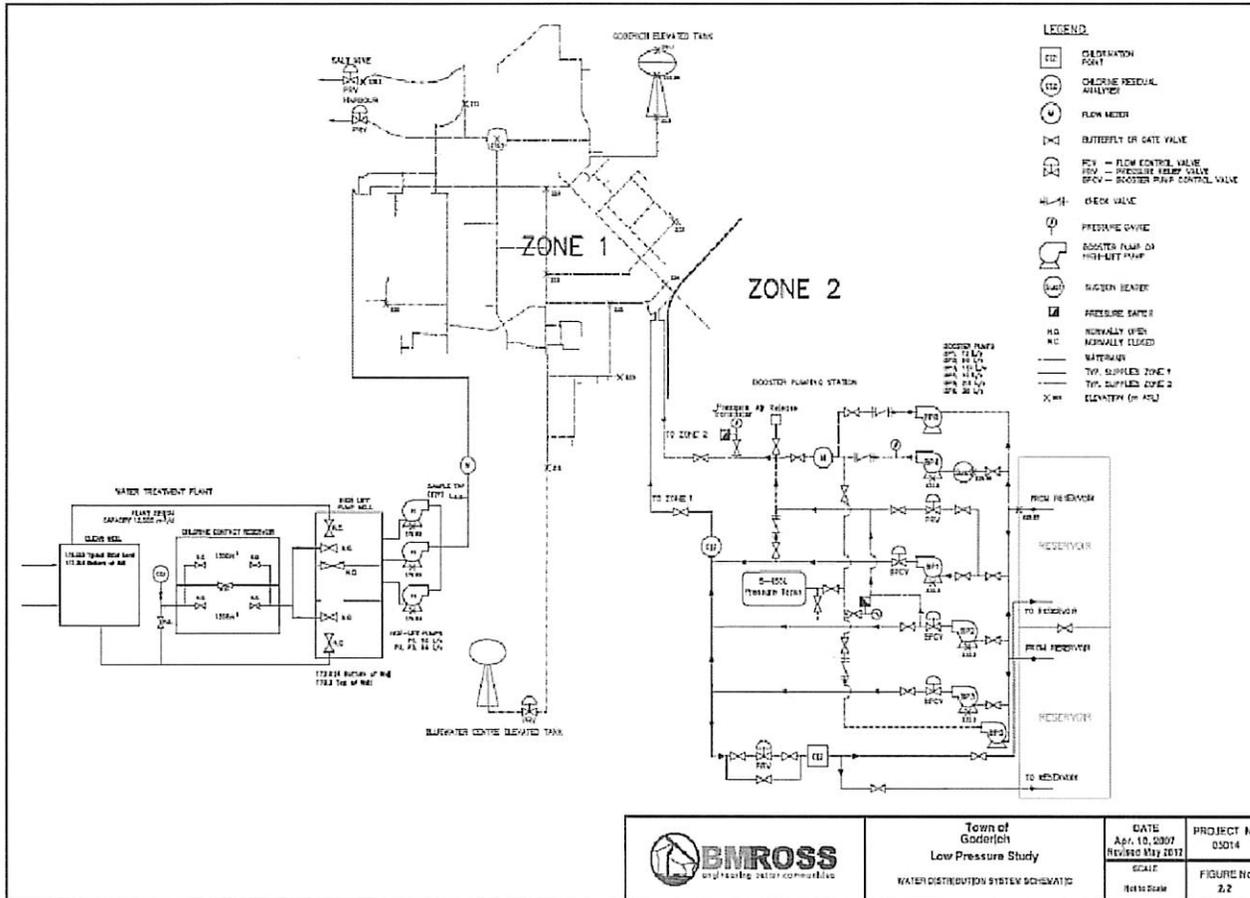
6.10. Process Flow Charts

- 6.10.1. The Goderich WTP Process Schematic
- 6.10.2. The Goderich Watermain Plan for Water Distribution System
- 6.10.3. The Low-Pressure Study for the Goderich Water Distribution System
- 6.10.4. The Goderich Booster Pumping Station Process Flow Schematic
- 6.10.5. The Goderich Parsons Court Pumping Station and Reservoir High Lift Pump Addition

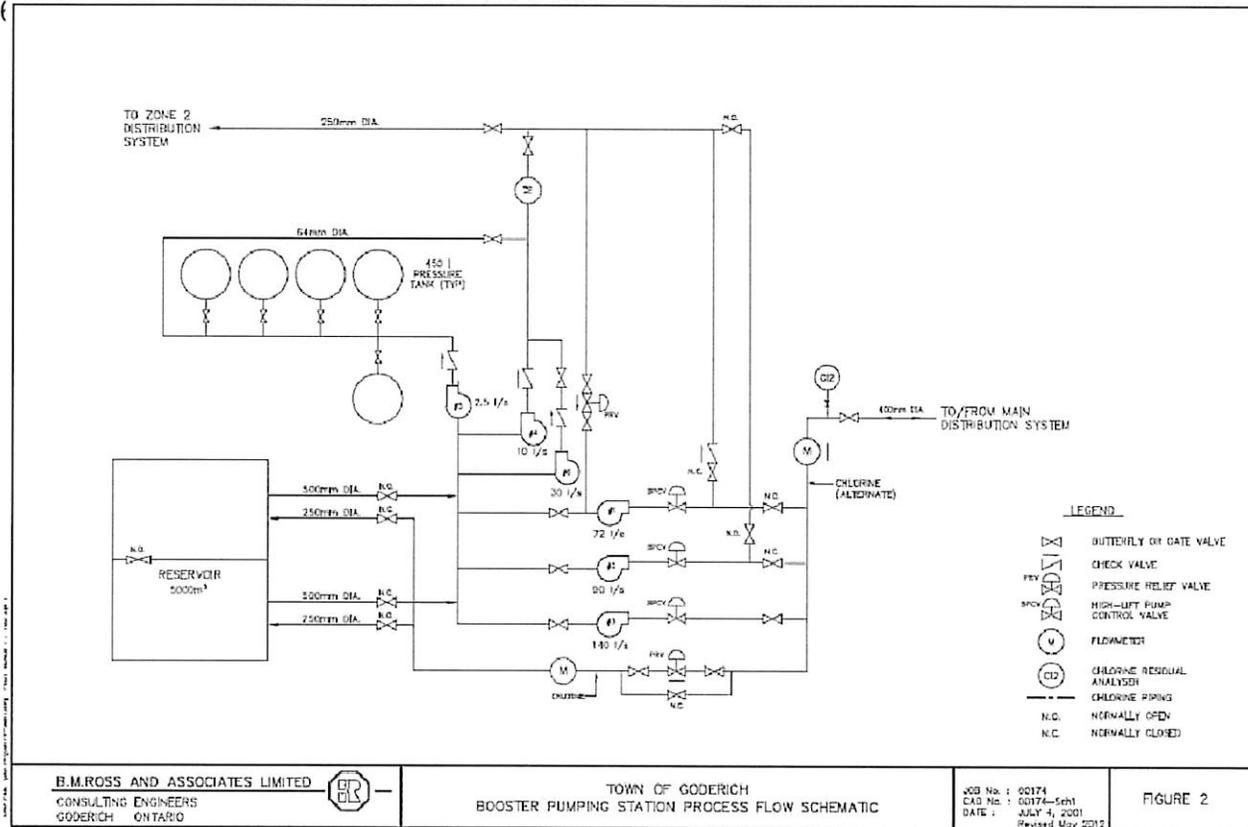
6.10.1. The Goderich WTP Process Schematic (rev. to Aug 19, 2015)



