



THE REGIONAL MUNICIPALITY OF YORK
DRINKING WATER QUALITY MANAGEMENT STANDARD
OPERATIONAL PLAN



ENVIRONMENTAL SERVICES DEPT.

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Introduction

York Region (York Region) is an upper tier municipality that provides treated drinking water to the local area municipalities of the Town of Aurora, the Town of East Gwillimbury, the Town of Georgina, the Township of King, the Town of Markham, the Town of Newmarket, the Town of Richmond Hill, the City of Vaughan and the Town of Whitchurch-Stouffville.

York Region does not provide drinking water directly to the residents of the local area municipalities and is not responsible for the local distribution system.

Groundwater Supply and Treatment

York Region has a number of groundwater production wells. Drinking water is treated and delivered to the local area municipalities for distribution to the residents.

Surface Water Supply and Treatment (Lake Simcoe-based supply)

The Town of Georgina is supplied with treated drinking water from York Region's surface water treatment facilities located on Lake Simcoe. The Georgina Water Treatment Plant and the Keswick Water Treatment Plant service this community. Drinking water is treated and delivered to the local area municipality for distribution to the residents.

Surface Water Supply (Lake Ontario-based supply) and Distribution

In the southern end of York Region, the Towns of Richmond Hill and Markham and the City of Vaughan (with the exception of Kleinburg) are serviced by drinking water received from the City of Toronto and Peel Region. This drinking water is directly supplied to the local area municipalities distribution system for delivery to residents.

Blended Supplies of Groundwater and Surface Water

In addition to the groundwater supply and treatment, York Region receives and distributes surface water treated and supplied by Peel Region and the City of Toronto to supplement the growing demand in some communities. The Towns of Aurora, East Gwillimbury, Newmarket, and the City of Vaughan (Kleinburg) receive a blended drinking water supply of groundwater and surface water (Lake Ontario-based supply).



1. Quality Management System – General Requirements

Management Standard Reference(s):

- DWQMS Element 1

York Region's Environmental Services Department is committed to establishing, documenting, implementing, maintaining and continually improving its drinking water quality management system.

The Drinking Water Quality Management System (DWQMS) will meet the requirements of the DWQMS standard, as regulated by the Ministry of the Environment through the *Safe Drinking Water Act, 2002*. In order to meet this commitment, York Region's Environmental Services Department will:

- identify the processes needed for the DWQMS and their application throughout the organization, including processes for management activities, provision of resources, product realization and measurement;
- determine the sequence and interaction of these processes;
- determine criteria and methods required to ensure the effective operation and control of these processes;
- ensure availability of resources and information necessary to support the operation and monitoring of these processes;
- measure, monitor and analyze these processes; and
- implement actions necessary to achieve planned results and continual improvement.

If York Region's Environmental Services Department chooses to outsource any process that can affect product conformity with requirements, it shall ensure control over such processes. Control of outsourced processes is identified within the DWQMS.

Purpose

The purpose of the Operational Plan is to describe the DWQMS implemented by York Region's Environmental Services Department for the municipal drinking water systems.

The DWQMS Operational Plan includes references to all components of the DWQMS.

Scope

The scope of the DWQMS includes all of York Region's Municipal Drinking Water Systems (Element 6). These systems primarily include drinking water treatment, distribution and storage components.



It does not include any activity, product or service contained within the municipal drinking water systems of the local area municipalities of the Town of Aurora, the Town of East Gwillimbury, the Town of Georgina, the Township of King, the Town of Markham, the Town of Newmarket, the Town of Richmond Hill, the City of Vaughan and the Town of Whitchurch-Stouffville. York Region supplies treated drinking water to the lower area municipalities.

It does not include any activity, product or service contained within the municipal drinking water systems of the City of Toronto or Peel Region. York Region has entered into long-term service agreements with both the City of Toronto and Peel Region for the supply of treated drinking water.

References

- *Safe Drinking Water Act, 2002*



2. Quality Policy

Management Standard Reference(s):

- DWQMS Element 2

York Region's quality policy describes the overall intentions and direction of York Region's municipal drinking water systems. This policy is contained in the Integrated Management System Policy.

