

# DRINKING WATER QUALITY MANAGEMENT SYSTEM OPERATIONAL PLAN



## WATER OPERATING AUTHORITY FOR THE



The Municipality of **Lambton Shores**

## EAST AND WEST LAMBTON SHORES WATER DISTRIBUTION SYSTEMS

This Operational Plan defines and documents the Quality Management System (QMS) for the Municipality of Lambton Shores East and West Drinking Water Systems operated by Operations Management International Canada Inc. (OMI) – Jacobs.

**2.0 Standard Update – October 16, 2018**

Approved and Authorized for Use – June 26, 2019

Rick Marsh – Top Management

A handwritten signature in black ink, appearing to read "Rick Marsh".

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Operational Plan  
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03/03/14, May 8/14, Jun 3/14, Aug 26/14, Mar 30/15, Jul 26/16

<b>JACOBS</b>	Title: Quality Management System	Approval Date: 04/05/19
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Element 1		
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## 1 Quality Management System

This document will be the Quality Management System Operational Plan for the East Lambton Shores Water Distribution System Number 260006568, and the West Lambton Shores Water Distribution System Number 260006581 and meets the requirements of the Ministry of Environment Drinking Water Quality Management System Standard.

The Quality Management System for the East Lambton Shores Water Distribution System and West Lambton Shores Water Distribution System covers the transmission and distribution of potable drinking water to consumers within the Municipality of Lambton Shores. Treated potable drinking water is purchased from the Lake Huron Primary Water Supply System (LHPWSS) Number 210000791 and the Lambton Area Water Supply System (LAWSS) Number 210000906. The water enters the East Lambton Shores Water Distribution System from three connection points to the LHPWSS. The primary supply point is a 600mm connection on the B Line in the Municipality of South Huron and one secondary/emergency 350mm supply point at the north boundary of Lambton Shores at Grand Bend, Hwy 21 as well as one secondary/emergency 150mm supply point from the North Middlesex Number (26006529) system at the Ausable River between North Middlesex and Lambton Shores. The water enters the West Lambton Shores Water Distribution System through a 300mm connection at the intersection of Townsend Line and Lakeshore Road. The Municipality of Lambton Shores is a member of the Joint Board of Management for the LHPWSS and the LAWSS.

Revision Date: 041410, Mar 26/14, May 8/14, Apr 5/19



Ministry of the Environment and Climate Change

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

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

Owner of Municipal Residential Drinking Water System \*  
Lambton Shores, The Corporation of the Municipality of  
Name of Municipal Residential Drinking Water System \*  
East and West Lambton Shores Distribution Systems

#### Subject Systems

Check here if the Municipal Residential Drinking Water System is operated by one operating authority. Enter the name of the operating authority in the below table.

	Name of Operational Subsystems(if Applicable)	Name of Operating Authority *	DWS Number(s) *
1	East Lambton Shores Drinking Water Syst	OMI Canada Inc. (Jacobs)	260006568
2	West Lambton Shores Drinking Water Syst	OMI Canada Inc. (Jacobs)	260006581

[Add item \(+\)](#)

Provide the information outlined in the 'Contact Information' section for each Operational Subsystem.

#### Contact Information 1

Last Name *	First Name *	Middle Initial	<a href="#">Remove</a>
Marsh	Rick		
Title *	Phone Number *		
Senior Project Manager	519 490-5576		
Email Address *			
richard.marsh@jacobs.com			

#### Contact Information 2

Last Name *	First Name *	Middle Initial	<a href="#">Remove</a>
Marsh	Rick		
Title *	Phone Number *		
Senior Project Manager	519 490-5576		
Email Address *			
richard.marsh@jacobs.com			

<b>JACOBS</b>	Title: Quality Management System Policy	Approval Date: 06/03/14
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Element 2		
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## 2 Quality Management System Policy

The Operating Authority of the East Lambton Shores Water Distribution System and the West Lambton Shores Water Distribution System are committed to comply with all water legislative requirements and regulations to supply clean safe drinking water to meet the consumers' requirements and understands the importance of the maintenance and continual improvement of the Quality Management System.

### Refer to Annex F – Policy Statement

Revision Date: 041410, 060413, May 8/14, Jun 3/14

<b>JACOBS</b>	Title: Commitment and Endorsement	Approval Date: 11/23/15
		Revision No: 6
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### 3 Commitment and Endorsement

The Owner and Top Management will endorse the Operational Plan of the Drinking Water Quality Management System.