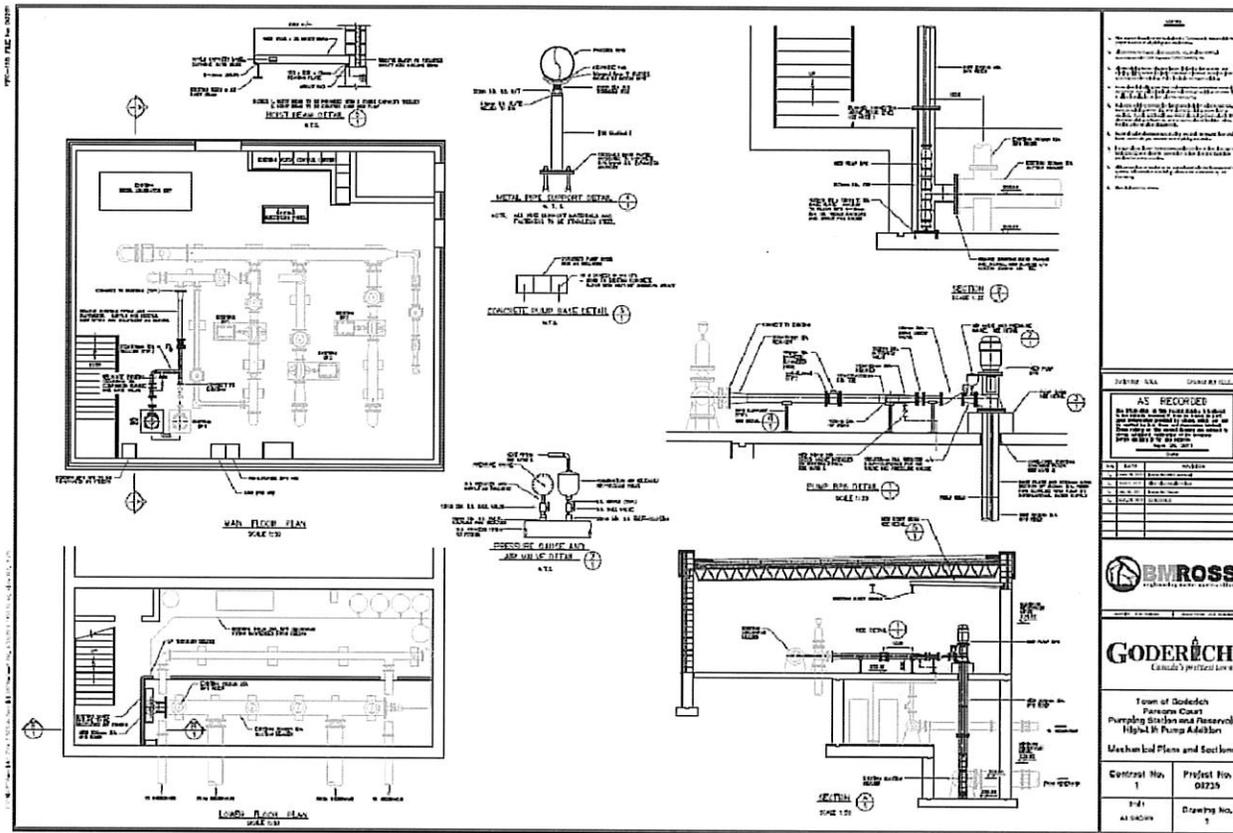
6.10.3 The Low Pressure Study for the Goderich Water Distribution System (Zones)



6.10.4. The Goderich Booster Pumping Station Process Flow Schematic



6.10.5. The Goderich Parsons Court Pumping Station and Reservoir High Lift Pump Addition



ELEMENT # 7 – RISK ASSESSMENT

A Risk Assessment Procedure has been established and implemented to determine the potential hazards and critical control points that exist in the water treatment system.

A Risk Assessment Table has been developed to list potential hazards and their effects, and the associated monitoring and control measures. Critical Control Points (CCP) and Critical Control Limits (CCL) are identified using a Risk Priority Number system described in the risk assessment procedure.

For emergency situations or hazardous events outside the regular monitoring and control process, a Contingency Plan is available for response to deviations from critical control limits.

An Operational Plan binder and Contingency Plan are readily available for employee’s reference at the Water Treatment Plant Main Office.

Procedures are implemented for reporting and recording deviations from critical control limits.

An annual Management Review, as described in Element 20, takes place to ensure the system is current and the risk assessment procedure and outcomes are reviewed and maintained.

During the Risk Assessment the Team:

- *considers the potential hazardous events and associated hazards, as identified in the MOECC document “Potential Hazardous Events for Municipal Residential Drinking Water Systems – dated April/2022 and available at www.ontario.ca/drinkingwater*
- *identifies additional potential hazardous events and associated hazards*
- *assesses the risks associated with the occurrence of hazardous events*
- *ranks the hazardous events according to the associated risks*
- *identifies the control measures to address the potential hazards and hazardous events*
- *identifies the Critical Control Points and their respective Critical Control Limits*
- *document procedures and/or processes to monitor the Critical Control Limits*
- *document procedures to respond to deviations from the Critical Control Limits*
- *procedures for reporting and recording deviations from the Critical Control Limits*
- *considers the reliability and redundancy of equipment*

The risk criteria and the associated rating values are summarized in the table below:

Column A - Likelihood	Column B - Severity	Column C -Detectability	Column D -Rating Value
<u>Rare</u> : may occur in exceptional circumstances and has not occurred in the past	<u>Insignificant</u> : impact, little public exposure, little or no health risk	<u>Very Detectable</u> : easy to detect, on-line monitoring through SCADA.	1
<u>Unlikely</u> : could occur at some time, historically has occurred less than once every 5-10 yrs.	<u>Minor</u> : limited exposure, minor health risk	<u>Moderately Detectable</u> : Moderately detectable, alarm present but not in SCADA, may require operator to walk by and notice alarm; problem is indicated promptly by in house lab test results.	2
<u>Possible</u> : Has occurred or may occur once or more per year	<u>Moderate</u> : minor public exposure, minor health risk	<u>Normally Detectable</u> : visually detectable on rounds or through regular maintenance	3
<u>Likely</u> : has occurred or may occur on a monthly to quarterly basis	<u>Major</u> : large population at risk	<u>Poorly Detectable</u> : visually detectable, but not inspected on a regular basis, lab tests conducted quarterly or longer, not normally detected before a problem becomes evident lab tests are not done on a regular basis (e.g. quarterly).	4
<u>Very likely</u> : one or more occurrences on a monthly or more frequent basis	<u>Catastrophic</u> : major impact for large population, complete failure of systems.	<u>Undetectable</u> : cannot detect until problem is evident	5

Risk Assessment and Procedure

1.0 Procedure Description

This Risk Assessment Approach is based on the Walkerton Clean Water Centre's 'Risk Assessment & Emergency Preparedness' Training Course and the Health Canada Approach and methodology in addition to the Implementing Quality Management Guide on Risk Assessment.

