

Town of Goderich

Operational Plan

Drinking Water Quality Management Standard



Drinking Water Works Permit No.

084-201 issue #5

Municipal Drinking Water Licence No.

084-101 issue #2

REVISION 7

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Introduction

Quality Management Systems and Standards have been actively used in North America since the early 1950's. In 1987, the International Organization for Standardization (ISO) released the first version of the ISO 9001 Quality Management System Standard, which is used worldwide.

Incorporating a mandatory Province-wide Quality Management Standard into the management of Ontario's Drinking Water Systems was the result of a recommendation in Part Two of the Report of The Walkerton Inquiry by Justice Dennis R. O'Connor in May, 2002. The *Safe Drinking Water Act (SDWA), 2002*, followed. Regulations made under the *SDWA* provide the requirements for Drinking Water Systems, testing services, quality standards, certification of Operators and Water Quality Analysts, as well as compliance and enforcement.

The Drinking Water Quality Management Standard (DWQMS), as described in the *SDWA* prescribes a Quality Management System (QMS) or Operational Plan, which specifies the minimum requirements for an Operating Authority of a subject system to:

- Facilitate the Operating Authority's ability to consistently produce and/or deliver drinking water that meets applicable legislative, regulatory and Owner requirements; and to
- Enhance consumer protection through the effective application and continual improvement of the QMS.

The purpose of incorporating a quality management approach for Drinking Water Systems is to protect public health by achieving consistent and effective/efficient operating and management practices. Key components of the DWQMS include:

- Adoption of best practices and continual improvement
- Operating with robust multiple barriers to protect public health
- Preventative measures rather than reactive strategies to identify and manage risk
- Effective leadership

This Operational Plan outlines the QMS and describes the methods used by the Municipality of Morris-Turnberry and the Operating Authority to provide and consistently maintain safe drinking water. Using a systematic and proactive approach, the Operational Plan provides a foundation for consistency, safety and efficiency, as well as meeting legislative requirements.

This Operational Plan is implemented and carried out by the MTown of Goderich and Operating Authority, and is approved by the Mayor and Council. The QMS Representative, appointed by Top Management and approved by the Mayor and Council, is responsible for ensuring that all processes and procedures are established and maintained, promoting awareness and ensuring commitment to the Operational Plan. The QMS Representative reports to Top Management on QMS performance and any need for improvement. These findings are forwarded to the Mayor and Council for review and approval.

1. Element 1 - Quality Management System

1.1 PROCEDURE DESCRIPTION

The Town of Goderich, as the Owner, and Veolia Water, as the Operating Authority of the Town's Drinking Water System, is required to attain conformance to the Drinking Water Quality Management Standard (DWQMS) developed by the Ministry of the Environment, Conservation and Parks. This Operational Plan has been developed to represent the Operating Authority's Quality Management System (QMS) that conforms to the Standard.

1.2 REASON FOR PROCEDURE

The Quality Management System, as described in this Operational Plan, applies to all of the requirements prescribed in the Standard.

1.3 DEFINITIONS

Not applicable

1.4 PROCEDURE

The DWQMS requires an Operating Authority to establish a QMS for each Drinking Water 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 Systems, 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 procedures are correct and current. The review may include the QMS Representative, Owner, Operating Authority, or Operators of the systems.

The ultimate goal of achieving conformance to the DWQMS must be fully understood, and activities must strive to meet the requirements of the Standard. A focus on continuous improvement is the cornerstone for breakthrough thinking and innovation.

1.5 ASSOCIATED DOCUMENTS

None Applicable

1.6 REFERENCE MATERIALS

Drinking Water Quality Management Standard, Version 2.0

2. Element 2 - Quality Management System Policy

2.1 PROCEDURE DESCRIPTION

The Town of Goderich (Owner) has retained the services of Veolia Water Canada to operate and maintain the water supplies and distribution systems.

Together, the Town of Goderich and Veolia are committed to:

- Providing the consumer with a consistent supply of clean, safe drinking water
- Meeting or surpassing all applicable legislative and regulatory requirements
- Managing and operating the water supply systems in a responsible manner in accordance with documented Quality Management System (QMS) policies and procedures
- Maintaining and continually improving its QMS

2.2 REASON FOR PROCEDURE

It is a requirement of the DWQMS to create a policy which demonstrates the Town's commitment to deliver safe drinking water and enhance customer confidence in the quality of the drinking water.

2.3 DEFINITIONS

None Applicable

2.4 PROCEDURE

The Town of Goderich and the Operating Authority who are directly involved in the treatment, supply, and distribution of drinking water, share in the responsibilities of implementing, maintaining, and contributing to the continual improvement of the Drinking Water System through the QMS.

2.5 ASSOCIATED DOCUMENTS

E2 - QMS Policy Statement

2.6 REFERENCE MATERIALS

None Applicable

3. Element 3 - Commitment and Endorsement

3.1 PROCEDURE DESCRIPTION

Commitment and Endorsement refers to the Quality Management System as described in the Operational Plan, for the Belgrave Drinking Water System in the Town of Goderich.

3.2 REASON FOR PROCEDURE

To communicate Top Management's commitment to and endorsement of the Quality Management System described in this Operational Plan.

3.3 DEFINITIONS

None Applicable

3.4 PROCEDURE

The Town of Goderich (Owner), and Veolia Water Canada (Operating Authority), support the implementation, maintenance, and continual improvement of a Drinking Water Quality Management System (QMS) for the Belgrave Drinking Water System, as documented in the Operational Plan.

Endorsement by the Owner (represented by The Town of Goderich CAO/Clerk), and the Operating Authority Top Management (represented by Veolia Water Canada Project Manager) acknowledges the need for, and supports the provision of sufficient resources to implement, maintain, and continually improve the Quality Management System (QMS).

Top Management is also committed to communicating the QMS according to Element 12 - Communications of the Operational Plan. The QMS Representative, approved by the Mayor and Council, acknowledges the roles and responsibilities of the appointment.

3.5 ASSOCIATED DOCUMENTS

E3 - Commitment and Endorsement

3.6 REFERENCE MATERIALS

None Applicable

4. Element 4 - QMS Representative

4.1 PROCEDURE DESCRIPTION

This procedure describes the role of the QMS Representative as it pertains to the operation and maintenance of the QMS.

4.2 REASON FOR PROCEDURE

To identify the role of the QMS Representative for The Town of Goderich and describe the specific responsibilities and authorities placed upon the Representative.

4.3 DEFINITIONS

Authority: Official permission or approval to carry out a responsibility or task

Responsibility: A charge, trust, or duty, for which one is responsible. To be responsible means to be correspondent or answerable, accountable to another for something.

4.4 PROCEDURE

The QMS Representative has been appointed by Top Management. The QMS Representative regardless of other responsibilities shall:

- A. Administer the QMS by ensuring that processes and procedures need for the QMS are established and maintained,
- B. Report to Top Management on the performance of the QMS and any need for improvement,
- C. Ensure that current versions of documents required by the QMS are being used at all times,
- D. Ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the water supply systems, and
- E. Promote awareness of the QMS throughout the Operating Authority.

The responsibilities of the QMS Representative are listed in the Responsibilities Table in Appendix E, as part of Element 9 - Organizational Structure, Roles, Responsibilities and Authorities.

Should the QMS Representative position be vacant, an "Interim QMS Representative" may be appointed by Top Management to satisfy the responsibilities identified above. This shall be a temporary assignment until a permanent QMS Representative can be identified and brought forward for approval. The Interim QMS Representative will have the same responsibilities and authorities as those identified for the QMS Representative throughout the QMS and all supporting documents.