- a) Ensuring that a QMS is in place that meets the requirements of the Standard
- b) Ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements
- c) Communicating the QMS according to the procedure for communications, and
- d) Determining, obtaining or providing the resources needed to maintain and continually improve the QMS
- e) The Owner and Top Management will endorse the Operational Plan and should be re-endorsed when there is a major change in the plan's intent or when the majority of signing parties are no longer filling positions.

Refer to Annex A - Endorsement

Revision Date: 041410, 111511, May 8/14, Aug 26/14, Nov 23/15

<b>JACOBS</b>	Title: Quality Management System Representative	Approval Date: 04/15/19
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#### **4 Quality Management System Representative**

The Administrative Specialist will be the QMS Representative or in her/his absence, the Lead Operator.

The Quality Management System representative irrespective of other responsibilities shall:

- a) Administer the Quality Management System by ensuring the processes and procedures needed for the Quality Management System are established and maintained
- b) Report to Top Management on the performance of the Quality Management System and any need for improvement
- c) Ensure that current versions of documents required by the Quality Management System 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 subject system, and
- e) Promote awareness of the Quality Management System throughout the Operating Authority

Refer to – Annex D – Organization Responsibilities

Revision Date: 041410, May 8/14, Aug 26/14, Apr 15/19

<b>JACOBS</b>	Title: Document and Records Controls	Approval Date: 08/26/14
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## 5 Document and Records Control

All records to demonstrate compliance and or conformance shall be maintained per the Safe Drinking Water Act.

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

Operational Plans that are the subject of an audit by an auditor for the accrediting body shall be retained for 10 years by the owner of the Operational Plans and Accredited Operating Authority for the subject system to which the Operational Plans apply.

### Refer to PROCEDURE A - Document and Records Control

Revision Date: 041410, 06/04/13, 03/03/14, May 8/14, Aug 26/14



<b>JACOBS</b>	Title: Drinking Water System	Approval Date: 06/26/19
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## 6 a. East Lambton Shores Water Distribution System

The East Lambton Shores Water Distribution System is owned by the Municipality of Lambton Shores and is operated under contract by Operations Management International Canada Inc (OMI). Due to the heavy influx of tourists and the summer season use the Lambton Shores water consumption increases by approximately 230% during the months of June, July and August as compared to the winter months.

The north and easterly part of Lambton Shores is supplied by water from the Lake Huron Primary Water Supply System (LHPWSS) through its connection to the twin 1200mm lines at the B Line in the municipality of South Huron (LHPWSS). The LHPWSS is owned by the Joint Management Board and operated by Ontario Clean Water Agency (OCWA).

The Municipality of Lambton Shores obtains its drinking water supply from (LHPWSS). The raw source water already meets the Ontario drinking water standards when it enters the Lambton Shores Water Distribution System. The LHPWSS Water Treatment Plant (WTP) employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, post-chlorination, and pH adjustment using sodium hydroxide to treat raw water obtained from Lake Huron. The WTP intake crib and raw water intake pipe have an estimated gross capacity of 454.6 Megalitres/day (MLD). The WTP rated capacity is 340.0 MLD. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system. Common event driven fluctuations can include rough lake conditions which can increase turbidity levels; weather related events, storm runoff, zebra mussels and lake turn over. The LHPWSS treatment plant is responsible for responding to any operational challenges or threats posed by the event driven fluctuations. For site specific information refer to [WWW.watersupply.ca](http://WWW.watersupply.ca).

The Lambton Shores line is 600mm and is connected to a Pressure Reducing Valve (PRV) Chamber and a Metering Chamber approximately 110m from the connection point. The PRV in this chamber is set at approximately 850 kPa (125 psi) and can be adjusted by (LHPWSS) operations staff. The 600 mm main runs south on B Line, west on Hwy 81, south along the Mollard Line before going across country and crossing the Ausable River to connect into a 600mm line and Control Valve and Flow Meter, just south of the entrance to the Huron Woods Subdivision on Hwy 21. The Control Valve modulates the flow based on the water level in the Northville Tower. The 600mm line also connects to a 350mm line and PRV chamber running north to serve Grand Bend and area. This PRV is set at 525 kPa (76 psi). From this point on all lines serve as both transmission and distribution lines with direct service connections tied in. The

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south bound 600mm line continues to Northville at the intersection of Hwy 21 and Port Franks Road where a 450mm line runs south on Port Franks Road to the Northville Elevated Tower. On Hwy. 21 the 450mm line continues south west from Northville to serve the Ipperwash area. This 450mm line is connected in a chamber at Ravenswood to the 300mm line extending north east along Hwy. 21 from the Lambton Area Water Supply System (LAWSS) which originates in Point Edward.