This includes:

- 1- identification of existing or potential hazards for the drinking water
- 2- determination of the hazards that are or could be significant
- 3- development of a plan to manage the water system to ensure any health risk from a significant hazard is reduced to an acceptable level

This procedure describes the method of hazard identification, risk assessment, and critical control point determination used for the Water Treatment Plant and Distribution System. The procedure consists of four main exercises: hazard identification and the potential for biological, chemical, physical, or radiological concern, risk assessment, critical control point determination, and critical limit identification. Each exercise is described in detail in Section 4.0 - Procedure.

2.0 Reason for Procedure

The systematic approach used for risk identification and assessment lessens the likelihood of overlooking potential treatment process hazards and associated risks to drinking water quality and public health. Hazard analysis, identifying critical control points, establishing critical limits and control instructions provides all operators with consistent direction for responding to conditions that pose a risk of jeopardizing drinking water quality.

3.0 Responsibility

The designated QMS Representative, with the assistance of the Project Manager or Overall Responsible Operator, forms a committee consisting of at least four persons who are familiar with the facilities.

The Risk Assessment Committee is responsible for identifying all actual and potential hazards, assessing the associated risks, determining critical control points, and setting critical limits. The committee communicates all associated procedures to the remainder of WTP operators through training sessions and documentation.

4.0 Procedure

The Risk Assessment analysis procedure is to be conducted at least every 36 months, with a review conducted annually by the Overall Responsible Operator / Project Manager or QMS Representative, prior to the annual Management Review. These exercises may also be completed when a significant change occurs in operations, such as a change in the type of process chemical or a change of equipment.

4.1 Hazard Identification and Control Measures

Using the WTP Drinking Water System Description and Process Flow Diagram (from Element 6) as a guide, the committee reviews the water treatment process steps from the raw water intake to the point of customer use. The committee reviews the existing list of hazards and identifies any new potential hazards. Special attention is given to areas within the process where changes have occurred since conducting the previous hazard identification exercise.

A Risk Assessment Table template is used to record all hazards, and potential effects of the hazard, identified by the committee for each stage of the Drinking Water System.

Also refer to the MECP document "Potential Hazardous Events for Municipal Residential Drinking Water" attached to online at: http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2015/012-5530_Hazar d.pdf

Once all of the hazards have been identified, the committee identifies measures in place to monitor and control the hazards and hazardous events that have been identified. Any measures that are currently in place to address the hazards are listed in the Risk Assessment Table. The reliability and redundancy of equipment is considered during this exercise.

4.2 Risk Assessment

A risk assessment is performed for all events that are deemed to be controllable and the hazardous results of which are measurable. Controllable events are those that may be prevented through the actions of an operator. All other events are those that may be prevented through the actions of an operator. All other events are considered "emergency situations" and require the development of a contingency plan.

Each controllable event is assigned a numeric value ranging from 1 to 5 in three different categories: likelihood, severity, and detectability (see Tables below). The three assigned numbers for each event are then added to determine the overall risk value or Risk Priority Number (RPN).

The highest overall risk (RPN) values are typically indicators of critical events. Based on a review of the overall risk values and the associated events, a threshold number is chosen such that all events associated with risk values which are equivalent to or greater than the threshold number are considered critical. Discretion may be used when determining which events are indeed critical, regardless of the calculated risk. Careful evaluation is required for each hazard event.

In the case where an event having a higher calculated risk value is not determined by the committee to be critical, an explanation of the reasoning for this distinction is required. An explanation of the reasoning is also required when the committee deems an event with a lower calculated risk critical.

Note that there are three events that are always critically hazardous to water quality: high turbidity, inadequate primary disinfection, and low system pressure.

4.3 Critical Control Point Determination

From the hazards identified as critical in the risk assessment analysis, an associated critical control point (CCP) can be determined.

A critical control point (CCP) is a point in the system where control is established to prevent, eliminate, or reduce to an acceptable level, a drinking water health hazard. In some cases of multi barrier protection several control points could address a particular hazard. The final point in a process step that leads to a critical event is identified as the critical control point in this procedure.

Normally the Critical Control Point is the point at which an Operator's intervention is required.

Critical control points require the establishment of controlled conditions, including: critical control limits, equipment redundancy, and control and recovery procedures.

4.4 Critical Limits

Critical limits are established for values that measure critical events. The limits provide operators with a range of acceptable values within which no preventive or corrective actions are required. Critical limits define the point at which an operator must take action to prevent escalation of the critical event or to correct the critical event.

Critical limits are determined based on regulatory requirements, process monitoring capabilities, off-hours response time, and historical plant performance. Process alarms (if

available) are normally set at, or near critical limits. Responses to breached critical limits are detailed in the Operations Manual.

4.5 Items with ≥ 6 RPN values and no associated CCP

Item #	Process Step	Description of Hazard	RPN	Why is no CCP needed?
1	Raw Water Supply	Accidental spill into lake by vessel	7	There is no specific parameter to monitor until the contaminant is identified.
2	Raw Water Supply	Algal Blooms	8	Visual, taste and odour checks are used as a monitoring system which is not quantifiable.
38	Distribution	Non-Functioning Appurtenances	8	There are no quantifiable parameters associated with this event to monitor.
39	Suppliers	Failure to Receive Critical Supply of Parts or Chemicals	8	There are no quantifiable parameters associated with this event to monitor.
41	Control Systems	Remote Transmitting Unit / Remote Processing Unit Failure	7	There are no quantifiable parameters associated with this event to monitor.
43	Entire System	Primary power failure	6	There are no quantifiable parameters associated with this event to monitor.
44	Facility Security	Vandalism	11	There are no quantifiable parameters associated with this event to monitor.

5.0 Associated Documents

Refer to the following for detailed information:

- Operations Manual – control procedures, control limits - Contingency Plan - emergency response procedures

Refer to: Appendix “C” - Risk Assessment Outcomes Table

ELEMENT # 8 – RISK ASSESSMENT OUTCOMES

The outcome of the risk assessment process is summarized in the risk assessment outcomes table that documents the:

- *identified potential hazardous events and associated hazards,*
- *assessed risks associated with the occurrence of hazardous events,*
- *ranked hazardous events,*
- *identified control measures to address potential hazard and hazardous events,*
- *identified critical control points (CCPs) and their respective critical control limits (CCLs)*
- *procedures and/or processes to monitor the CCLs,*
- *procedures for responding to deviations from CCLs, and*
- *procedures for reporting and recording deviations from the CCLs.*

SOPs and Procedures used to monitor CCPs, CCLs, respond to deviations, and for reporting & recording deviations are available at the Water Department and are identified in the Outcomes Table in Appendix “C”

Refer to: Appendix “C” - Risk Assessment Outcomes Table

ELEMENT # 9 – ORGANIZATIONAL ROLES, RESPONSIBILITIES AND AUTHORITIES

The system Owner, and the Operating Authority, OMI Canada Inc. (Jacobs), have an organizational structure in place to ensure the operations of the drinking water system is performed by qualified staff.