4.5 ASSOCIATED DOCUMENTS

- E4 - Notice of Appointment - QMS Rep
- E4 - Notice of Appointment - QMS Alternate
- E4 - QMS Orientation Checklist
- E9 - Job Description and Employee Orientation Program

4.6 REFERENCE MATERIALS

None Applicable

5. Element 5 - Document and Records Control

5.1 PROCEDURE DESCRIPTION

This procedure outlines and defines the process of managing, maintaining and protecting all documents and records required for conformance of the DWQMS.

5.2 REASON FOR PROCEDURE

To ensure that all QMS related documents and records are managed and controlled according to regulatory requirements and established protocols.

5.3 DEFINITIONS

Documents:	Policies, Standard Operating Procedures, Emergency Response Plans, Forms, Regulations, Associated Documents, etc.
Records:	Documents containing recorded data such as daily data logs, training records, forms, maintenance records, etc.
Controlled:	Considered the most current approved version of a document.
Uncontrolled Copy:	For information only. An uncontrolled copy means it may be out of date.

5.4 PROCEDURE

The establishment and maintenance of an effective document and records control system is the foundation of any quality management system. A procedure for both documents and records controls has been established to describe how:

- A. Documents required by the QMS are:
 - a. Kept current, legible and readily identifiable
 - b. Retrievable
 - c. Stored, protected, retained and disposed of, and
- B. Records required by the QMS are:
 - a. Kept legible, and readily identifiable
 - b. Retrievable
 - c. Stored, protected, retained and disposed of.

All QMS documents are to be reviewed annually.

5.5 ASSOCIATED DOCUMENTS

- E5 - Document and Records Control Procedure
- E5 - Document and Records Control Table
- E5 - Document Approval - Change Form
- E5 - Operational Plan Change History Table
- E19 - Non-Conformance and Corrective Action Report
- E19 - Action Item Request / Opportunity For Improvement Form
- QMS - Longterm Spreadsheet

5.6 REFERENCE MATERIALS

None

6. Element 6 - Drinking Water Systems

6.1 PROCEDURE DESCRIPTION

The Town of Goderich, together with Veolia Water Canada, provide potable water to the residents and businesses in the Municipality. The Drinking Water System that supplies water is:

- **Goderich Drinking Water System (Water Treatment Subsystem Class 3 and Distribution Subsystem Class 3)**

The distribution system serves the community of Goderich .

The raw water drawn for the Goderich DWS is classified as surface water.

The Owner and the Operating Authority incorporate a multi-barrier approach to prevent or reduce the contamination of drinking water. This includes an integrated system of procedures, processes, automatic control systems, a Supervisory Control and Data Acquisition (SCADA) automation system complete with an auto-dialer alarm system.

6.2 REASON FOR PROCEDURE

To ensure processes and procedures are in place to assess the current capability of the Owner and Operating Authority's management and operating systems for providing safe drinking water.

6.3 DEFINITIONS

None Applicable

6.4 SYSTEM DESCRIPTION

Goderich - Water Works # 21 000 0238

WATER SYSTEM DETAILS

The Goderich Water Supply is characterized as a surface water system and is classified as a Large Municipal Residential System. The system is operated by Veolia Water Canada, the Operating Authority, and provides a potable water supply to the residents and businesses of the Corporation of the Town of Goderich.

The facilities, consisting of a Class III conventional design Water Treatment Plant having an approved rate capacity of 12,000 m³/d,(cubic meters per day) and a Class III water distribution system consisting of a Booster station with a capacity of 5000 m³, the Water Tower with a capacity of 941 m³, which are owned by the Town of Goderich and operated by Veolia Water Canada, the Operating Authority.

The system is operated by Veolia Water Canada, the Operating Authority, and provides a potable water supply to the residents and businesses of the Corporation of the Town of Goderich.

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:

- Pre-chlorination
- Flash Mixing, Flocculation, Coagulation, and Sedimentation
- Filtration and Backwash
- Post-chlorination
- Fluoridation
- Distribution system chlorination

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 into a two celled concrete low lift pump well.

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.

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.

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 in the First Engineer's Report which was completed by BM Ross and Associates.

Chlorine gas is used from two on-line gas cylinders, with auto switch-over, to treat the water intake (for zebra mussel control if needed) and to provide primary and secondary disinfection.

The addition of chlorine gas to the raw water supply is referred to as pre-chlorination, 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.

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 influent raw water.

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. Supernatant (the clear liquid above the settled floc) overflows from the settling tanks to the top of the dual media filters.

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.

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).

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.

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.

Primary disinfection (pre-chlorination) occurs before filtration, immediately upstream from the filtered water. Primary chlorination disinfects the water, ensuring that no potentially pathogenic organisms remain after sedimentation and filtration and are rendered harmless prior to distribution to consumers. Consistent disinfection is ensured by continuous monitoring of the chlorine residual at three points in the process of 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.

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 microorganisms 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.

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 adequate CT (Concentration, mg/L x Time, min)

to ensure pathogen removal and disinfection requirements have been met. When calculating CT, the baffle factor is 0.6.

The raw water source is low in naturally occurring fluoride, and hydrofluosilicic acid is able to be added at the post-chlorination point. Equipment is also available to provide continuous monitoring of fluoride concentrations in the treatment plant effluent, and includes a high level alarm.

Taste and odour control facilities are installed consisting of a powdered activated carbon feed system at the flash mixing tank.

Standby power is provided by a 425 kW diesel generator and automatic transfer switch.

Filter backwash water and accumulated floc from the sedimentation tanks is directed to a waste settling tank from where they are pumped to the settling beds (lagoons).

Treated water is pumped from the high lift pump wells into the distribution sub-system. Distribution piping typically ranges in size from 100 mm to 400 mm in diameter, and may consist of cast iron, ductile iron, concrete, or PVC, depending on the location and date of installation.

One ground level, two cell storage reservoir provides reserve storage. The booster station is used to ensure adequate system pressure to zones 1 and 2.

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 in operation. An elevated storage tank is also an integral part of the distribution system and used to provide constant pressure for zone 1.

Typical system pressure ranges from 40 P.S.I. to 80 P.S.I., depending on zone and elevation.

Distribution and Elevated Storage Tank

Treated water is pumped from the high lift pump wells into the distribution sub-system. Distribution piping typically ranges 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.

One ground level, two cell storage reservoir provides reserve storage. The attached booster station is used to ensure adequate system pressure to zone 1.

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.

Typical system pressure ranges from 45 P.S.I. to 80 P.S.I., depending on zone and elevation.

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.

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.

Taste and odour control facilities are installed consisting of a powdered activated carbon feed system at the flash mixing tank.

SYSTEM FLOWS

The Goderich DWS has one Permit to Take Water (PTTW):

5204-C5JGSY

Expires: August 3, 2031

- Water Treatment Plant: 15,000 L/min (4.2 L/s)

Maximum Total 15890 m³/day

The CT calculations for each site are based on these maximum flows. For simplicity, these values are expressed as L/s in order to coincide with the SCADA monitoring.

The limiting factor regarding flow is chlorine contact time in the two-celled reservoir. In order to meet the regulatory CT requirements (CT value >4), the maximum flow permitted must correspond with a free chlorine residual of **0.60 mg/L**.

SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM

A SCADA automation system is used to monitor and control processes at the well house. While most of the processes are run automatically by local PLC units, the SCADA system continuously records operations, provides alarm notifications, and allows Operators to remotely monitor and control the system processes.