From the Northville Elevated Tower a 300mm line runs south along Northville Road delivering water at approximately 275 kPa (40 psi) to a Booster Pump Station at the intersection of Ravenswood Line. From the Booster Pump Station a 300mm line runs at approximately 990 kPa (143 psi) when the pump is running south on Northville Road and then east on Townsend Line into Arkona. When the pump shuts off the Arkona Standpipe maintains the Zone pressure at 655 kPa (95 psi) back at the Booster Pump Station. At the Booster Pump Station there is a 250mm bypass line that runs east on Ravenswood Line to Thedford where it fills the underground reservoir at Gordon Rd. through a control valve.

The East Lambton Shores Distribution System can also be supplied water from the Lambton Area Water Supply System (LAWSS) through the interconnection to the LHPWSS at Ravenswood. Through this interconnection the Northville Elevated Tower can be filled and can in turn supply the East Lambton Shores Water Distribution System in the case of an emergency. The LAWSS system is owned by the LAWSS Joint Management Board and is operated by OCWA.

**Refer to Annex B - System Schematic**

**Northville Elevated Tower**

The Northville Elevated Tower is filled from the LHPWSS as described above. The level of the elevated tower is used to activate the control valve at the Hwy 21 chamber at Huron Woods to maintain the tower level. This Huron Woods control valve is controlled by a Supervisory Control and Data Acquisition (SCADA) system that also allows online status monitoring and manual operation from remote locations. The SCADA system computer is located in the base of the tower which gives excellent off site backup facilities and is supported by an auto start generator in the case of a power failure. The Northville Elevated Tower provides secondary disinfection with a chlorine injection and a recirculation system that keeps the chlorine residual in the tower at an adequate range to meet regulations. The Northville Elevated Tower supplies the pressure zone (Zone 1) from the Hwy 21 chamber at Huron Woods to Ipperwash, Port Franks and the Northville Booster Pump Station.

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### **Northville Booster Pump Station**

The Northville Booster Pump Station at the intersection of Northville Road and Ravenswood Line is required to increase the pressure in order to supply water to the Arkona Standpipe in Zone 2. The pumps are controlled by the level of the water in the Arkona Standpipe through the SCADA system which can also be operated manually. The two booster pumps cycle alternately on demand from the Arkona standpipe. Once the standpipe is filled it supplies the zone pressure for Arkona and the rural area back to the Northville Booster Pump Station. The Northville Booster Pump Station has an auto start diesel generator which will supply adequate power to run the pumping system. There is a chlorine residual monitor at this location which is equipped for online monitoring through SCADA.

### **Thedford Reservoir and Pump Station**

The Thedford reservoir is filled by gravity from the Northville Elevated Tower through a 250mm line with a control valve in a chamber just ahead of the reservoir. There is a four pump system across Gordon Road from the reservoir which supplies the pressure for the Thedford distribution system. The pumps are staged to run as the pressure decreases with the fourth pump coming on for fire rated flows. The operating pressure is maintained in a range from 350 kPa (51psi) to 475 kPa (69psi) in the Thedford system and is metered on the discharge line. The chlorine level averages 0.8 mg/L. The Thedford Pump System has an auto start diesel generator which will supply adequate power to operate the complete pumping system. The Thedford system can also be supplied water from the LHPWSS through a 150mm line coming from the Parkhill, North Middlesex distribution system. This system is owned by the Municipality of North Middlesex and operated by OCWA. This can be used as an emergency supply source but the valve into the reservoir is normally in a closed position. There are a few Lambton Shores customers supplied from this line and a constant flow is maintained to the reservoir through a 19 mm connection in order to sustain water quality in the transmission main.

### **Arkona Standpipe**

The Arkona standpipe is located on Townsend Line at the east side of Arkona and provides level control signals to the Northville Booster Pump Station. There is also an automated chlorine residual monitor connected to the municipal SCADA System on the municipal water supply at the Arkona Sewage Treatment Plant which is at the north end of the Arkona water distribution system. The chlorine residual at this point averages 0.9 mg/L.

### **Other Possibilities:**

The East Lambton Shores Water Distribution System is very flexible in that it can be controlled to supply water to the West Lambton Shores Water Distribution System (WLSWDS) in emergency situations. By isolating the Northville Elevated Tower and

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fully opening the Huron Woods Control Valve water can be pushed directly to Forest to fill the Forest Standpipe in the WLSWDS or by locking out the Northville Booster Pump Station can push water directly to Arkona and can maintain the operating level in the Standpipe there. During this time of emergency feed to Forest or to Arkona the existing 50mm inlet valve would be opened into the Thedford Reservoir from Parkhill which would supply the Thedford Distribution System and would increase the supply available for the other areas.