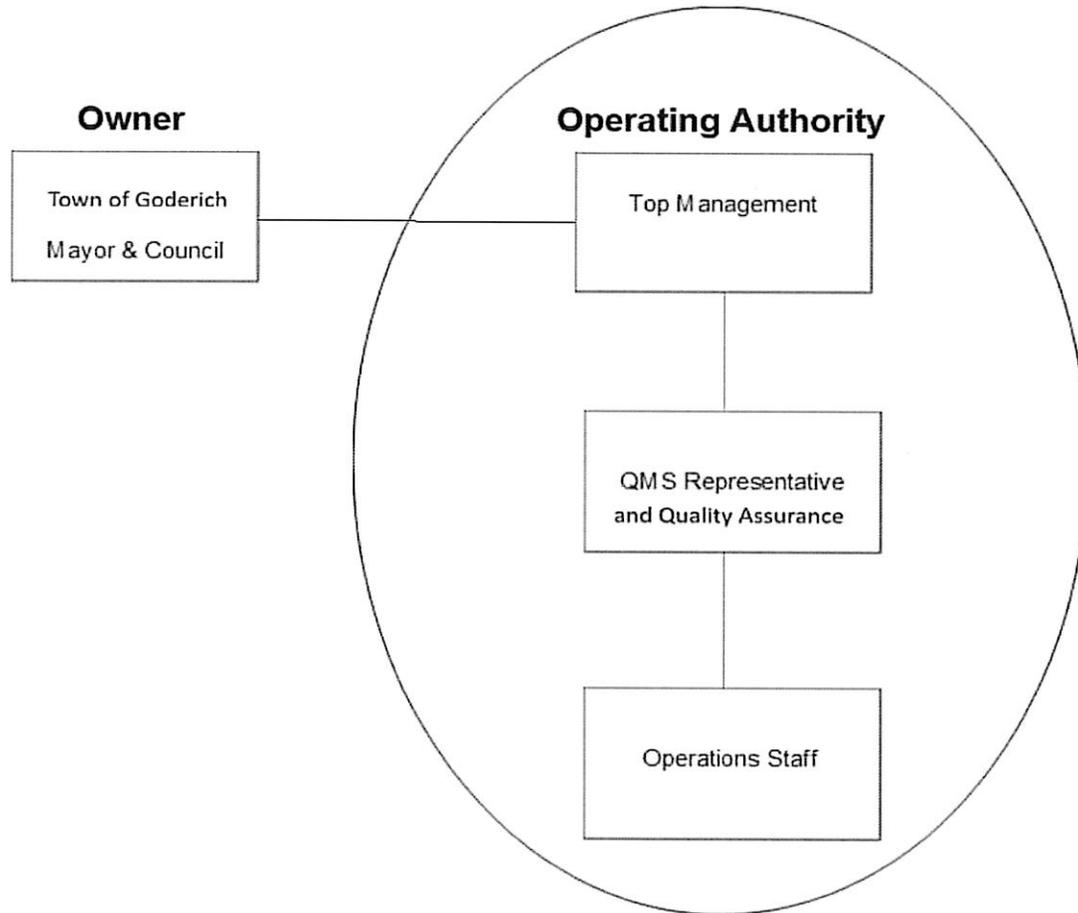
Job descriptions are created for each Operating Authority position, and are outlined in the Responsibilities Table,.

The Owner and Owner's representatives also have significant roles, responsibilities and authority in the management, operation, and support of the water supply system, as outlined in the QMS Policy (Element 2), and the Commitment and Endorsement Policy (Element 3). An Organizational Chart and Responsibilities Table for the Owner are also shown in.

An annual Management Review, as described in Element 20, takes place to ensure the system is current.

ORGANIZATION QMS CHART

QMS Organizational Chart



Z

RESPONSIBILITIES TABLE (OA)

Purpose: To document the process for scheduling and carrying out the orientation program for new employees operating within the Goderich Drinking Water Systems.

Definitions: None applicable

Responsibilities:

Regional Manager/Top Management

- Complete Corporate oversight for OMI Canada Inc. (Jacobs) operation
- Ensures operations are performed as per the Contract between the Operating Authority and the Owner, and by regulatory requirements
- Provide resources required for operation of drinking water systems according to the Contract
- Participate in Management Reviews
- Ensures a QMS is implemented and maintained to meet the DWQMS requirements

Project Manager

- Ensures operations are performed as per the Contract between the Operating Authority and the Owner, and by the regulatory requirements
- Obtains resources and/or infrastructure as necessary from the Owner
- Provides resources and/or infrastructure as necessary
- Recommend and/or implement improvements or changes according to the Operating Contract
- Develops the facilities budget, payment of bills, preparation of accruals, estimates, budgets, billing, and employee expenses
- Performs duties of the QMS Representative
- Undertakes performance reviews and provides Discipline if necessary
- Schedules work assignments
- Supervises Operations staff, Office Manager and Maintenance Manager
- Participates in Management Reviews
- Ensure that the QMS is implemented and maintained, and that the Operating Authority is Accredited
- Communicates with the Owner, Mayor and Council about the Drinking Water Systems (DWSs)
- Ensures that Personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the Operation of DWSs
- Review monthly reports from Finance in regard to Match Exceptions, accounts Receivable and billings
- Communication liaison with Project Manager and Operators including Human Resource items or issues, maintaining confidentiality as required
- Works with Maintenance Manager and Leads on Procurement Items
- Communicate and liaison with Finance and Procurement teams
- Assist Area Manager and Project Manager with new contracts
- Work with Quality Assurance and Compliance Specialist and QMS Representative(s) to ensure completion of tasks and to provide assistance
- Provides orientation training for new employees

Quality Assurance and Compliance Specialist

- Communication liaison with Project Manager, Operators, Owner, Engineers, Ministry, and locating agencies
- Review and track log sheets, sampling schedule, custody sheets, lab reports, and input of data to compliance program
- Prepare monthly and annual reports as required by the Client, Project Manager, Head Office, Engineers, and Ministry
- Report Out of Compliance issues and appropriate documentation to Project Manager, Owner, and Ministry
- Document and respond to, as appropriate, public and customer complaints, and communicate to the Project Manager, ORO, OIC, and Owner
- Work with annual budgets, filing, phone and office duties as required

QMS Representative

- Ensures that the DWQMS is implemented and maintained, and that the Operating Authority is accredited
- Communicates with the Owner about the DWS and the QMS
- Reports on Operations and the QMS to Top Management and the Owner as required and any need for improvement
- Assists with the development of the Operational Plan and on-going maintenance of the QMS system including reaccreditation
- Administers the QMS by ensuring that processes and procedures needed for the QMS are established and maintained
- Ensures that current versions of documents required by the QMS are being used at all times
- 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
- Promotes awareness of the QMS throughout the Operating Authority
- Is familiar with the Drinking Water System and has knowledge of best practices
- Is familiar with the DWQMS
- Is familiar with audit principles and what is needed to demonstrate the DWQMS

Health and Safety Representative

- Assists with the development and on-going maintenance of processes and procedures needed for the Health and Safety Program
- Makes recommendations to Top Management on the performance of the H&S Program
- Is familiar with, and keeps up to date with, applicable legislation and regulatory requirements
- Ensures that personnel are aware of all applicable legislative and regulatory requirements
- Ensures that current versions of documents required are being used
- Ensures regular workplace safety meetings to review safety topics for employee training and discussion of safety hazards, are carried out at least once per month
- Consults on and is available for workplace testing and safety procedure assessment
- Assists with the investigation of safety incidents, near miss reporting, Ministry of Labour visits, and work refusals
- Inputs safety and near miss incident data into the "Intelex" database and follows reporting procedures as required.