The Integrated Management System Policy was developed and endorsed by Operational Top Management. The policy in relation to the DWQMS contains:

- a commitment to the maintenance and continual improvement of the Quality Management System;
- a commitment to the consumer to provide safe drinking water; and
- a commitment to comply with all applicable legislation and regulations.

The policy is posted at the Hub administrative locations for the municipal drinking water systems and at the reception area for the Environmental Services Department at York Region's Administrative Centre. It is available to the public upon request.

The Integrated Management System Policy will be reviewed on an annual basis as per Management Review (Element 20) by Operational Top Management for continuing suitability.

As part of the Operational Plan, the Integrated Management System Policy is also endorsed by Corporate Top Management by the Commissioner of Environmental Services.



3. Commitment and Endorsement

Management Standard Reference(s):

- DWQMS Element 3

Top Management Definitions

York Region defines 'Top Management' as follows:

- 'Operational Top Management' has been defined as the management team for the Environmental Services Department including the Commissioner, the Director of Operations, Maintenance and Monitoring, the Director of Environmental Protection and Promotion, the Director of Capital Delivery and Planning, the Director of Strategy and Business Planning, the DWQMS Representative (Manager of Regulatory Compliance and Policy), and the Superintendents. The Operational Top Management will provide decisions on the day-to-day operation of the continuing suitability, adequacy and effectiveness of the DWQMS.
- 'Corporate Top Management' has been defined as the Commissioner, the Chief Administrative Officer (CAO) and the members of Regional Council. On an annual basis, a report will be provided to Corporate Top Management on the continuing suitability, adequacy and effectiveness of the DWQMS.

Commitment to the DWQMS

Operational and Corporate Top Management have committed to ensuring that the DWQMS is implemented and maintained by providing resources to the Regulatory Compliance and Policy group within the Environmental Services Department. Commitment of resources (human, financial and technological) is provided through York Region's annual business planning and budgetary exercises.

Communication with the Owner and Corporate Top Management

Several staff reports have been submitted and endorsed by Regional Council regarding the DWQMS. These reports provide general information on the DWQMS requirements such as staff comments to the MOE on draft documents, detail various roles and responsibilities conferred throughout the organization, and provide updates on implementation progress.

On January 16, 2008 and June 11, 2008 resolutions were passed by Regional Council that delegated authority for endorsement of Operational Plans to the Commissioner, Environmental Services.



Top Management Commitment and Endorsement

The system owner, York Region, and the operating authority, the Environmental Services Department – Operations, Maintenance and Monitoring Branch, support the implementation, maintenance, and continual improvement of a drinking water Quality Management System (QMS) for York Region's drinking water system, as documented in this Operational Plan.

Endorsement by the owner, (represented by the Commissioner of Environmental Services – as delegated by Regional Council on June 11, 2008), and top management, (represented by the Director of Operations, Maintenance and Monitoring and the Director of Environmental Promotion and Protection), acknowledges the need for and supports the provision of sufficient resources to maintain and continually improve the QMS.

The Designated QMS Representative and alternate, appointed by Top Management, acknowledge the roles and responsibilities of that appointment.

December 11, 2008

Date

Erin Mahoney
Commissioner, Environmental Services

December 11, 2008

Date

Brett Bloxam
Director, Operations, Maintenance and Monitoring

Dec. 15, 2008

Date

Laura McDowell
Director, Environmental Protection and Promotion

December 11, 2008.

Date

Michele Maitre
DWQMS Management Representative



4. Quality Management System Representative

Management Standard Reference(s):

- DWQMS Element 4

Operational Top Management will appoint a Quality Management System Representative (QMR) who, irrespective of their other responsibilities has the responsibility to:

- ensure that processes of the Quality Management System are established, implemented and maintained;
- report to Top Management on the performance of the quality management system, including the need for improvement;
- ensure current versions of documents required by the DWQMS are being used at all times;
- promote awareness of applicable regulatory and legislative requirements as they pertain to drinking water system operation; and
- promote awareness of the DWQMS and its requirements throughout the organization.