The original 350mm transmission main coming into Grand Bend from South Huron can also be used for additional supply in the case of emergency or if the B Line connection is taken out of service for any reason. This line can also be used to push water north back into South Huron and further into Bluewater if necessary. The Municipality of South Huron is the owner and operator of the South Huron Drinking Water System. The Municipality of Bluewater is the owner and Ontario Clean Water Agency (OCWA) is the operator of the Bluewater Drinking Water System. This 350mm line valve is normally closed at the Grand Bend boundary and is metered coming into Lambton Shores but is not metered for service back into South Huron.

### **6 b. West Lambton Shores Water Distribution System**

The West Lambton Shores Water Distribution System is owned by the Municipality of Lambton Shores and is operated under contract by OMI.

The western part of Lambton Shores includes the former Town of Forest as well as the area from Fuller Road to Lake Huron and as far north as Kettle Point. This system receives its drinking water supply from LAWSS which is owned by Joint Board of the Lambton Area Water Supply System (LAWSS) and operated by Ontario Clean Water Agency (OCWA).

The Municipality of Lambton Shores obtains its drinking water supply from the Lambton Area Water Supply System (LAWSS). The Lambton Area Water Supply System (LAWSS) is a direct filtration facility with a maximum rated capacity of 181,844 m<sup>3</sup>/day. The Water Treatment Plant (WTP) uses chemically assisted filtration with disinfection. The facility consists of an intake system, a low lift pumping system, a treatment system and distribution pumping system that supplies water to seven different drinking water systems. Water is drawn into the plant (a zebra mussel chemical control system is available when needed) via a 1675 mm intake pipe, located approximately 100 m into the St. Clair River at a depth of 15 m. The water passes through travelling screens prior to entering the surge wells and pre-disinfection is utilized. Water flows to the low lift pump wet wells where a total of 4 vertical turbine pumps are located and used as needed. The water is then pumped to a common discharge header where a coagulant is added and then flash mixed. Powdered activated carbon (PAC) is also applied at this location when needed to control taste and odor problems. The water is then flocculated with polymer being added when needed. Polymer can be added to any and all of the following as required: to the flocculation trains, filter inlet channels and each filter. Water from the flocculators is then sent to

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be filtered by dual media filters (10 filters in total). The filter effluents combine into two clearwells via gravity where sodium hypochlorite is added. To increase the chlorine contact time, the treated water is diverted to two baffled reservoirs (in series with total capacity of 67460 m<sup>3</sup>). The water is fluoridated upon exiting the reservoirs. Six vertical turbine pumps are available for supplying water to the distribution system. The water treatment process and distribution components are controlled by a dedicated supervisory control and data acquisition (SCADA) computer system and are monitored by a certified operator 24 hours a day. Emergency generators powered by diesel are available at the WTP to keep the plant in operation should a power failure occur. Backwash from the dual media filters is treated using a high rate clarification process (ACTIFLO). The clarified water is dechlorinated and then discharged to the St. Clair River and the settled material is sent to the Sarnia Water Pollution Control Plant for final treatment and disposal. This system is referred to as the Residual Management System. Common event driven fluctuations can include rough lake conditions which can increase turbidity levels; weather related events, storm runoff, zebra mussels and lake turn over. The LHPWSS treatment plant is responsible for responding to any operational challenges or threats posed by the event driven fluctuations. For site specific information refer to lawss.org. This distribution system does not provide secondary disinfection.

This system is served by a 300mm PVC line which enters Lambton Shores at the corner of Townsend Line and Lakeshore Road that records water going into the standpipe as well as any water going back into the LAWSS to provide a pressure zone in neighbouring Plympton/Wyoming municipality. There is a meter chamber immediately south west of this intersection on Lakeshore Road which records all usage coming into this area. The main waterline on Townsend Line from Lakeshore to the Water Storage Standpipe as well as the Standpipe in Forest is owned by LAWSS. The meter chambers, Townsend Line water main and the Standpipe storage is maintained and controlled by the LAWSS contract operator Ontario Clean Water Agency (OCWA). The OA has SOP's to check chlorine disinfectant residuals and act as required.

The West Lambton Shores Water Distribution System can also be supplied potable water from the East Lambton Shores Water Distribution System by opening the normally closed isolation valves at the intersection of Lakeshore Road and West Ipperwash Road interconnect. Through this interconnection point water can be supplied from the East Lambton Shores system to maintain the Standpipe at an acceptable level to serve the West Lambton Shores system. This interconnection would only be used in emergency situations since the East Lambton Shores System was not designed for peak demands in the West Lambton Shores System.