Overall Responsible Operator (ORO) / Back-up ORO

- Is designated by the Owner or Operating Authority
- Holds a certificate suitable for the classification of the Drinking Water Systems or higher certification
- Provides instruction to Operator-in-Charge (OIC) if needed
- Communicates with the Owner about the Drinking Water Systems

- 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

Operator-in-Charge (OIC)

- Holds a certificate suitable for the classification of the Drinking Water Systems
- Is designated as OIC of a system by the ORO or Project Manager
- Sets operational parameters for the system as required
- Directs or instructs other Operators as required
- Takes all steps reasonably necessary to operate the process
- Ensures that process is monitored, sampled and tested as required
- Ensures that records are maintained of all adjustments made to the process
- Ensures all equipment used in the process is monitored, inspected, tested evaluated, and that records are properly maintained

Operator

- Holds a certificate suitable for the classification of the Drinking Water Systems
- Conducts operational checks
- Adjusts, tests, and evaluates the process, directs flow, pressure or quality of the water
- Reports and acts upon non-conformances
- Follows procedures, completes forms, and files records
- Receives and communicates external complaints
- Regularly communicates with the OIC
- Performs required operations and maintenance activities
- Maintains Operators license
- Follows the Standard Operating Procedures at each site
- Is designated as OIC as required
- Assists in training of Operating-in-Training as required

Operator-in-Training

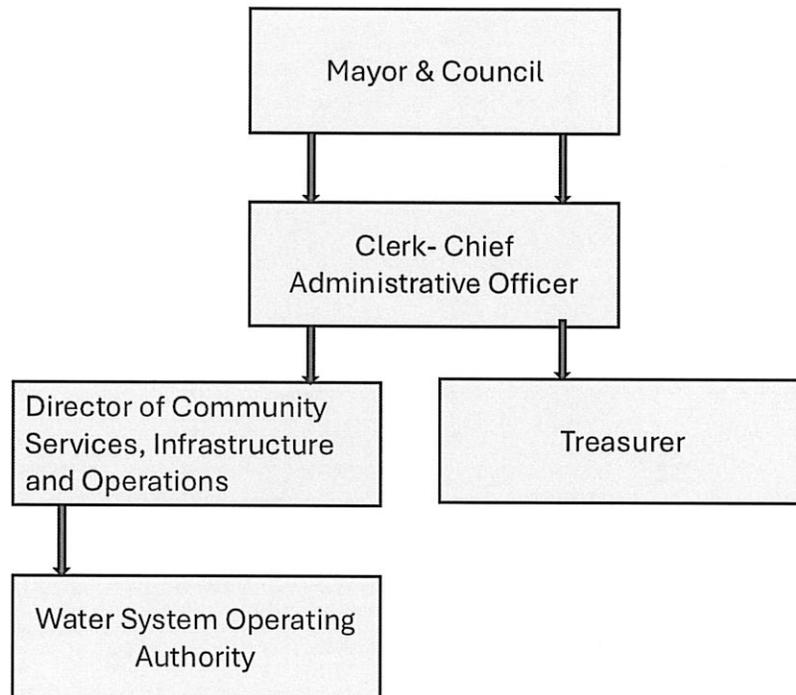
- Has successfully completed an Operator-in-Training course
- Works under the supervision of the OIC
- Performs duties of Operator with exception of being able to be the designated OIC Orientation Program:

The OMI Canada Inc. (Jacobs) Orientation Program is provided by Jacobs HQ Corporate. The On Boarding portion is delivered to new employees by the Office Manager.

QMS Training: QMS training is provided within 3 months of hire. Current employees receive semi-annual in-house refresher training. Topics for in-house training include:

- QMS Content and Responsibilities
- Public Health and Source Water Protection
- MDWL, DWWP, and PTTW review, as needed
- CT calculation review, as needed

ORGANIZATION CHART – TOWN OF GODERICH



RESPONSIBILITIES TABLE – OWNER

Role / Title	Responsibilities	Authorities
Mayor and Council	<ul style="list-style-type: none"> • Responsible for Town of Goderich operations • Approves facility budget for resources or infrastructure as necessary • Endorses the implementation of a DWQMS • Endorses the Operational Plan • Owns the Operational Plan • Submits operational Plan to MOE • Applies for licence and DWWP • Ensures Operating Authority is accredited • Ensures compliance with license • Monitors the QMS and the need to support with resources • Reviews the Operating Authority's capita works recommendations and sets budgets as appropriate • Emergency response as listed in the Municipal Emergency Plan 	<ul style="list-style-type: none"> - Financial and administrative authority related to all Town operations - Hiring and discipline of staff and contractors - To perform listed responsibilities
Clerk - Chief Administrative Officer	<ul style="list-style-type: none"> • Obtains resources or infrastructure as necessary • Assists in preparation of the facility's budget • Appoints Town QMS representation • Participates in Management Reviews • Participates in ongoing communication with the Operating Authority • Serves as liaison between the Operating Authority and the Environmental Committee and Council • Emergency response as listed in the Municipal Emergency Plan 	<ul style="list-style-type: none"> - To recommend improvements or changes according to the Operating Contract - To communicate with the public if required - To perform listed responsibilities

<p>Director of Community Services, Infrastructure and Operations</p>	<ul style="list-style-type: none"> • Assists with the development of the facility's budget • Participates in Management Reviews • Emergency response as listed in the Municipal Emergency Plan • Directs, oversees and advises on all matters relative to the design and construction of services, sewers, roads, waste, and fleet maintenance • Directs the planning and development of future requirements for such services within the jurisdiction of the municipality • Supervises the operation and maintenance of all services coming within the jurisdiction of the Public Works Manager through the effective scheduling and supervision of employees • Prepares detailed operating and capital budgets of reporting departments for approval by Council • Assists in overseeing water and sewer operations, distribution and treatment • Manages the maintenance and provides stewardship related to a variety of municipal infrastructure (land, buildings, equipment) as required • Supervises the work of outside contractors and trades people on special construction and repair projects 	<p>- Work is performed under the direction of the Administrator with access to other departments and appropriate ministries for assistance and information. Access is also available to policies and procedures, the Town Engineer, by-laws and Town Solicitor.</p> <p>- To perform listed responsibilities</p>
<p>Emergency Management Coordinator</p>	<ul style="list-style-type: none"> • Acts as a resource to the Emergency Operations Control Group and updates the Emergency Plan on an annual basis. • Emergency response as listed in the Municipal Emergency Plan 	<p>- To perform listed responsibilities</p>

ELEMENT # 10 – COMPETENCIES

All personnel performing duties directly affecting drinking water quality must have adequate training and be competent in their position. This relates to legislative as well as DWQMS requirements.