The DWQMS Representative is the Manager, Regulatory Compliance and Policy. A meeting was held on October 3, 2007 by Operational Top Management that determined the appointment and communicated to the Department.



5. Document and Records Control

Management Standard Reference(s):

- DWQMS Element 5

Records Control

York Region Records Retention By-law is mandated by the *Municipal Act, 2001*. The by-law is designed to determine the length of time both paper and electronic records should be kept. Based on the requirements in the by-law and any other legal requirements, records will be maintained onsite for a certain time period and either shipped offsite (if considered permanent records) or destroyed. The by-law authorizes the legal destruction of information which no longer has any administrative, financial, legal, operational, or historical value.

All DWQMS records will be managed and retained in accordance with all applicable regulatory requirements, including but not limited to York Region Records Retention By-law. Records will be kept legible, readily identifiable and retrievable in accordance with corporate records management procedures and regulatory requirements.

Document Control

Documents required by the DWQMS will be kept current, legible and readily identifiable. All management system documentation, including the DWQMS, is stored utilizing the ISOsoft software.

The QMS Representative, together with the Compliance Technologists, are responsible for ensuring that current versions of documents required by the DWQMS are being used.

Types of documents applicable to the DWQMS include:

- Controlled Documents:
 - Operational Plan Procedures and integrated management systems policy statement
 - Standard Operating and Emergency Procedures
 - Forms for communicating issues and events
 - Meeting Notes and Minutes
- Uncontrolled/External Documents
 - Drinking water legislation and applicable municipal bylaws
 - Certificates of Approvals, Permits to Take Water
 - Equipment manuals and facility manuals



- Applicable industry standards

Controlled documents are managed based on revision levels. The most current revision is available to staff on ISOsoft and is provided to staff by a Compliance Technologist when updated/revised.

Documents are managed and controlled through *Procedure A1 – Document and Records Control*.

Access to Documents

Operating and Emergency procedures are available on each vehicle within the drinking water systems.

A master copy of the Operational Plan is maintained in hard copy by the Regulatory Compliance and Policy group.

Electronic versions of the operational plan are available through ISOsoft.



6. Drinking Water System

Management Standard Reference(s):

- DWQMS Element 6

As required by Element 6 of the DWQMS, a description of each drinking water system can be found in *Appendix B*.

Each section contains the following information:

- a general description of the processes at the facilities
- raw water source description
- operational challenges
- process flow diagram

Information for the system descriptions was obtained from:

- Raw water quality characterization taken from Genivar Report (August 21, 2007) 'Water Quality Characterization and Issues Identification for Municipal Groundwater Supply System – Final Report'
- 'Annual Water Quality Reports' and Engineer's reports
- Existing Process & Instrumentation Drawings (P&IDs), Certificates of Approval
- Site visits and walk-through

Additionally, *Appendix C* contains a chart linking hazards analysis, critical control points, mitigating measures and response procedures as required by Elements 7 and 8. Each drinking water system in York Region is represented.



7. Risk Assessment

Management Standard Reference(s):

- DWQMS Element 7

A procedure has been developed and implemented that describes the processes for ranking and identifying potential hazards and emergencies, and for identifying critical control points (CCPs) in the drinking water system.

Procedure A2 – Risk Assessment and Critical Control Point Analysis outlines the methodology and responsibilities for Element 7 of the DWQMS.

Appendix C contains a chart linking hazards analysis, critical control points, mitigating measures and response procedures as required by Elements 7 and 8. Each drinking water system is represented. *Appendix D* contains a list of identified critical control points.



8. Risk Assessment Outcome

Management Standard Reference(s):

- DWQMS Element 8

Appendix C contains a chart linking hazards analysis, critical control points, mitigating measures and response procedures as required by Elements 7 and 8. Each drinking water system is represented. *Appendix D* contains a list of identified critical control points.