- Refer to Annex B - System Schematic**
- SOP 9.2 Calibration of Online Chlorine**
- SOP 7.3 Test for Free Chlorine Analyzer Residual**
- SOP 10.1 Watermain and Hydrant Flushing Procedure**

Revision Date: 041410, 12/18/13, 02/20/14, Mar 26/14, May 8/14, Mar 30/15, Jun 24/15, Mar 26/18, Oct 16/18, Apr 5/19, Apr 15/19, Jun 26/19

	Title: Risk Assessment and Risk Assessment Outcomes	Approval Date: 04/05/19
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## 7 & 8 Risk Assessment and Outcomes

Top Management, QMS Representative and Operators make up the team to identify additional potential hazards and hazardous events which could affect the water system, the control measures to address the hazards, identify the Critical Control Points and control limits, and associated methods of monitoring the controlling them.

Considers potential hazardous events and associated hazards, as identified in the Ministry of Environment Conservation and Parks document titled Potential Hazardous Events for Municipal Residential Drinking Water Systems, dated February 2017 as it may be amended, a copy of this document is available at [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

Hazardous events and hazards were assessed on the basis of likelihood, severity and detectability. The assessment criteria are summarized in the following tables and values were combined to give an overall level of risk as shown.

Top Management, QMS Representative and Operators will review the risk assessment and ensure that the information and assumptions remain current and valid once every Calendar Year.

Once every thirty six months Top Management will assemble a team to conduct a new risk assessment, to ensure the risks are assessed.

**Refer to PROCEDURE B - East Lambton Shores Assessment & Outcomes**

**Refer to PROCEDURE C - West Lambton Shores Assessment & Outcomes**

Revision Date: 041410, 120310, May 8/14, Oct 9/18, Feb 6/19, Apr 5/19

<b>JACOBS</b>	Title: Organizational Structure, Roles, Responsibilities and Authorities	Approval Date: 08/26/14
		Revision No: 3
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## 9. Organizational Structure, Roles, Responsibilities and Authorities

Top Management shall keep the operational structure, respective roles, responsibilities and authorities current, and shall communicate this information to the owner and personnel.

**Refer to Annex C - Organizational Chart**

**Refer to Annex D - Organizational Responsibilities and Authorities**

Revision Date: 041410, Aug 26/14

<b>JACOBS</b>	Title: Competencies	Approval Date: 04/05/19
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## 10 Competencies

The following table illustrates the competencies required by personnel whose duties directly affect drinking water quality.

<b>Function</b>	<b>Required Competencies</b>	<b>Desired Competencies</b>
Senior Project Manager	<p>Class III Operators Certification or next lower level for the size and complexity of the system</p> <p>Knowledge of the principles and practices of water distribution, operating principles of valves, pumps and motors</p> <p>Knowledge of principles and methods of bacteriological analyses</p> <p>Demonstrated expertise in the principles of supervision and training; principles of budget preparation and expenditure control; and safe work practices</p> <p>Valid Driver's License</p>	<p>First Aid including CPR Training</p> <p>Confined Space Training</p> <p>WHMIS</p> <p>Leadership Training</p>
Overall Responsible Operator/ Lead Operator	<p>Class III Certification</p> <p>Knowledge of principles and practices of water distribution, operating principles of valves, pumps and motors</p> <p>Valid Driver's License</p>	<p>First Aid including CPR Training</p> <p>Confined Space Training</p> <p>WHMIS</p> <p>Leadership Training</p>
Operators	<p>OIT</p> <p>Knowledge of the principles and practices of water distribution, operating principles of valves, pumps and motors</p> <p>Valid Driver's License</p>	<p>Class 1 Certification</p> <p>First Aid including CPR Training</p> <p>Confined Space Training</p> <p>WHMIS</p>
Administrative Specialist	<p>Knowledge of the water distribution system, internal auditing training, knowledge of the Principal and Best Practices of the DWQMS Operational Plan</p>	<p>Organizational Skills</p> <p>Schedules – staff reviews of Operational Plan, manuals, facility tour, internal audits, management reviews</p>



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		DWQMS Provincial Workshop training First Aid, CPR WHMIS Response to external audits
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Activities to develop and or maintain competencies for personnel performing duties directly affecting drinking water quality include the following: Certified Operators are responsible for completing the annual number of required training hours as per applicable regulations. This training consists of both continuing education and on the job training and is delivered using a combination of methods. (e.g. classroom courses and custom courses/sessions. All certified operators are required to complete once every calendar year review of the Operational Plan, East and West Operations Manuals and complete once every calendar year emergency testing and training to ensure that personnel are aware of the relevance of their duties and how they effect safe drinking water. Certified operators are also required to complete the mandatory drinking water course to the requirements for licence renewal. The Senior Project Manager takes reasonable steps to ensure that every operator has the opportunity to attend training to meet the requirements. Individual employee records are maintained and tracked. Training records are controlled in accordance with QMS Operational Plans Item 5.0 Document and Record Control.