Legislative Requirements:

-All Water Treatment Plant operators shall, at a minimum, attain and maintain a Class I certification as per O. Reg. 128/04.

-The Water Treatment Plant Overall Responsible Operator (ORO) shall maintain, at a minimum, a Class III certification (with exceptions for relief periods as specified in the legislation). -All Water Treatment Plant distribution employees shall, at a minimum, maintain a Class I certification as per O. Reg. 128/04 and in accordance with the classification of the works.

-The Water Treatment Plant and Distribution System Overall Responsible Operator (ORO) shall maintain, at a minimum, a Class III certification.

Additionally, annual training is provided to ensure that personnel meet or exceed minimum standards for annual training hours and continuing education hours as established in O. Reg. 128/04.

OMI Canada Inc. is required to provide competent operators to maintain effective water treatment. It is required as part of the operator's responsibility to monitor adequate annual training hours to maintain operator certification for the operation of the Water Treatment Plant.

An annual review of training records and certifications is made by the appointed employee (or Project Manager) to ensure classifications are current and competency is maintained.

The Project Manager may also recommend training courses and approves training registration requests as appropriate. The appointed employee assists in course arrangements and maintains and monitors the employee training matrix.

Effectiveness of outside training is evaluated by the Project Manager, after completion, by discussions with the employee. Certifications from the training, when provided, are filed with the employee training records, and added to the Training Matrix.

In-House Training Requirements

In-house training such as new employee orientation, internal systems (SCADA etc.), refresher training is provided by the Project Manager / Overall Responsible Operator or designate.

Training session records are to be noted by the employee, signed by the trainer and trainee, and forwarded to the appointed employee for filing and entering in the Training Matrix.

QMS Awareness Training Requirements

All personnel must be aware of the Quality Management System and their requirements under the QMS, especially those pertaining to their specific roles.

The QMS Operational Plan, and any changes to procedures affecting personnel, will be reviewed with employees by the Project Manager and / or QMS Representative at least prior to the accreditation audit, and as appropriate throughout the development of the Operational Plan (Document and Records Control, Risk Assessment, for example) and when changes may be made to the Operational Plan.

COMPETENCY REQUIREMENTS TABLE

Competency Requirements Table		
Role	Required Competencies	Desired Competencies
Project Manager / Overall Responsible Operator/Operations Lead	<ul style="list-style-type: none"> WTP Class III Certification Distribution Class III Certification Supervisory Experience/Training System ORO SCADA Training WHMIS Mechanical Aptitude Internal Auditor Training First Aid (Including CPR) Computer literate Related post secondary school 	<ul style="list-style-type: none"> Leadership Training WD Class III Certification WT Class III Certification Trade designation/CET SCADA Training
Quality Assurance and Compliance Specialist	<ul style="list-style-type: none"> Familiarity with O. Reg's Water Familiarity with QMS Computer literate WHMIS Office Management training 	<ul style="list-style-type: none"> WT/WD certification SCADA training
Lead Hand/WTP Operator	<ul style="list-style-type: none"> WT/WD certification Designated OIC SCADA training WHMIS Mechanical/electrical skills Familiarity with Lab procedures G2 Operator's license First Aid (Including CPR) Computer literate 	<ul style="list-style-type: none"> Confined space training Computer literacy Related post secondary school
QMS Representative	<ul style="list-style-type: none"> Familiarity with QMS Related post secondary school Familiarity with O. Reg's Water Computer literate 	<ul style="list-style-type: none"> WT/WD certification Leadership Training Mechanical/electrical skills Familiarity with Plant / Lab procedures WHMIS

TRAINING MATRIX

Example Only: Note- complete training record matrix stored electronically on Share Point.

Date	Course/Training	CEU	CE Hours	Other Training Hrs	Total Hours
Total					

System Class	Continuing Ed.	On-the- Job	Total hrs
Limited System-Ground	7 hrs	13 hrs	20
Limited System- Surface	7 hrs	13 hrs	20
Class I	7 hrs	23 hrs	30
Class II	12 hrs	23 hrs	35
Class III	14 hrs	26 hrs	40
Class IV	14 hrs	36 hrs	50

ELEMENT # 11 – PERSONNEL COVERAGE

The Water Treatment Plant (WTP) is staffed from Monday to Friday from 7:30 a.m. until 4:30 p.m. and attended on weekends for normal daily rounds.

The Water Treatment Plant Project Manager, or delegate, is the primary Overall Responsible Operator (ORO). Back-up OROs are identified in the shift log, as required.

There is an assigned on-call water treatment plant operator during off-hours as described in the After Hours Dispatch Procedure for WTP personnel coverage. The on-call operator conducts a physical verification of conditions at the plant once per day during weekends and statutory holidays.

The normal on-call schedule for water treatment plant operators shall be from start time on Tuesday to start time the following Tuesday. The Water Treatment Plant Project Manager establishes and maintains the on-call schedule.

At all times, the Water Treatment Plant is monitored by the SCADA system. The SCADA system has an auto-dialer that has been programmed to contact the Project Manager, Overall Responsible Operator, or personnel designated by the Project Manager, whenever conditions warrant.

The on-call operator is the designated Operator-in-Charge and will respond to and investigate all alarms within 60 minutes.

An Overall Responsible Operator, or designated back-up ORO, is available by cell phone when not physically at the system.

There are regular daily checks of the distribution system conducted by water distribution personnel, and weekend checks of the booster station. The time of the visit and the details of any related action taken are recorded in the on-site daily log.

Procedures are located in the WTP Operations Manual.

AFTER HOURS DISPATCH AND RESPONSE TO AUTO-DIALER ALARM

Please refer to the Water Treatment Plant Operations Manual for the latest information for the procedure for After Hours Dispatch and for the Response to the Auto-Dialer Alarm.

Copies are located at the Water Treatment Plant and the Municipal Office.

ELEMENT # 12 – COMMUNICATIONS

The Project Manager / ORO shall ensure that the Owner is provided with a current copy of the Operational Plan. The owner shall also be advised of any changes to the Quality Management System, following revisions, and a status update shall be communicated following Management Reviews. This communication may take place during the regular annual report to Council by the Project Manager, or separate meetings arranged as necessary.

In addition to the Operational Plan, potential changes, and Management Reviews, other relevant information could include audit reviews, risk assessment changes, and provision for infrastructure information. The procedure for this information to be communicated to the Owner will be by the Project Manager to the Owner through the Owner's liaison, at Council Meetings, or Committee Meetings, as applicable.