An Endress Hauser system records data for the Goderich WTP as a back-up to the SCADA system. Veolia has two SD cards on which the data for Goderich is stored and retrieved. The cards are interchanged when the data is downloaded from the system. This allows a card to be read and saved monthly on the Google Shared Drive.

SAMPLING AND TESTING

All sampling and monitoring is carried out in accordance with O. Reg. 170/03, O. Reg. 248/03, as well as the Municipal Drinking Water Licence (MDWL) and Drinking Water Works Permit (DWWP). The SCADA system continuously monitors analyzers for free chlorine residual, pressure and flow. Weekly, quarterly, annual, 36-month, and 60-month sampling for microbiological and chemical analyses are conducted and sent to accredited laboratories as required in O. Reg. 170/03. SCADA reporting, grab samples, Operator observations, and external laboratory test results are recorded and monitored by Operations staff.

CURRENCY

It is the responsibility of the QMS Representative to ensure that the Drinking Water System Process Description is kept current, updated, when system changes are made, and reviewed at least annually.

6.5 ASSOCIATED DOCUMENTS

E6 - OM-01-1 - Goderich Process and Instrumentation Schematic - 13504-1-FIGURE - 2_3

E6 - OM-01-2 - Goderich Pumphouse Schematic - 13504-1-FIGURE-3_3

E6 - OM-01-3 - GODERICH DISTRIBUTION Schematic - 13504-1 FIGURE 3-1 - RJB update - Jan 25, 2010

E6 - OM-01-4 -GODERICH - MW047642 As Built - Burnside Dwgs

6.6 REFERENCE MATERIALS

Goderich PTTW #45204-C5JGSY

Goderich MDWL #084-101 issue #2

Goderich DWWP #084-201 issue #5

7. Element 7 - Risk Assessment

7.1 PROCEDURE DESCRIPTION

This procedure describes the process steps used to identify, assess, and determine Critical Control Points (CCPs) for hazards or hazardous events.

7.2 REASON FOR PROCEDURE

To ensure that all potential hazards or hazardous events associated with drinking water quality are identified and assessed. The results of identifying and assessing hazards provide staff with guidance to control and properly respond to potential conditions. It also improves the level of Public Health protection.

7.3 DEFINITIONS

Control Measures: defined as any procedure, process, device, or means of eliminating, preventing or reducing the risk of a hazardous event.

Critical Control Point (CCP): an essential step or point in the subject system at which control can be applied by the Operating Authority to prevent or eliminate a drinking water health hazard or to reduce it to an acceptable level.

Critical Limits: defined as the point at which an Operator must take action to prevent escalation of the critical event or to correct the critical event.

Risk: the probability of identified hazards causing harm, including the magnitude of that harm or the consequences.

Risk Assessment: an orderly methodology of identifying hazards or hazardous events that may affect the safety of drinking water and evaluating their significance.

7.4 PROCEDURE AND MEASUREMENT METHODOLOGY

The complete Risk Assessment Review will be performed by the QMS Representative, Overall Responsible Operator, at least one Operator, Project Manager, and representatives from the The Town of Goderich as deemed necessary (i.e. Director of Public Works). A designate may be appointed if attendees are unable to attend. Participants may be added at the discretion of the QMS Representative.

A complete Risk Assessment Review will be performed every 36 months for all the Drinking Water Systems, which will consist of a table-top session or a remote video session including as many staff as available. These exercises may also be completed when a significant change occurs in operation such as a new process or change of process/equipment.

A Risk Assessment is completed based on the previous Risk Assessment Outcomes. Potential hazardous events and associated hazards as identified in the Ministry of the Environment, Conservation and Parks (MECP) Document titled *Potential Hazardous Events for Municipal Residential Drinking Water Systems* are also to be considered in the Risk Assessment.

In addition, Emergency Management Ontario (EMO) has updated its *Hazard Identification and Risk Assessment (HIRA)* in 2019. Many of the hazards listed there represent **external issues** that can compound **internal personnel coverage issues** that may occur during a pandemic.

All previous hazards and control measures are reviewed using the methodology of Likelihood, Consequence, and Detectability, and are assigned a numeric value between 1 and 5 in each of these categories depending on severity. All three numbers are added together to determine the overall Risk Value using the following format:

LIKELIHOOD

Rating	Description	Hazardous Event Occurring
1	Rare	May occur in exceptional circumstances, and has not occurred in the past
2	Unlikely	Could occur at some time, historically has occurred less than once every 5 or 10 years
3	Possible	Has or may occur once or more per year
4	Likely	Has or may occur quarterly
5	Very Likely	One or more occurrences monthly

CONSEQUENCE

Rating	Description	Hazardous Event Occurring
1	Insignificant	Little public exposure, little or no health risk
2	Minor	Limited public exposure, minor health risk
3	Moderate	Public exposure, possible health impact on small part of population
4	Significant	Large public exposure, noticeable by public, health risk to small part of population, objectionable aesthetics
5	Major	Large public exposure, health risk to part of population, loss of confidence in system

DETECTABILITY

Rating	Description	Hazardous Event Occurring
1	Very Detectable	Easy, on-line monitoring through SCADA
2	Moderately Detectable	Moderately detectable, alarm present but not constantly monitored, indicated by daily or weekly lab results
3	Normally Detectable	Visually detectable through frequent maintenance rounds weekly or more often
4	Poorly Detectable	Visually detectable but inspected less frequently than weekly, lab test conducted quarterly or longer, not normally detected before a problem becomes evident
5	Undetectable	Cannot be detected until problem is evident

After reviewing all of the previous hazards and control measures, any new hazards that group members may feel need to be added are discussed and all revisions, deletions and additions are noted, and the updated Risk Assessment Outcomes documents are generated.

The highest Overall Risk 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 completed for each hazard event.

In the case where an event having a higher calculated risk value is not determined by the risk assessment group to be critical, an explanation of the reasoning for this distinction is provided. An explanation of the reasoning is also required if the risk assessment team was to deem an event with a lower calculated risk to be critical as well.

From the identified critical events, the risk assessment group then traces backwards through the water process to determine the specific points where each critically hazardous event originates. These points then become Critical Control Points (CCPs). The final point in a series that leads to a critical event is identified as the Critical Control Point.

Critical Control Points require the establishment of controlled conditions, including Critical Control Limits (CCLs), equipment redundancy, and control and recovery procedures.

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, after-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 Manuals.

The Risk Assessment is an ongoing process. In addition to the formalized Risk Assessment Review completed every 36 months, the currency and validity of the information in the Risk Assessment will be verified at least once every calendar year.

7.5 ASSOCIATED DOCUMENTS

QMS - Longterm Spreadsheet

E7 - Goderich - Risk Assessment - Template

E7 - Risk Assessment Verification Template

E7 - Goderich - CCP and Risk Assessment Summary Table

7.6 REFERENCE MATERIALS

MECP - Potential Hazardous Events for Municipal Residential Drinking Water Systems

EMO - Hazardous Identification and Risk Assessment (HIRA)

8. Element 8 - Risk Assessment Outcomes

8.1 PROCEDURE DESCRIPTION

This procedure describes the approach taken by the Operating Authority to detail and document the outcomes of the Risk Assessment process.

8.2 REASON FOR PROCEDURE

To establish an effective and organized approach to conducting, assessing and improving hazard risks associated with the Drinking Water System.

8.3 DEFINITIONS

Emergency (relating to the Water System Supply): a potential situation or service interruption that may result in the loss of the ability to maintain an adequate supply of safe drinking water to consumers.

Emergency (relating to the Town of Goderich Emergency Response Plan): situations or impending situations caused by forces of nature, an accident, or an intentional act that constitutes a danger or major proportions to life and property.