Revision Date: 041410, 03031, 02/20/14, May 8/14, Aug 26/14, Nov 25/15, May 30/17, Oct 16/18, Apr 5/19

<b>JACOBS</b>	Title: Personnel Coverage	Approval Date: 04/05/19
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## 11 Personnel Coverage

The water department is staffed from Monday to Friday 8:00 am to 4:30 pm five days per week. The Senior Project Manager is the primary overall responsible operator (ORO) and the back-up ORO is tracked through East and West Lambton Shores Drinking Water Log books.

The 24/7 personal coverage procedure shows how after hour emergencies are handled. Competent Jacobs - OMI personnel can be available from nearby projects in times of potential staff shortages. The auto dialer dials directly to the pager carried by the On Call OMI staff person.

Level 1 Operators and OIT's (operators-in training) can work on their own with an OIC (operator-in-charge) being readily available by phone. Employees not licenced cannot make any operational changes to the system. Sub-contractors if required are prequalified and used at the discretion of the OIC.

### Refer to PROCEDURE D – Personnel Coverage

Revision Date: 041410, 18/12/13, May 8/14, Aug 26/14, Jul 26/16, Mar 26/18, Feb 6/19, Apr 5/19

<b>JACOBS</b>	Title: Communications	Approval Date: 04/15/19
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Element 12		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 12 Communication

The QMS Representative shall make sure the Owner Representative is provided with a current copy of the Operational Plan. The QMS Representative shall keep the owner informed of any changes to the QMS, the adequacy of infrastructure requirements, the outcome of management reviews and other issues about the QMS. Any updates are provided through regular reports to the owner.

Operating Authority personnel will be informed of the QMS and of any changes or updates to it through staff meetings with the QMS Representative. A current version of the Operational Plan is available for review by staff at the Water Department Office.


Essential suppliers identified by the OA or Owner shall receive communication essential supplies letter – controlled document (W22-01) regarding the QMS from the purchaser when there are changes to legislation or regulations relevant to the supplier by phone or email.

Consumers will be informed of the QMS and any significant changes through the website [www.lambtonshores.ca](http://www.lambtonshores.ca)

The QMS policy will be posted at the Water Department Office. It can also be viewed on the municipal web site.

Revision Date: 041410, 100711, May 8/14, Aug 26, Mar 30/15, Nov 23/15, Oct 19/16, Oct 16/18, Apr 15/19

### Refer to Annex E – Essential Supplies and Services

	Title: Essential Supplies and Services	Approval Date: 04/15/19
		Revision No: 7
		Page 1 of 1
Element 13		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

### 13 Essential Suppliers and Services

Where applicable, supplies must meet or be equal to AWWA specifications. Supplies are verified against the order requisition when received.

Annex E is a list of suppliers and contractors that has been developed. This list is reviewed once every Calendar Year by the QMS Representative to ensure that it is current and up-to-date.

Contractors are selected based on their qualifications and ability to meet the facility's needs without compromising operational performance and compliance with applicable legislation and regulations.

Contracted personnel including suppliers may be requested or required to participate in additional relevant training/orientation activities to confirm conformance requirements.

If necessary, appropriate control measures are implemented while contracted work is being carried out and communicated to all relevant parties to minimize the risk to the integrity of drinking water system and the environment.


All third-party drinking water testing services are provided by accredited and licensed laboratories.

Calibration services are provided by qualified personnel.

Chemicals purchased for use in the drinking water treatment process must meet AWWA Standards and be ANSI/NSF certified.

#### **Refer to Annex E - Essential Services Suppliers and Services Contact List**

Revision Date: 093009, 041410, May 8/14, Oct 9/18, Apr 5/19, Apr 15/19

	Title: Review and Provision of Infrastructure	Approval Date: 04/05/19
		Revision No: 7
		Page 1 of 1
Element 14		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 14 Review and Provision of Infrastructure

The Owner Representative and Top Management will once every Calendar Year tour all the facilities and review the Inventory List (Item 8.2) in the East and West Lambton Shores Operations Manuals to determine that the proper infrastructure is in place to operate and maintain the subject systems, in addition, considers the current outcomes of the Risk Assessment documented to ensure the adequacy of the infrastructure necessary to operate and maintain the system. This review will be completed once every Calendar Year at the Management Review. CMMS report data review to be included in the once every Calendar Year infrastructure tour to ensure no items identified in the system are missed to be communicated to the Municipality. This review will also determine the need of replacement parts within the infrastructure and add them to the capital replacement plan.