9. Organizational Structure, Roles, Responsibilities and Authorities

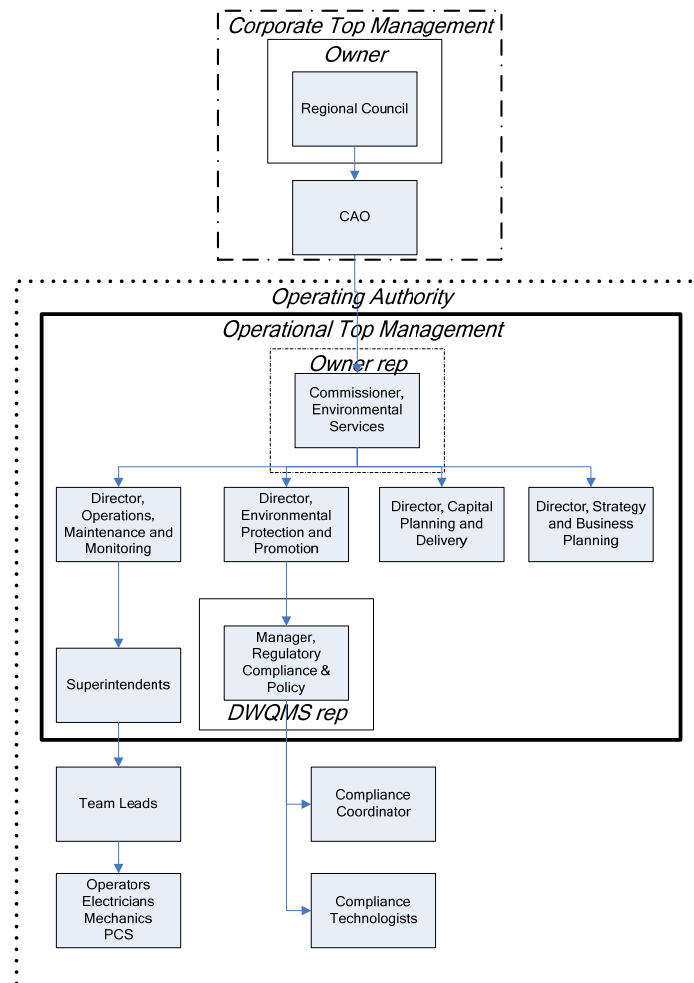
Management Standard Reference(s):

- DWQMS Element 9

The Owner and the Operating Authority

The Environmental Services Department is the Operating Authority for the drinking water systems at York Region (the Owner). The Environmental Services Department is responsible for the overall treatment, transmission and storage of drinking water on behalf of the Owner.

York Region is an upper-tier municipality with nine area municipalities for which it is responsible to service, according to the *Municipal Act, 2001*. The nine area municipalities are responsible for the transmission of drinking water directly to the residents and businesses in their area (as per Drinking Water System descriptions (Element 6)).





Roles and Responsibilities within the DWQMS

Role	Responsibility
<i>Regional Council (Corporate Management)</i>	Members of Regional Council for York Region have the overall responsibility and authority to ensure that the drinking water systems owned and operated by York Region meet all legislated and regulatory requirements. They have the responsibility and authority to allocate the resources required to ensure provision of safe drinking water to the local area municipalities based on recommendations from the Commissioner of the Environmental Services Department.
<i>Commissioner (Corporate Management, Operational Top Management)</i>	The Commissioner is authorized to make recommendations for the DWQMS on behalf of Regional Council regarding the drinking water systems. The Commissioner communicates with Regional Council concerning the drinking water systems as required. Operational Top Management is responsible for reporting on the performance of the drinking water systems to Regional Council as needed.
<i>Director, Environmental Protection and Promotion</i>	The Director, Environmental Protection and Promotion is responsible for reporting on the performance of the DWQMS and making high level management system decisions on the operation of the DWQMS based on information provided by the Manager, Regulatory Compliance and Policy and the Regulatory Compliance and Policy Group members.
<i>Director, Capital Planning and Delivery</i>	The Director, Capital Planning and Delivery is responsible for the delivery of the Capital program and the long-term planning of water and wastewater infrastructure.
<i>Director, Strategy and Business Planning</i>	The Director, Strategy and Business Planning is responsible for the compilation and delivery of the annual budget. The Asset management program for the Environmental Services Department is maintained by this business group, including the Infrastructure Improvement Plan (IIP).
<i>Manager, Regulatory Compliance and Policy</i>	The Manager, Regulatory Compliance and Policy is responsible for guiding the day-to-day operations of the DWQMS from an administrative perspective. The Manager, Regulatory Compliance and Policy is also the DWQMS representative and is responsible for communicating progress updates to Top and Corporate Management as required.
<i>Regulatory Compliance and Policy Group</i>	The Regulatory Compliance and Policy Group is comprised of the Compliance Coordinator and the Compliance Technologists. They are responsible for the daily administrative duties associated with the DWQMS including policy maintenance, management of the audit program and data collection.