8.4 PROCEDURE

Risk Assessments are documented using the Risk Assessment Outcomes document. Previous Risk Assessment Outcomes are used to conduct Risk Assessment Reviews (annually) and when completing the Risk Assessment exercise again every 36 months.

During the table-top or virtual sessions, the QMS Representative notes all revisions, deletions, and additions to the Risk Assessment Outcomes document and prepares an updated version. The updated document is circulated to all pertinent staff for review and comment. The updated Risk Assessment Outcomes document is then finalized.

8.5 DEVIATION AND TRACKING

In order to determine if the Risk Assessment process is adequate and offers appropriate feedback, any deviation from the established Critical Control Limits or Critical Control Points and response actions must be documented and tracked. This will help to facilitate future Risk Assessment reviews, validate the established CCLs and CCPs, and also illuminate areas that require improvement or modification.

These deviations and response actions must also be reported in the Management Review - Element 20.

Critical Control Point (CCP) Limits

Goderich

No.	Hazard	CCP Limit
7	Chemical feed system failure	1.0 mg/L residual alarm and lockout
12	Contamination of the chlorine contact chamber with improperly disinfected water	1.0 mg/L residual alarm and lockout
13	High lift pump failure	SCADA and Autodialer alarms
14	High lift pump lock-out due to control loss	SCADA and Autodialer alarms
15	Inadequate chlorine residual in distribution system	1.0 mg/L residual alarm and lockout; daily residuals, weekly sampling, semi-annual flushing
18	Loss of system pressure	Pressure alarms, backup pumps

8.6 ASSOCIATED DOCUMENTS

QMS - Longterm Spreadsheet
 E7 - Goderich - Risk Assessment - Template
 E7 - Risk Assessment Verification Template
 E7 - Goderich - CCP and Risk Assessment Summary Table
 E20 - Management Review - Template

8.7 REFERENCE DOCUMENTS

None applicable

9. Element 9 - Organizational Structure, Roles, Responsibilities and Authorities

9.1 PROCEDURE DESCRIPTION

This procedure describes the organizational structure, roles, responsibilities and authorities associated with the Drinking Water System and the QMS.

9.2 REASON FOR PROCEDURE

To ensure all personnel associated with the Drinking Water System are aware of their regulatory requirements in the provision of safe drinking water.

9.3 DEFINITIONS

None Applicable

9.4 PROCEDURE

The structure of the organization is depicted in the Veolia Organizational Structure Chart, and the The Town of Goderich Organizational Structure Chart. Relevant staff are listed in the DWQMS document.

The Town of Goderich is the Owner and Veolia Water Canada has been retained as the Operating Authority for its Drinking Water Systems. The Owner and the Operating Authority are responsible for ensuring the safety of the drinking water. The Mayor, Council, and the Director of Public Works represent the Owner and Veolia carries out the operation of the Drinking Water Systems in accordance with all regulatory and QMS requirements.

Veolia Water Canada appoints personnel to assume the roles of Top Management and QMS Representative as they relate to the Operating Authority. This is presented to the Owner for their approval.

The roles and responsibilities pertaining to the Operating Authority personnel as they relate to drinking water quality and the QMS are summarized in the Organizational Structure, Roles, Responsibilities and Authorities document.

The Operating Authority shall keep the description of the organizational structure current including respective roles, responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.

Top Management or their designate will ensure Management Reviews are conducted and communicated to the Owner on a regular basis.

9.5 ASSOCIATED DOCUMENTS

- E9 - Organization Chart - Veolia Water Canada
- E9 - Job Descriptions and Employee Orientation Program
- E9 - Organization Chart - The Town of Goderich

9.6 REFERENCE MATERIALS

None applicable

10. Element 10 - Competencies

10.1 PROCEDURE DESCRIPTION

To provide a method to identify the competencies required for personnel performing duties directly affecting drinking water quality and the activities in place to meet those competencies.

10.2 REASON FOR PROCEDURE

To ensure the necessary competencies of these personnel are developed, documented and monitored, and to ensure employees are aware of the relevance of their duties and how they impact safe drinking water.

10.3 DEFINITIONS

Competency: the demonstrated ability of an employee to apply their knowledge, understanding, skills, behaviours and techniques in performing their duties and responsibilities. Competency is assessed through a combination of background (education, training and experience) and their actions performing assigned responsibilities.

10.4 PROCEDURE

The level of competency required for personnel who may directly affect drinking water is itemized in the Competency/Training Requirements associated document. These requirements are based on the organizational structure, roles, responsibilities, and the job description associated. All legislative and regulatory requirements have been factored into the competencies listed.

Appropriate training and development opportunities will be provided to meet the requirements, where necessary. Training may be provided internally or by an external agency, as appropriate. To maintain the necessary staffing level, certain requirements may be deviated from, at the Project Manager's discretion upon hiring new or transferred candidates. They may be deviated from provided they are not a regulatory requirement for a specific function.

A Training Record Form is required to be filled out for all Operators attending a training session. This form includes the date, description of the course/session, length of time, CEUs received and the Operator and Instructor signatures. The Training Form is then forwarded to Administrative Support and this information is recorded on the Employee Training Matrix. The completed Training Record Form is filed by the Office Manager. The Employee Training Matrix is maintained electronically and is filed in the Veolia Google Drive by Administrative Support.

Competencies will include factors such as leadership, decision making, cooperation, communication, analyzing situations, learning, applying knowledge, creativity, flexibility, planning, following directions, customer satisfaction focus, adapting to change, handling pressure, and being results focused.

Competencies are evaluated annually through Veolia Performance Reviews conducted for all full time employees. This Performance Review includes key assessment factors, performance goals and objectives, a Health and Safety discussion, and a personal development plan. As part of the Performance Review, competencies and training records will be reviewed and necessary training and updates will be provided as part of the goals and objectives portion of the review for each staff member's upcoming year.

Performance Reviews are conducted by the Project Manager responsible for the employee and signed off by the VP Operations. Copies of completed Reviews are retained by the Project Manager, VP Operations, and the employee.

Awareness of the importance of employee responsibilities and their impact on drinking-water quality will be promoted through the following activities:

- 1) Communication and review of relevant legislative and regulatory requirements
- 2) Communication and review of roles and responsibilities relevant to the QMS detailed in Element 9
- 3) Regular review and updates of relevant policies and procedures, and
- 4) Communication and review of relevant competency requirements

Veolia Water Canada may administer certain tests, conduct interviews, verify references and/or request specific documentation as part of the hiring process in order to confirm skills, experience and knowledge to ensure competency of the Operations staff.

10.5 ASSOCIATED DOCUMENTS

QMS - Longterm Spreadsheet
E4 - QMS Orientation Checklist
E12 - Training Record Form

10.6 REFERENCE MATERIALS

Employee Training Matrix
Training Record Form

11. Element 11 - Personnel Coverage

11.1 PROCEDURE DESCRIPTION

To identify how The Town of Goderich and Veolia Water ensure that competent personnel are available to fulfill the responsibilities needed for the ongoing operation of its Drinking Water Systems and its Quality Management System (QMS) .

11.2 REASON FOR PROCEDURE

To ensure continuous coverage and availability of personnel for the Drinking Water Systems to address all issues that directly affect drinking water quality.

11.3 DEFINITIONS

None Applicable

11.4 PROCEDURE

The Drinking Water System Operators utilize one shift Monday through Friday and report daily to the Project Manager and the Director of Public Works. Table 11.1 provides the schedules for the Operations staff. The Operators are required to be included in a 7-day on-call rotation (Tuesday AM - Tuesday AM). With respect to the water system, there is only one On-Call Operator. This Operator is equipped with an on-call phone to address alarms, and a response time of 1 hour is required to attend to any after-hours alarms if deemed necessary by the Operator.