Top Management will communicate with the Owner Representative once every Calendar Year the results of the review to ensure that the adequate infrastructure needs are added to the Capital Plan to maintain the subject systems and that the proper funding is available.

Revision Date: 093009, 041410, 12//18/13, May 8/14, Oct 16/18, Apr 5/19

<b>JACOBS</b>	Title: Infrastructure Maintenance, Rehabilitation and Renewal	Approval Date: 10/16/18
		Revision No: 7
		Page 1 of 1
Element 15		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 15 Infrastructure, Maintenance, Rehabilitation and Renewal

The Water Operating Authority has a water distribution maintenance program which includes regular flushing of dead end system main lines, system pressure regulator valve testing, and valve exercising program. Records will be kept at the Water Department.


The maintenance of equipment within the distribution system is completed as stated in the East and West Lambton Shores Operations Manuals Item 8.1.

Unplanned maintenance is conducted as required and is completed by licensed operators under the direction of the Overall Responsible Operator. All maintenance is completed within government regulations and AWWA standards.

Monthly operating reports are provided to the Project and Infrastructure Manager that summarizes the repairs and maintenance of the drinking water system for review.

At least once every Calendar Year during the Management Review, the long term forecast included in the Owner's Capital Program, Water System Report, will be reviewed by the Owner and OA to ensure both parties have opportunity to provide input.

Revision Date: 093009, 041410, 18/12/13, Mar 26/14, May 8/14, Mar 30/15, Oct 16/18

	Title: Sampling, Testing and Monitoring	Approval Date: 04/15/19
		Revision No: 11
		Page 1 of 1
Element 16		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 16 Sampling, Testing and Monitoring

There are five on-line continuous Chlorine Analyzers at strategic locations in the Municipality.

Sterile sample bottles are received from the laboratories and qualified operators are required to take samples using procedure SOP 7.1 in the Operations Manuals.

Relevant sampling, testing and monitoring is done upstream by LHPWSS and LAWSS and North Middlesex. They ensure that the water supplied meets the Ontario Drinking Water Quality Standards (ODWQS) and has a minimum free chlorine residual of 0.20 mg/l. They have on-line chlorine residual analyzers, pressure gauges flow monitoring on the treated water leaving the plant.

Eight (8) water samples are taken from various locations throughout the Municipality weekly and tested at the accredited SGS Canada Inc. - London laboratory for E. coli, and coliform. SGS Canada Inc. – Lakefield laboratory does our testing for haloacetic acid (HAA) and trihalomethanes quarterly and lead as required by O Reg 170. The chlorine residuals are also checked manually by the operator at these sites at the same time that the microbiological samples are taken. Results of testing from the labs are entered into the Water Trax programs by the laboratory. The laboratory will notify the operating authority immediately, orally, of any adverse readings the operating authority will reference SOP 7.4, Adverse Water Quality Response. The operating authority in turn will orally notify and record the name of the local Medical Officer of Health and the MOE Spills Action Centre person spoken to. Within twenty-four hours of this notification, the lab will send Section 1 of Notice of Adverse Test Results to operating authority and operating authority will complete Section 2 (a) indicating the corrective action to be taken by the operating authority. These forms will be faxed to the Medical Officer of Health, MOE Spills Action Centre and Owner. Once the sample has been re-tested and the results received, Section 2 (b) will be completed and sent to the Medical Officer of Health and the MOE Spills Action Centre and Owner.

These papers will then be filed in the East or West Lambton Shores Water Distribution System Binders and retained as per regulations. The annual report will show any adverse readings and will be available to the owners and public.

Refer to – SOP 7.1 – Microbiological Sampling

Refer to - 7.4 – Adverse Water Quality Response

Refer to – SOP 7.5 Microbiological Sampling Schedule & Location

Revision Date: 04/14/10, 12/03/10, May 8/14, Jun 3/14, Oct 8/14, Mar 30/15, Nov 23/15  
Mar 22/17, May 30/17, Mar 26/18, Apr 5/19

<b>JACOBS</b>	Title: Measurement and Recording Equipment Calibration and Maintenance	Approval Date: 10/08/14
		Revision No: 5
		Page 1 of 1
Element 17		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 17 Measurement and Recording

The portable and online chlorine analyzers are calibration checked according to the manufacturers' procedure monthly and recorded.