Operating Authority Personnel will be informed of the QMS and any changes or updates through staff meetings with the Project Manager and/or QMS Representative following the original implementation, and thereafter following the Management Review, or as changes occur. The QMS Policy and Operational Plan are to be posted in the Operations Room for access by all employees.

Essential Suppliers shall receive information regarding the QMS from the Operating Authority as required for purchasing as described in Element 13.

Consumers or the General Public will have access to the QMS policy at the Operating Authority's Water Treatment Plant (WTP) site, as well as at the Municipal Office.

The Owner shall make the Operational Plans available for viewing by the public at the principal office of the owner and at one other publicly accessible location in the geographical area served by the subject system.

Information about the QMS may be added to the Municipal website, as decided by the Owner.

ELEMENT # 13 – ESSENTIAL SUPPLIES AND SERVICES

Essential supplies and services are purchased by the Operating Authority on behalf of the Owner under the direction of the Project Manager.

All essential Chemical, Material, Equipment, and Part Suppliers, and Service Providers must meet the Quality and Performance standards suitable for the production and delivery of safe drinking water to the customer.

Essential suppliers of chemicals and materials must meet NSF / ANSI (National Sanitary

Foundation / American National Standards Institute) and / or AWWA (American Water Works Association) standards. Current versions of these standards are to be reviewed, as required, on the appropriate internet website by Operations or Purchasing personnel.

Ontario legislation requires that Laboratories performing drinking water testing must be accredited for the parameters being tested, and Operating Authorities must use accredited labs as required for testing.

The Project Manager / QMS Rep reviews the requirements annually, or as may be required for changes, and suppliers are informed (as required and noted above), by the Project Manager, or designate.

Meetings may be held with contractors and service providers prior to work being carried out on water treatment equipment. They are accompanied by a Water Treatment Operator to ensure water plant and distribution system requirements are understood and met prior to performing their task.

Essential suppliers identified by the OA or Owner receive communications about products or services' quality, quantity, timeframes, certification or accreditation requirements through the procurement and purchase order process.

Appendix B lists the Essential Suppliers and Services, Procurement information, and Quality expectations.

Refer to: Appendix "B" - Essential Supplies & Services List

ELEMENT # 14 – REVIEW AND PROVISION OF INFRASTRUCTURE

On an annual basis a summary of the Water Treatment System is prepared by the Operating Authority's Project Manager / Overall Responsible Operator/Delegate and is submitted to the Owner. Included in the Summary Report is a review and updates on the Operating Authority's infrastructure and related programs.

The procedure will be for the Project Manager / Overall Responsible Operator/Delegate to compile information received from the Maintenance Manager and Operators throughout the year based on work orders and observations relating to the infrastructure of the water treatment system. This information will be summarized in an Infrastructure section of the annual summary report and presented to the Owner on an annual basis.

During the annual Management Review, participants will discuss all infrastructure topics related to the Drinking Water System. The following topics shall be reviewed:

- a) Drinking Water Quality Trends.
- b) Annual Summary Report.
- c) Watermain replacement and rehabilitation.
- d) Planned maintenance on roads and sewers that will directly affect the Drinking Water Distribution System.
- e) Any issues with annual hydrant flushing, valve operation and/or hydrant maintenance.
- f) Planned maintenance and/or structural updates on the Drinking Water System (treatment or distribution).
- g) Capital budget.
- h) Preventative maintenance program.
- i) Long-term forecast of major infrastructure maintenance, rehabilitation and renewal activities.
- j) Outcome of the 36 month Risk Assessment.
- k) Town's Asset Management Plan

ELEMENT # 15 – INFRASTRUCTURE MAINTENANCE, REHABILITATION AND RENEWAL

The Operating Authority maintains a documented summary of the Operating Authority's infrastructure maintenance, rehabilitation, and renewal programs for the water treatment and distribution system. This assists in ensuring the infrastructure required is in place and is adequately maintained, or plans for improvement are in place for continued safe drinking water to be provided to the customer. The maintenance program is reviewed once every calendar year, with the owner representative, operational improvement suggestions are made at this time by the operating authority representative. The Long-term forecast of major infrastructure maintenance, rehabilitation, renewal activities and recommendations from the operating authority will be reviewed with the owner representative to ensure adequate Capital funding is available.

Unplanned Maintenance: activities may include emergency watermain breaks, emergency shut off's (leaks or frozen lines) and is conducted as required under the direction of the ORO/OIC. All maintenance is completed within government regulations and AWWA standards.

The summary is kept current, and is communicated to the Owner at least annually, or as deemed required by the Operating Authority's Project Manager / Overall Responsible Operator, in the Management Review as well as presentations to the local council, and committee, if applicable or required.

Monitoring the effectiveness of the maintenance, rehabilitation, and renewal programs is a requirement of the DWQMS, and is carried out by monitoring the maintenance work order system and assessing the amount of planned versus unplanned maintenance activity.

The Maintenance Request system can be initiated by any employee by filling in a Maintenance Request Form. This request is then forwarded to be assessed by the Maintenance Manager or Project Manager / ORO. Maintenance Requests are filed and reviewed as required to assess or confirm trends and issues are reported in the annual summary.

A "CMMS' Maintenance system also generates work orders for routine equipment servicing and preventive maintenance for designated equipment in the water treatment and distribution system.

A summary of key infrastructure material and equipment from the CMMS is generated by the Maintenance Manager or Project Manager / ORO and added to the annual infrastructure summary.

ELEMENT # 16 – SAMPLING, TESTING AND MONITORING

The Operating Authority maintains a sampling, testing, and monitoring process as required by the Ontario Regulation 170/03, including under conditions challenging to the system, as shown in the Table in Appendix D.

Specific sampling and monitoring procedures are established for operating the water treatment facility and are listed in the Operations Manual. Laboratory analysis is carried out in-house as well as from an accredited outside lab. In-house test procedures are kept in a binder in the test lab.

Test results are reported to the Operating Authority and the Owner by the Accredited Lab and Operator Test results are recorded in the logbook in the Water Treatment Plant lab by the Operator.

All sampling and test records from the SCADA system, laboratories, and Operators are recorded, properly filed and maintained according to procedures as outlined in the Document and Records Control (Appendix A), and the Water Treatment Plant Operations Manual.

A summary of the sampling and monitoring requirements of the various WTP process steps, including frequency, location, quality targets, challenging conditions, and records is shown in Sampling, Testing and Monitoring Table.

Refer to Appendix D: Sampling Testing and Monitoring Summary Table

ELEMENT # 17 – MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION AND MAINTENANCE

The Operating Authority maintains a calibration and maintenance process, as required for the measurement and recording equipment used in the water treatment system. Procedures are established for calibration and maintenance of this equipment and are listed in the Operations Manual.

Specific equipment procedures are available in the Equipment Manufacturer’s Manuals and Users Manuals are available for Operators as required.

Certified sub-contractors are used as required for maintenance and calibration of flow meters, and records maintained.