Alarms are numbered by channel and these channels are defined in the Operations Manual procedure OM-14 - Response to Alarms/SCADA Monitoring and Control.

If additional Operators are required to assist during an After-Hours call-out, it is at the discretion of the Project Manager to assign appropriate staff for this task. It is the responsibility of the Project Manager to ensure personnel coverage is available at all times for the water systems. This includes scheduled shifts, on-call coverage and any emergency situation.

If the On-Call Operator has specific questions related to operations, their initial contact is the ORO and/or the Project Manager. If additional services are needed (i.e. well technician, tree removal, snow plow, etc.), the Operator should contact the Director of Public Works in addition to the Project Manager.

The On-call Schedule for the Operators is mutually agreed upon and uploaded into the Veolia Google Calendar.

The Town of Goderich After-Hours service receives calls and contacts the On-Call Operator to report the occurrence and provide pertinent information. All other alarms are generated by the SCADA system and on-site autodialers.

Table 11.1

Position	Schedule
Project Manager	At all times
Overall Responsible Operator	At all times
On-Call Operator (1)	7-day rotation
Water Operator (1)	07:30 - 16:00

11.5 ASSOCIATED DOCUMENTS

None applicable

11.6 REFERENCE MATERIALS

On-Call Schedule

12. Element 12 - Communications

12.1 PROCEDURE DESCRIPTION

To identify the method for communicating information related to the QMS Operational Plan to appropriate internal and external parties, including the public, and to outline the method for receiving and processing related communication.

12.2 REASON FOR PROCEDURE

To ensure all applicable procedures that apply to internal and external communication related to The Town of Goderich QMS are completed as required.

12.3 DEFINITIONS

None Applicable

12.4 PROCEDURE

Internal Communication: The QMS Operational Plan is available on the Veolia Google Drive (cloud-based platform) to all Veolia employees who have access to the Veolia Drive, and select members of The Town of Goderich who have been granted access.

For all new Drinking Water System staff, QMS awareness training will be provided by the QMS Representative. Existing Drinking Water System staff will be notified of all significant changes made to the QMS.

Internal training sessions will be organized as required by the QMS Representative and delegated as necessary. New staff will be trained within three months of hire, and existing staff will receive annual DWQMS refresher training. The QMS Representative will identify and review all applicable QMS documentation and ensure that required personnel understand the content pertaining to their specific functions. Attendance will be mandatory for all staff directly involved with the QMS and will be documented through the Training Record Form.

Communication between the Operating Authority and the Owner will be managed by the QMS Representative. Information documented as a result of the Management Review Meetings will be forwarded to the Owner in the form of a formal Management Review Summary Report that includes details such as updates on progress and actions taken pertaining to the Drinking Water System and the QMS. Operators are required to report pertinent information to the QMS Representative for reporting/documenting purposes.

External Communication: The QMS Operational Plan including the Policy, Statement of Commitment and Endorsement and its associated Elements will be communicated to the public via The Town of Goderich website. The QMS and the Policy will also be communicated to all Essential Suppliers and Service Providers by letter or during the formal tendering process. Signed confirmation letters are returned from Essential Suppliers or Service Providers to acknowledge awareness.

Responsibility: The QMS Representative will be responsible for ensuring that the QMS related information is communicated to the appropriate internal and external parties.

12.5 ASSOCIATED DOCUMENTS

E12 - Training Record Form - Blank

E12 - Essential Supplies and Services - Letter to Provider - Blank

12.6 REFERENCE MATERIALS

None applicable

13. Element 13 - Essential Supplies and Services

13.1 PROCEDURE DESCRIPTION

This procedure ensures suppliers and service providers meet all requirements of The Town of Goderich and Veolia Water Canada, to provide safe and reliable drinking water to the residents and businesses within the Township.

13.2 REASON FOR PROCEDURE

To ensure suppliers and service providers meet all Municipal and applicable regulatory requirements and to provide an effective monitoring protocol after selection through a contract or single purchase.

13.3 DEFINITIONS

Essential Supplies and Services: goods and people coming in from outside the Drinking Water System that can introduce risks to the quality and safety of the drinking water and are necessary to providing safe drinking water.

13.4 PROCEDURE

The Town of Goderich staff are required to follow their Municipal Purchasing and Procurement Policy when ordering or acquiring supplies and services. Veolia staff are required to follow **VNA Policy and Procedure PC_100 - Procurement**. A list of Essential Supplies and Services is maintained to ensure the supply of safe drinking water.

Assurance of the quality of Essential Suppliers and Services is achieved through documentation of applicable accreditation, licenses, certification and associated regulations and standards, as they apply, to be listed under the Quality Requirements of the Essential Suppliers and Services Table. These are to be reviewed for currency on an annual basis.

All suppliers of essential supplies and services will be provided with a Supplier Letter and a Communications Confirmation. This will serve to provide them with the Municipality's QMS Policy and ensure that they are aware and meet the Municipality's requirements. Signed copies will be valid for a period of one calendar year before another Communications Confirmation form will need to be signed.

A review of the Suppliers and Service Providers will be completed on an annual basis by the Project Manager, Operator-in-Charge, Office Manager, and the QMS Representative.

13.5 ASSOCIATED DOCUMENTS

E13 - Essential Suppliers and Services Table

E12 - Essential Supplies and Services - Letter to Provider - Blank

13.6 REFERENCE MATERIALS

Municipal Purchasing and Procurement Policy (internal)

VNA Policy and Procedure PC_100 Procurement

14. Element 14 - Review and Provision of Infrastructure

14.1 PROCEDURE DESCRIPTION

This procedure describes the infrastructure review activities and how funding is provided to ensure system rehabilitation and renewal (see also Element 15 - Infrastructure Maintenance, Rehabilitation, and Renewal).

14.2 REASON FOR PROCEDURE

An annual review of the drinking water infrastructure ensures that the necessary facilities, process equipment and supporting services are in place and capable of operating the Drinking Water System safely and effectively. The results of the review are used to prioritize future resource allocation.

14.3 DEFINITIONS

None Applicable

14.4 PROCEDURE

The QMS Representative shall include a summary of the Infrastructure Review, in collaboration with the Operators, the Director of Public Works, and the Project Manager, in the Management Review.

The Infrastructure Review shall be conducted in accordance with the QMS Infrastructure Review Procedure, and be completed at least annually, usually in conjunction with the Capital Budget planning process and Management Review. This process reviews performance and maintenance and analyzes progress made from the previous year along with the outcomes of the Risk Assessment. This review collects input from Veolia staff, Township staff, MECP Inspection Reports, flow data trends, water quality reports, monthly summaries, maintenance records and the Financial Plan to determine priority needs.

To ensure the Town has the appropriate funds for Infrastructure projects including maintenance, renewal, rehabilitation, or upgrades, the Capital Budget Program allots funds from the Water and Wastewater Reserve, Development Charges Reserve, and Provincial and Federal Government funding where available. The Town is responsible for reviewing water use rates and fees annually. Where appropriate, increases are proposed to ensure that costs for capital, operation, maintenance and improvements are covered.

All employees share responsibility to communicate system concerns and/or opportunities for improvement to the Project Manager, ORO, QMS Representative, and the Director of Public Works.