Refer to: SOP 9.1 Calibration Check of Hand Held Chlorine Analyzer  
SOP 9.2 Calibration of On Line Chlorine Analyzer

Revision Date: 041410, 03031, 12/18/13, May 8/14, Oct 8/14



<b>JACOBS</b>	Title: Emergency Management	Approval Date: 10/09/18
		Revision No: 9
		Page 1 of 1
Element 18		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 18 Emergency Management

Some causes of emergency situations would consist of loss of power, contamination, line breaks or interruptions in pressure. The Risk Assessment chart for the East and West Lambton Shores Water Distribution System, contained in the QMS Operational Plan, can be referenced for emergency procedures or contingency plans.

The Municipality of Lambton Shores has an emergency plan in accordance to the current legislation and regulations which are updated once every Calendar Year at the municipal office and is kept with the 24/7 Operational Procedure in place for the water distribution system at the Water Department Office. A list of emergency contacts and essential suppliers and services are also kept with the emergency plan. This list is updated once every calendar year.

Emergency response testing and training will be completed once every Calendar Year and meeting minutes for the emergency response and testing on record for review.

The emergency contacts and essential suppliers and services list will be kept current by the QMS Representative.

The responsibilities of all positions within the municipality during an emergency are listed in the municipal emergency plan.

If there is a water problem after hours, the resident will call any Lambton Shores office and follow the prompts to OMI after hour's number. The call will be directed to the On Call Person and the problem will be investigated within one (1) hour of being notified.

### **Refer to Contingency and Emergency Plan Refer to Annex E – Essential Supplies and Services Listing**

Revision Date: 041410, 120310, 03/26/13, 12/18/13, May 8/14, Mar 30/15, July 13/15, Oct 9/18

<b>JACOBS</b>	Title: Internal Audit	Approval Date: 04/15/19
		Revision No: 5
		Page 1 of 1
<b>Element 19</b>		
Review by: Connie Garrison		Approved by: Rick Marsh

## 19 Internal Audit

For this procedure, top management is defined as the Senior Project Manager.

The internal audit shall be performed, using the current QMS internal audit checklist, once every Calendar Year, before the once every Calendar Year management review by personnel with adequate skills, training and/or experience. The audit date shall be determined between the QMS representative and the internal auditor. Written record of audit shall be distributed to **all** top management members within 7 business days of audit completion.

### Refer to PROCEDURE E - Internal Audit

Revision Date: 041410, May 8/14, Oct 16/18, Apr 15/19

<b>JACOBS</b>	Title: Management Review	Approval Date: 06/26/19
		Revision No: 6
		Page 1 of 1
Element 20		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 20 Management Review

Top Management will implement and conform to the management review procedure with the Owner Representative once every Calendar Year to evaluate the continuing stability, adequacy and effectiveness of the QMS. The Owner Representative will receive the results of the Management Review by email.

### Refer to PROCEDURE F - Management Review

Revision Date: 041410, 121411, May 8/14, Oct 9/18, Jun 26/19

<b>JACOBS</b>	Title: Continual Improvement	Approval Date: 04/05/19
		Revision No: 8
		Page 1 of 1
Element 21		
Reviewed by: Connie Garrison	Approved by: Rick Marsh	

## 21 Continual Improvement

The Water Operating Authority shall strive to continually improve the effectiveness of its Quality Management System through the use of corrective actions. On-going Management Reviews and resulting corrective actions will be the basis for further improvement.

Best Management Practices – Reviewing and considering applicable Best Management Practices, including any published by the Ministry of Environment Conservation and Parks and available on [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater), at least once every thirty six months.

Corrective Actions, Preventative Actions and Best Management Practices are recorded on the Action Register Reports. Sources may include:

- Internal audits
- External audits
- Staff reviews
- MECP inspection reports
- Opportunities for improvement
- Staff suggestions/feedback
- Risk assessment outcomes
- Emergency response training outcomes
- Training sessions
- Management reviews
- Best management practices published by the MECP
- Consumer complaints

The Action Register Reports review will be completed during the once every Calendar Year Management Review to ensure the actions recorded are implemented and are effective in corrective and preventing a re-occurrence of the non-conformity. Additionally the effectiveness of these items shall be reviewed at the time of the Management Review by reviewing the number of MECP non compliances, internal and external audit results , consumer complaints etc.

Refer to Action Register Report (W05-04)

Refer to MECP Inspection Report – WLS Action Register Report (W21-01)

Refer to MECP Inspection Report – ELS Action Register Report (W21-02)

Revision Date: 041410, Mar 26/14, May 8/14, Jul 26/16, Oct 16/18, Feb 6/19, Apr 5/19