Role	Responsibility
<i>Director of Operations, Maintenance and Monitoring (OMM) (Operational Top Management)</i>	The Director of OMM is responsible for reporting on the performance of the drinking water systems to the Commissioner and Regional Council as required for the DWQMS. The Director of OMM is responsible for making high level operational decisions on the operation of the drinking water systems based on information provided by the Superintendents and Team Leads.
<i>Superintendents (Operational Top Management)</i>	Superintendents are responsible for reporting on the performance of the drinking water systems to the Director of OMM. The Superintendents are also responsible for making operational decisions on the operation of the drinking water systems in their hubs based on information provided by the Team Leads and Operators.
<i>Team Leads</i>	For the purpose of the DWQMS, Team Leads are responsible for reporting on the performance of the drinking water systems within their hub to their Superintendent and the Director of OMM as required. Team Leads are directly accountable for the day-to-day operational decisions of the drinking water systems in their hub.
<i>Operators</i>	For the purpose of the DWQMS, the Operators are responsible for communicating the performance of the drinking water systems to their Team Lead and Superintendent as required. Operators are directly responsible for the day-to-day operational decisions of the drinking water systems in their hub. These duties include monitoring and maintaining water quality, maintenance of treatment operations, and/or the maintenance of distribution system operations, where applicable. This group of staff is also responsible for CLAIRs-type maintenance within their Hubs (cleaning, lubricating, adjustments, inspections, minor repairs).
<i>Maintenance and Electrical Staff</i>	For the purpose of the DWQMS, the Maintenance and Electrical staff are responsible for the specialized maintenance activities and electrical work on equipment. In some cases, the work to be completed requires specific licenses held by this group of staff including plumbing and electrical activities. This group of staff is responsible for the preventive maintenance beyond the CLAIRs-type activities.
<i>PCS</i>	For the purpose of the DWQMS, the PCS group maintains the calibration database and performs calibration activities for equipment in the drinking water systems. This group also contracts out third party calibration as required.
<i>Training Officer</i>	For the purpose of the DWQMS, the Training Officer maintains training records, the Training Matrix and schedules training for staff in accordance with staff requests.
<i>Water Resources</i>	For the purpose of the DWQMS, the Water Resources group is responsible for the administration of the sampling program (SiteFX), well monitoring and performance programs.



10. Competencies

Management Standard Reference(s):

- DWQMS Element 10

The Training Officer maintains documentation with regards to staff competencies and training requirements.

Competencies

Competencies for each position that directly affects drinking water quality are defined within the Job Descriptions for each position. Job Descriptions for each position are maintained by the corporate Human Resources Services department for York Region. All staff with positions that can directly affect the quality of drinking water (Team Lead and Operators) must be certified as required by Ontario Regulation 128/04.

Competency requirements for each of the positions that directly affect the quality of drinking water have been reviewed and incorporated into the training requirements for each position as defined in the 'Training Matrix' developed by the OMM management team and the Training Officer. The review included any legal requirements as defined by legislation and the job descriptions noted above.

Mandatory Training Requirements

York Region has developed and maintains a comprehensive training program to ensure that all staff holding positions that directly affect the quality of drinking water meet and maintain their required competencies.