14.5 ASSOCIATED DOCUMENTS

- E14 - Review and Provision of Infrastructure
- E20 - Management Review - The Town of Goderich - Template

14.6 REFERENCE MATERIALS

- The Town of Goderich Asset Management Plan

15. Element 15 - Infrastructure Maintenance, Rehabilitation and Renewal

15.1 PROCEDURE DESCRIPTION

This procedure outlines and defines the process of managing the maintenance, rehabilitation and renewal (MRR) of the Goderich Drinking Water System infrastructure within The Town of Goderich.

Operational maintenance requirements of the subsystems are carried out during the year with annual money provided through the operations budgets for preventative and unscheduled maintenance. Unscheduled maintenance required funds greater than supplied through the operating budgets is requested through Council for emergency funds.

Rehabilitation and Renewal which requires more planning and larger expenditures, is conducted by funds provided through Capital allocation.

Infrastructure summaries are to be kept current and up to date through the Town's asset management planning efforts.

15.2 REASON FOR PROCEDURE

This procedure will ensure the required MRR components are in place to address all issues that directly affect the drinking water quality of the system.

15.3 DEFINITIONS

Planned Maintenance: scheduled or proactive activities required for maintaining or improving infrastructure elements. The objective of planned maintenance is to reduce unplanned failures within the water system.

Rehabilitation: the process of repairing and/or refurbishing an infrastructure component.

Renewal: the process of replacing the infrastructure components with new components.

Unplanned Maintenance: reactive activities and may include such things as responding to main breaks, analyzer or sensor failures or mechanical failures. Unplanned failures may draw more heavily on resources, may adversely affect the water quality, and reduce consumer and owner confidence.

15.4 PROCEDURE

This procedure will be divided into subheadings under i) Maintenance and ii) Rehabilitation and Renewal, and will describe the MRR of each subsystem individually.

i) Maintenance

PROCEDURE DESCRIPTION

This procedure describes the maintenance activities performed within the Drinking Water System including scheduled maintenance (planned) and unscheduled maintenance (unplanned).

REASON FOR PROCEDURE

Maintenance activities significantly impact the equipment required to produce and distribute potable water. An effective maintenance program will reduce the overall Drinking Water System costs, improve drinking water quality and uniformity and result in increased consumer confidence. The Ministry of the Environment, Conservation and Parks (MECP) also requires equipment to be maintained according to the manufacturer's recommendations (Operation and Maintenance manuals).

RESPONSIBILITY

All staff who are directly involved in the supply of drinking water share in the responsibilities of maintaining and contributing to the continual improvement of the Drinking Water System.

The Director of Public Works is responsible for the overall operation, maintenance, planning, and review of the Drinking Water Systems.

The Operator-in-Charge (OIC) is responsible for the day to day operations of the Drinking Water Systems and provides updates to the ORO, the Project Manager, QMS Representative, and the Director of Public Works.

Planned Maintenance

Planned maintenance activities are assigned using electronic work orders generated through the maintenance software program *Jobs Plus* by the Maintenance Planner or designate. Open work orders identify the maintenance tasks to be completed. The Operator who is assigned to the work order is responsible to record observations, comments and concerns regarding the equipment and/or maintenance activity, document any parts that are consumed, sign off and submit the completed work order to the Maintenance Planner or designate for entry into *Jobs Plus*.

The Maintenance Planner or designate will regularly monitor the progress of the work orders and issue reminders to the Operators if the work orders are delinquent. The information reported on the work orders may be used for budget planning and preparation of the Infrastructure Review, Management Review, and Annual and Summary Report.

Planned maintenance items include, but are not limited to:

- Valve turning
- Hydrant flushing and maintenance
- Well inspections
- Reservoir and facility inspections
- Chemical feed system maintenance
- On-line monitoring equipment maintenance
- High lift pump and well pump maintenance

Unplanned Maintenance

Unplanned maintenance will be communicated to the Project Manager, ORO, QMS Representative, and Director of Public Works, and is coordinated by the Operators and/or contractors within normal operation budgets and purchasing limits.

If the equipment breakdown or failure constitutes a potential emergency, Emergency Management procedures in Element 18 shall be followed.

Staff is required to complete and submit a Corrective Maintenance work order to the Compliance Coordinator or designate, with copies being distributed to the Office Manager (for billing purposes) and the Owner. Any observations, comments or concerns regarding the equipment and/or maintenance activity shall also be recorded on the Corrective Maintenance work order.

Unplanned maintenance items include, but are not limited to:

- Watermain breaks, valve or fire hydrant failures
- Pump failures
- On-line monitoring equipment failures
- Process equipment failures
- Weather-related damages

ii) Rehabilitation and Renewal

PROCEDURE DESCRIPTION

Replacement of aging process equipment, upgrades and expansions required for the Drinking Water System and aging in-ground infrastructure required for the Water Distribution and Supply Subsystems are evaluated and compiled by the Director of Public Works, and summarized in the Town's Asset Management Plan.

REASON FOR PROCEDURE

As equipment and infrastructure ages, the requirement for rehabilitation and renewal due to failures, efficiency and capacity related issues becomes a necessity. Due to the large costs associated, a plan must be in place to ensure funds are available. As well as the costs associated, coordination of such projects requires many hours to plan, develop and implement prior to the work being completed.

RESPONSIBILITY

The following persons are responsible for the rehabilitation of and renewal planning required with the systems:

- 1) Director of Public Works
- 2) Project Manager
- 3) Overall Responsible Operator
- 4) All Operators

PROCEDURE

Using the "Forecasted Capital Requirements" in the Asset Management Plan and continuous monitoring of the maintenance programs, annual Capital Budget submissions are developed and submitted to Council for approval for the following year. Upon budget approval, the MRR proceeds following the appropriate Purchasing and Procurement Policy.

All employees are responsible to identify and communicate infrastructure issues, concerns and opportunities for improvement to management for review. This may occur through monthly summaries, staff meetings, annual reports or corrective action work orders. Information must be communicated with the QMS Representative for reporting and documenting purposes.

15.5 ASSOCIATED DOCUMENTS

E14 - Review and Provision of Infrastructure
E20 - Management Review - The Town of Goderich - Template
Google Drive: Annual and Summary Reports
Google Drive: Annual and Summary Report Data Tracking Spreadsheet
Jobs Plus Work Order - Template
Corrective Maintenance Work Order - Template

15.6 REFERENCE MATERIALS

The Town of Goderich Asset Management Plan

16. Element 16 - Sampling, Testing and Monitoring

16.1 PROCEDURE DESCRIPTION

This procedure outlines the sampling, testing and monitoring programs that are conducted for drinking water quality within the Drinking Water Systems.

16.2 REASON FOR PROCEDURE

To ensure sampling, testing and monitoring is conducted to provide safe drinking water for The Town of Goderich Drinking Water Systems.

16.3 DEFINITIONS

None Applicable

16.4 PROCEDURE

The Operating Authority is responsible for establishing and maintaining a Sampling, Testing and Monitoring program that, at a minimum, meets regulatory requirements.

The sampling program was developed to ensure that the sample locations used are in areas that are representative of the drinking water provided to the residents, and that an adequate number of samples are collected on a regular basis.

The sampling program and its associated documents are detailed in the Operations Manual.

Competent Operators perform all regulatory sampling requirements. They also conduct daily grab samples for on-line analyzer comparison and treatment optimization. Distribution sampling for chlorine residuals and flushing of dead end mains (as necessary) is also part of the program.

All bacteriological and chemical testing required for regulatory compliance is conducted by accredited laboratories.

All regulatory monitoring requirements are either carried out by the licensed Operators or by the SCADA monitoring software program (DataSoft).

Regulatory reporting is completed as required and is available to all members of the public upon request.