All calibration and maintenance records are properly filed and maintained according to (Appendix A), Document and Records Control Procedures, and the Water Treatment Plant Operations Manual.

A summary of the calibration and maintenance requirements, for the WTP measurement and recording instruments, including method, frequency, and records is shown in Measurement and Recording Equipment Calibration Table.

MEASUREMENT AND RECORDING EQUIPMENT CALIBRATION TABLE

CALIBRATION SUMMARY TABLE			
Instrument	Method	Frequency	Records

<p>Hand Held Chlorine Analyzer (Hach Pocket Chlorine Colorimeter with each service vehicle for analysing distribution grab samples)</p>	<p>User's Manual copies kept with each unit for procedure and reference</p> <p>Operators track schedule requirement and record results</p>	<p>-Daily visual inspection, cleaning -Weekly preferred, (monthly minimum) accuracy check (calibration as required)</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>Spectrophotometer (Hach DR3900 Spectrophotometer located in Lab used for various analysis installed Jan 2013)</p>	<p>User's Manual copy stored in Lab for procedure and reference</p> <p>Operators track schedule requirement and record results</p>	<p>-Monthly checks per user's manual (calibration as required)</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>Hand Held Turbidimeter (Hach 2100P portable turbidimeter with each service vehicle)</p>	<p>User's Manual kept with each unit for procedure and reference</p> <p>Operators track schedule requirement and record results</p>	<p>-Daily visual inspection, cleaning and alarm check -Weekly accuracy check (calibration as required) - Quarterly calibration using 'formazin' as detailed in user's manual</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>On-Line Turbidimeter (2- Hach 1720E SC 100, 2- Hach 1720E SC 200 turbidimeter monitoring filter effluent and point of entry to distribution) (4 units, 2 each filter) -with interface SC200 at filter 1 and raw and SC100 interface at filter 2 and effluent</p>	<p>User's Manual copy stored at the WTP for procedure and reference</p> <p>Operators track schedule requirement and record results</p>	<p>-Daily visual checks of flows, alarms, comparison of instrument reading to calibrated bench instrument (calibration as required) -Monthly cleaning of sample cell per user's manual - Annual replacement of supply tubing</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>

Devices	Method	Frequency	Schedule
<p>Bench Turbidimeter (Hach 2100N used to verify on-line treated, filter effluent, and raw water turbidimeters plus used to monitor settled water turbidity)</p>	<p>User's Manual copy stored in Lab for procedure and reference</p> <p>Operators track schedule requirement and record results</p>	<p>-Daily accuracy checks using prepared gel standards (calibration as required) -Quarterly calibration using 'formazin' standards</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>

<p>On-Line Chlorine Analyzer 3- Hach Cl-17 on-line chlorine analyzers monitoring water, (2) entering the WTP from intake, treated water at point of entry to distribution, water entering and leaving the booster station (1).</p>	<p>User's Manual copy stored at each location for procedure and reference Operators track schedule requirement and record results</p>	<p>-Daily visual check of reagent levels, flow through instrument, alarms -Weekly comparison of instrument to calibrated hand held instrument or spectrophotometer (calibration as required) Monthly cleaning of sample cell per user's manual - Annual replacement of pumping tubes and supply tubing</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>pH meters 2 – on-line GLI Model 53 (Raw / Treated)</p>	<p>User's Manual copy stored at each location for procedure and reference Operators track schedule requirement and record results</p>	<p>-Weekly checks against bench instrument -Quarterly calibration to purchased prepared standards</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>On-Line Fluoride Analyzer Prominent Dulcometer</p>	<p>User's Manual copy stored at the WTP for procedure and reference Operators track schedule requirement and record results</p>	<p>-Daily visual check of electrolyte levels, flow through instrument, alarms -Weekly comparison of instrument to calibrated hand held instrument or spectrophotometer (calibration as required) Monthly cleaning of sample cell per user's manual - Annual replacement of pumping tubes and supply tubing</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>SCADA</p>	<p>Comparison to on-line instruments</p>	<p>-as required based on conditions- power outages etc</p>	<p>-maintenance recorded in instrument log -calibration recorded in calibration binder</p>
<p>Flow Meters</p>	<p>-outside contract</p>	<p>-annual inspection -more frequent if concerns noted by Operator</p>	<p>-Certificates filed in main office -copy filed with Operations Manual as required</p>

ELEMENT # 18 – EMERGENCY MANAGEMENT

An emergency, with regard to drinking water, is a potential situation or service interruption that may result in the loss of the ability to maintain a supply of safe drinking water to consumers.

Some emergency situations that could occur include chemical, biological, or radiological contamination, major distribution line or watermain breaks, interruptions in pressure, or loss of power. The Risk Assessment Outcomes, and Risk Assessment (Appendix C) reference potential emergency situations. Procedures or Contingency Plans related to potential emergency situations can be found in the Operations Manual or Contingency Plan.

A Contingency Plan and Emergency Response Plan for the Operating Authority is available at the Water Treatment Plant listing potential emergencies and the appropriate measures for response, contacts, and how to restore the system to normal operation. WTP Operators and staff are kept up to date with annual reviews of the Operations Manual and Contingency Plan, or as required if changes occur.

It is the responsibility of the Project Manager to ensure that employees are aware of the Contingency Plan and are trained in their responsibilities with regard to emergency preparedness.

A list of emergency contacts and essential suppliers and services is kept with the Contingency Plan.

In addition to the above, the Owner has an Emergency Response Plan, in accordance with current legislation and regulations, at the municipal office that provides information and contact information in the case of a water related emergency situation.

Emergency Response Testing can be accomplished by review of one or more Contingency Plan procedures, review of actual emergencies, or by participation in the Municipality's annual emergency exercise. This should be carried out by the Project Manager, or designate, on a regular basis (minimum annually) and followed up in the form of a documented meeting with Operators and employees to ensure awareness of the procedures and allow discussion and input on situations that could arise as an emergency situation.

Emergency Procedures

Emergency Response Procedures for OMI Canada Inc. (Jacobs) are located at the Water Treatment Plant in the Contingency Plan and Operations Manual.

The Municipal Emergency Response Plan for water is filed at the Municipal Office as well as a copy being maintained at the Water Treatment Plant.

ELEMENT # 19 – INTERNAL AUDITS

An Internal Audit procedure has been established by the Operating Authority to comply with the DWQMS standard. The intent of the procedure is to evaluate conformity of the QMS with the requirements of the Standard.

The Procedure below, identifies the internal audit criteria, the frequency recommended for the audit schedule, the scope, method and requirement for documentation of the audits.

The procedure also describes how Corrective Action Reports (CARs) are initiated and addressed to provide irreversible corrective actions to deficiencies found in the audits.

An Internal Audit Checklist is included below.

A Checklist will be prepared by the internal auditor(s), based on the review of applicable documentation for the element(s) to be audited. The documentation review could include the Operational Plan – Policy Procedures, and Tables, Operations Manuals/Contingency Plan, Process Maps, Work Instructions, and previous internal and external audit reports, and any other relevant information pertaining to the overall management of the Quality Management Standard.

Internal Audits are required to be completed at least once every 12 months.