Each certified operator is required to complete a minimum of 50 hours of training per year including 1.4 Director Approved Continuing Education Units (CEUs) per year (at a minimum).

A 'Training Matrix' has been developed and maintained that outlines the training requirements for all staff, based on position in order to maintain the required competencies by position. Training courses are identified as one of the following types:

- mandatory within 2 weeks of hire
- mandatory within 1 month of hire
- mandatory within 18 months of hire
- recommended

The Training Officer maintains this list and reviews it with OMM management annually or as required.



Training Records

All Operations and Maintenance staff training records are stored on an electronic database system called LearnFlex. LearnFlex is managed by the Training Officer or designated administrative support.

A Certification Report is generated from Learnflex that indicates all levels of certification held by each operator.

Corporate training records and requirements for all staff are stored on the corporate Corporate Learning Registration System (CLRS). These records and training courses are managed by the Corporate Training Group in Human Resources Services.

Communication with the Operating Authority (OMM staff)

Drinking water system OMM staff are made aware of the DWQMS through various mechanisms:

Training

- ISO/DWQMS introduction training is mandatory within 2 weeks of a new employee's start date
- An introductory training session about the DWQMS was provided to all Hubs
- A large scale training program was designed to orient staff with the DWQMS Operational Plan requirements
- Annual refresher training will be provided to refresh staff knowledge on the various management system and compliance requirements

Audits

- Internal and external audits provide staff with feedback on the DWQMS and other management systems

Visual Communication

- Integrated management system policy to be posted at all drinking water system facilities
- Operational Plan, Operating and Emergency Procedures for each Hub are available on ISOsoft
- 'ISO boards' at Hub administrative locations house information about various management systems and progress
 - Bayview Operations (Hubs 3 & 4)
 - Georgina WTP (Hub 1)
 - Mount Albert WPCP (Hub 2)
 - Kleinburg WPCP (Hub 5)
 - Leslie Pumping Station (Hubs 6 & 7)



- An “ISO and Compliance News” update is distributed to staff providing them with information on the management systems

General Communication

- Document reviews are incorporated into Hub meetings
- All emergency procedures are reviewed annually
- Document Owners review documents as required in ISOsoft
- Hub Reps meet to discuss document updates and share best practices, then communicate management system updates to their Hub



11. Personnel Coverage

Management Standard Reference(s):

- DWQMS Element 11

Certified operating staff responsible for the operation of the drinking water facilities are governed under a collective agreement between York Region and CUPE 905. Staff are determined to be competent as per Competencies (Element 10).

Coverage for Drinking Water Systems

The drinking water system's Operations, Maintenance and Monitoring (OMM) staff normal hours of work are from 7:30am – 4:00pm from Monday to Friday. OMM staff are available for after hours work based on a standby rotation. The standby rotation schedule is maintained by the Superintendents.

Facilities are monitored remotely using Supervisory Control and Data Acquisition (SCADA) on a 24-hour, 7 day basis by a Control Panel Operator at the Leslie Pumping Station (7033 Leslie Street). SCADA access is also available at the Bayview Operations Centre (380 Bayview Parkway) and the operations staff in each hub have remote SCADA access.

Procedures have been developed that outline roles and responsibilities for personnel coverage, standby scheduling, Operator-in-Charge (OIC) duties and time, and Overall-Responsible-Operator (ORO) duties. Refer to the following operating procedures:

- *General Work Protocol*
- *Standby Duty Eligibility and Instructions*
- *Operator in Charge and Overall Responsible Operator*

Workload planning is managed by the Hub Team Lead. General duties are detailed in various operating procedures including (but not limited to) the *Station Operational Procedures (Daily/Weekly/Monthly)*.

Continuity Planning

The purpose of the Continuity Plan Implementation Strategy (CP) is to outline staffing, resource and other requirements for York Region's Environmental Services Department to develop a department wide CP. The CP will ensure that York Region can maintain services when operations have been disrupted by strike, pandemic or other unexpected events.

The Director of OMM currently has control over the CP and all copies of the document.