Sample test reports from the accredited laboratory are emailed to the Owner, Compliance Coordinator, ORO, Project Manager, Office Manager, and the on-call email.

The test results are compiled into the Annual Report Data Spreadsheet by the Compliance Coordinator.

Any Adverse Drinking Water Quality Incidents (AWQIs) are reported as per O. Reg. 170/03 outlined in the Operations Manuals.

16.5 ASSOCIATED DOCUMENTS

E16 - Sampling, Testing and Monitoring Summary Table - Goderich

Google Shared Drive: C of Cs (Chain of Custody)
Google Shared Drive: Annual and Summary Report Data Spreadsheet
Google Shared Drive: Blank Forms ,Adverse Forms

16.6 REFERENCE DOCUMENTS

Operations Manuals
Contingency Plans

17. Element 17 - Measurement and Recording Equipment Calibration and Maintenance

17.1 PROCEDURE DESCRIPTION

This procedure describes the method used by The Town of Goderich to ensure that all measurement and recording equipment is calibrated and maintained.

17.2 REASON FOR PROCEDURE

Accuracy of measurement and recording equipment is essential to providing quality drinking water to the consumer with confidence that the characteristics of the water meet or exceed the regulatory requirements.

17.3 DEFINITIONS

None Applicable

17.4 PROCEDURE

This procedure is applicable to the following types of equipment in use at facilities operated by The Town of Goderich:

- Instrumentation equipment including flow metering and level sensing
- On-line continuous chlorine residual analyzers
- Pocket Chlorine analyzers
- Pocket Turbidimeters
- pH pocket testers

The Operator shall conduct, where required, calibration and maintenance of all continuous monitoring and recording equipment, including portable hand held devices applicable to their individual subsystems. These calibrations shall be recorded into the corresponding logbook or tracking logsheets.

Work orders from the *Jobs Plus* maintenance software are generated and issued to the Operators to indicate when calibration of continuous monitoring equipment is required.

The frequency of calibration shall at a minimum meet the regulatory requirements or the manufacturer's recommended calibration requirements if the frequency is greater.

17.5 ASSOCIATED DOCUMENTS

Google Drive : Annual Calibration of Analyzers

17.6 REFERENCE MATERIALS

Operations Manuals

18. Element 18 - Emergency Management

18.1 PROCEDURE DESCRIPTION

This procedure describes the events and risks of The Town of Goderich Drinking Water System that are considered emergencies, as well as those responsible for managing the response and recovery measures.

18.2 REASON FOR PROCEDURE

To establish an effective and organised response procedure that relates to emergencies directly related to the safety of the Drinking Water Systems.

18.3 DEFINITIONS

Emergency (relating to the Town of Goderich): situations or impending situations caused by forces of nature, an accident, or an intentional act that constitutes a danger of major proportions to life and property.

Emergency (relating to the Drinking Water Supply Systems): a potential situation or service interruption that may result in the loss of the ability to maintain an adequate supply of safe drinking water to consumers.

18.4 PROCEDURE

The Town of Goderich will utilize the risk assessment process to identify potential emergencies and consider specific emergency preparedness requirements. By assessing risks against process or practice, instances that may or may not exceed the acceptable risk threshold will be identified as risks that require the need for appropriate controls and an emergency preparedness plan. These risks and emergency conditions will be evaluated and categorized into degrees of severity with most severe being Emergency Response Procedures (ERP), then Contingency Plans (CP) and the least severe being Standard Operating Procedures (SOP). This occurs during the risk assessment group review sessions. The assessments will be reviewed annually to ensure accuracy of the procedures.

An Emergency Contact List, along with the CPs, ERPs and SOPs, is available to ensure the effective response to any emergency event. All of these documents will be reviewed and updated periodically or as emergency conditions are assessed and categorized.

Emergency Response Testing is conducted annually in the form of a table-top scenario OR the review of an actual emergency event. In case of an actual event, an After Action Report/Improvement Plan report is completed in collaboration with all applicable staff involved.

Operators will be trained on a regular basis according to the QMS Emergency Management Training Procedure and on the contents of the Operations Manuals and Contingency Plans in order to identify and take the appropriate measure to address any emergencies using the specific plans and procedures and providing appropriate notification. The licenced Operator on duty for each system must be capable of identifying and be prepared for responding to any emergency condition that may arise in any of the Drinking Water Systems.

In the event of an identified major emergency (relating to The Town of Goderich Emergency Response Plan), the ORO responsible for the system shall be contacted immediately. After assessing the severity, the ORO will contact the Owner (Director of Public Works), Project Manager and Office Manager. The Director of Public Works is designated as the lead representative of the Operating Authority and will be responsible for all major emergencies and will dictate the overall management, decision making and communications.

Mayor and Council along with the CAO shall be notified in the event that water quality poses an acute health risk to customers and a Boil Water Advisory or Drinking Water Advisory must be issued. Mayor and Council, as well as the CAO, Fire Chief and the Director of Public Works, will be primary contacts for all required communication with the public during these emergencies. The Director of Public Works will be responsible for making the notification if deemed necessary.

18.5 ASSOCIATED DOCUMENTS

QMS - Longterm Spreadsheet
E7 - Goderich - Risk Assessment - Template

18.6 REFERENCE MATERIALS

The Town of Goderich Emergency Management Plan
Operations Manuals
Contingency Plans
Emergency Response Planning Guide - 2017 - Washington State DOH

19. Element 19 - Internal Audits

19.1 PROCEDURE DESCRIPTION

This procedure defines the process used by The Town of Goderich to conduct Internal Audits of the Drinking Water Quality Management System for all the Drinking Water Systems.

19.2 REASON FOR PROCEDURE

Internal Audits are conducted to confirm that the QMS meets or exceeds the requirements of the Ministry of the Environment, Conservation and Parks (MECP) Drinking Water Quality Management Standard (DWQMS), that the QMS is operating effectively and to identify opportunities for improvement.

19.3 DEFINITIONS

Corrective Action: actions taken to identify the root cause of a problem and apply actions to fix the identified problem.

System Non-Conformance: a system non-conformance is considered where:

- A procedure is not being followed as prescribed
- Objective evidence is not sufficient to support a claim that a procedure is followed accordingly, or
- The Operational Plan does not meet the requirements of the DWQMS.

19.4 PROCEDURE

It is the responsibility of the QMS Representative, that the audits are conducted in accordance with this procedure and frequencies required.

Internal Audits shall only be conducted by persons approved by the QMS Representative and having one of the following qualifications:

- A staff member who has completed Internal Audit training
- Employees of other Operating Authorities who have completed Internal Audit Training
- Non-qualified Auditors are permitted to assist an Auditor for the purpose of training and employee development.

At a minimum, Internal Audits shall be conducted once every calendar year. The audit frequency shall be increased for elements where a previous Internal or External Audit has identified either a major non-conformance or a series of minor non-conformances at the discretion of the QMS Representative. The scope of the Internal Audit includes all Management Systems and Operations that are applicable to the Drinking Water Systems that fall under the scope of the QMS.

It is the responsibility of the Internal Auditors to conduct these audits in a thorough and professional manner, document results, identify opportunities for improvement and

communicate the results to all parties involved in the Audit and the QMS Representative within 2 weeks of completing an Audit.

All Internal Audits shall be completed and a report generated prior to the annual Management Review Meeting.

Upon receipt of a Non-Conformance, the QMS Representative will follow the Root Cause Analysis Procedure/5-Whys or Wish-Bone Diagram and the root cause results and recommended actions to resolve the non-conformance by using the Root Cause Analysis Form.

An Audit will consist of the following phases:

- Audit preparation
- Conducting the Audit
- Reporting and follow-up,

and shall be completed according to the QMS Internal Audit Procedure.

19.5 ASSOCIATED DOCUMENTS

E19 - Internal Audit Report and Checklist

QMS - Longterm Spreadsheet

E19 - Root Cause Analysis - Fishbone Diagram - Template

E19 - 5 Why Root Cause Analysis - Blank Report Form

19.6 REFERENCE DOCUMENTS

Drinking Water Quality Management Standard

20. Element 20 - Management Review

20.1 PROCEDURE DESCRIPTION

This procedure defines the process by which the Quality Management System (QMS) is reviewed by utilizing the Management Review Committee.

20.2 REASON FOR PROCEDURE

Management reviews are conducted to assess and ensure the continuing suitability, adequacy and effectiveness of the QMS. In addition, the review provides a forum to support continuous improvement.

20.3 DEFINITIONS

None applicable

20.4 PROCEDURE

This procedure is applicable to The Town of Goderich Management, Veolia staff, and the Drinking Water Systems and activities that fall under the scope of the QMS.

A full Management Review shall be conducted at every calendar year, following completion and reporting of the year's Internal Audit. Top Management is responsible for ensuring that the review is conducted and conforms to the procedure.

Management Review Meetings may include the following participants:

- QMS Representative(s)
- Director of Public Works
- Project Manager
- CAO/Clerk
- Operator(s)
- Participants added at the discretion of the Management Review participants

The QMS Representative is responsible to report to Top Management on the performance of the QMS and any need for improvement. This is provided through a Draft Management Review Summary Report/Agenda.

The QMS Representative shall be responsible to prepare a Draft Management Review Summary Report/Agenda and issue copies prior to the Management Review Meeting to all participants. This Draft Report/Agenda shall have the following information:

- A. Incidents of regulatory non-compliance
- B. Incidents of adverse drinking water tests
- C. Deviations from Critical Control Point Limits and response actions
- D. The effectiveness of the Risk Assessment process
- E. Internal and Third-Party Audit results
- F. Results of emergency response testing
- G. Operational performance
- H. Raw water supply and drinking water quality trends
- I. Follow-up on Action Items from previous Management Reviews
- J. The status of Management Action Items identified between Reviews
- K. Changes that could affect the Quality Management System
- L. Consumer feedback
- M. The resources needed to maintain the Quality Management System
- N. The results of the Infrastructure Review
- O. Operational Plan currency, content and updates, and
- P. Staff suggestions.

For the Management Review Meeting, the following topics shall be presented:

- A review of the raw water supply and drinking water quality trending
- A review of the Drinking Water System's flows and capacities
- Any changes to Source Water Protection within the Drinking Water Systems
- A review of the Annual and Summary Reports
- Any changes to Best Management Practices, Emergency Exercises and related initiatives (continual improvement)
- Any directions or considerations published by the Ministry of the Environment, Conservation and Parks, World Health Organization, Local Health Units, Emergency Management Ontario, etc..

For all deficiencies identified during the Meeting, the Management Review participants may identify any Action Items and/or Action Plans, personnel responsible for implementation, and timeframes of Action Items required. Alternatively, deficiencies may be addressed by initiating Corrective Actions.

After the Management Review Meeting, any comments, recommendations, changes, plans, etc.. shall be documented in the Final version of the Management Review Summary Report, and copies are then circulated to the participants as a record of the Meeting Minutes.

The QMS Representative shall be responsible for communication and implementation of the Management Review Action Items. The Final Management Review Summary Report shall be made available to Mayor and Council after all items have been addressed, as required.

20.5 ASSOCIATED DOCUMENTS

- QMS - Longterm Spreadsheet
- E14 - Review and Provision of Infrastructure
- E18 - After Action Report/Improvement Plan
- E20 - Management Review - The Town of Goderich - Template

20.6 REFERENCE MATERIALS

- Drinking Water Quality Management Standard

21. Element 21 - Continual Improvement

21.1 PROCEDURE DESCRIPTION

The Town of Goderich will maintain its established Drinking Water Quality Management System by regular review and continual improvement.

21.2 REASON FOR PROCEDURE

To continually improve the effectiveness of the Quality Management System through the use of corrective actions.

21.3 DEFINITIONS

Best Management Practice (BMP): a program, process or procedure which, if implemented, may assist the Owner and Operating Authority of a Drinking Water System to deliver safe, high quality drinking water; provide mechanisms to optimize efficiencies within the Drinking Water System and/or QMS, and provide information to assist in future planning for the systems.

Corrective Action: an action to eliminate the cause of a detected Non-Conformance with QMS, with the requirements of the DWQMS, or other undesirable situations.

Management Review Action Items (AI): Action Items identified formally through Element 20 - Management Review process.

Non-Conformance (NC): the non-fulfillment of a DWQMS requirement.

Opportunities for Improvement (OFI): improvement suggestions.

Preventive Action: an action to prevent a non-conformity from occurring.

21.4 PROCEDURE

With the use of tools such as Document Change Requests, Corrective Action Requests and Preventative Action Requests, The Town of Goderich will modify, update and/or adjust processes and procedures (while remaining in compliance with MECP regulations) to improve operations and customer satisfaction. The review of Best Management Practices (BMPs) at least once every 36 months (including checking the Ministry's Best Practices webpage) will be completed in conjunction with the annual Management Review process.

The QMS Representative will be responsible for maintaining the OFI Tracking Sheet, along with the Preventative and Corrective Actions Tracking Sheet, and Management Review Action Item Tracking Sheet. Preventative and Corrective Actions and OFIs may stem from the Internal and External Auditing process, MECP Drinking Water Inspections, Management Review and staff suggestions and ideas. OFIs will be discussed, evaluated and ultimately implemented as necessary.

21.5 ASSOCIATED DOCUMENTS

Google Drive: OFI Tracking Sheet

Google Drive: Annual and Summary Report Data Spreadsheet

21.6 REFERENCE MATERIALS

None applicable

REVISION HISTORY

Revision	Date	Summary of Changes	Revised by
14	March 30, 2023	Update to Google Doc format, new design, added introduction, rearranged definitions, removed signatures to separate associated documents, added revision levels in footer, change QAQS title to Compliance Coordinator, change Area Manager to VP Operations, added reference to Cross Border Bylaw with North Huron.	ST
13	Jun 8, 2021	Revisions to A1, A2, E1, E2, E3, E4 and F1	ST
12	Jul 11, 2019	Reformat/font/appearance, update information in entire document	NM
11	May 23, 2018	Rev to May 23, 2018 Annual Review from update to 2.0 Standard	CG
10	May 29, 2017	Updated Table of Contents, E10, App A1, A2, I1 and M1 from Annual Review	CB
9	Apr 25, 2017	E11, E13, E21, App N1 and N2 updated from Internal Audit	CB
8	Mar 23, 2017	E2, E2, and E3 updated from Internal Audit	CB
7	Feb 21, 2017	E1, F1, and F2 updated from Internal Audit	CB
6	Dec 7, 2016	E4 updated from Internal Audit	CB
5	Mar 22, 2016	A1 updated from Internal Audit	DCS
4	Mar 20, 2015	A1, H1, I1 and J1 updated from Internal Audit	DCS
3	Apr 15, 2014	E6 - updated system descriptions	DCS
2	Jun 23, 2013	Updated Op Plan Elements and Appendices	DCS
1	May 15, 2010	E18 & E19 revisions per CGSB CARs	DCS
—	Feb 15, 2010	Release	DCS