12. Communications

Management Standard Reference(s):

- DWQMS Element 12

The table below identifies the mode of communication between the Operational Top Management and:

- Owner/Corporate Top Management
- Operating Authority
- Suppliers and contractors
- The Public

Target Audience	Method of communication
<i>Owner, Corporate Top Management</i>	Staff will be reporting to the Owner (Regional Council) at a minimum of annually to provide them with a status report on the DWQMS and the drinking water systems. The status report will include performance indicators discussed at Management Review as per Element 20.
<i>Corporate Top Management, Operating Authority</i>	Corporate Top Management and the Owner communicate with the Operating Authority by means of memos (generally issued by the CAO). The memos may be posted by email and/or are available on the intranet (mY netwORK). Corporate Top Management may also communicate requirements directly to the Operational Top Management via the Commissioner.
<i>Operational Top Management, Operating Authority</i>	An initial training session on requirements of the DWQMS was provided to all staff prior to rollout of the Operational Plan. Any new staff hired are trained on requirements of the DWQMS as per Competencies (Element 10) of the Operational Plan and the Training Matrix. Annual results of audits and the progress of the DWQMS are conveyed at the general OMM meeting. A standing agenda item at the Team Lead monthly meetings is provided to allow for any immediate updates or requests.



Target Audience	Method of communication
<i>Suppliers and Contractors</i>	An initial mailing was provided to suppliers and contractors identified as critical. Documentation is also included in the contract and tender packages where applicable.
<i>The Public</i>	The Integrated Management System Policy is available at Environmental Services administrative locations, namely 17250 Yonge Street, Bayview Operations (380 Bayview Parkway) and Leslie Street Pumping Station (7033 Leslie Street). The Integrated Management System Policy will be posted on the internet for ready access by the public. A 'York Works' newsletter is distributed to residents advising them of various initiatives in the Environmental Services Department, including the DWQMS.



13. Essential Supplies and Services

Management Standard Reference(s):

- DWQMS Element 13

Purchasing

Purchasing at York Region is governed by the Region's Purchase of Goods and Services By-law and the policies and procedures of the Supplies and Services Branch of the Finance Department. Supplies and Services and Legal Services control the purchasing process within York Region and works with various departments to determine specific purchasing and contractual needs.

The by-law details specific requirements, roles and responsibilities in relation to the purchase of goods and service.

Additionally, the Supplies and Services Branch within York Region's Finance Department maintains a 'toolkit' on the intranet (mYnetwork) that identifies various processes for staff making purchases.

Supplier's Agreements

A 'Supplier's Agreement' process has been developed to streamline purchasing and is recognized by the Supplies and Services Branch of the Finance Department.

Team Leads and Operations staff contact the suppliers and quote the blanket Purchase Order (P.O.) number(s) during the order, along with quantity required, requestor name and location.

The suppliers, bound by the agreements, will issue monthly and annual reports to the Superintendents detailing the purchases made within the blanket P.O. they have been issued.

Required Standards

Chemicals that will be used in the treatment processes of the drinking water systems must meet the American Water Works Association (AWWA) quality criteria as set out in AWWA standards and the American National Standards Institute (ANSI) safety criteria as set out in ANSI Standard NSF60 or NSF61.

The York-Durham Regional Environmental Laboratory (YD Lab) is used for testing of drinking water samples. The lab is licensed by the Ministry of the Environment to carry out drinking water tests required under the *Safe Drinking Water Act, 2002*. Where the YD Lab is unable to carry out testing, the testing is outsourced to Becquerel Laboratories Inc. or Maxxam Analytics Inc. Permission must be granted by York Region before any other laboratory is used for outsourcing.



Documentation certifying these requirements must be provided by the supplier and/or contractor prior to initiating a contract.

Essential Suppliers List

A list of essential suppliers has been developed and is located in ISOsoft. The list was developed based on the CCPs identified for each drinking water system.

Each supplier and/or contractor identified on the list was contacted about their service and provided a letter indicating that they have been identified as essential.

Evaluation of Services and Suppliers

The Superintendents are responsible for reviewing the list a minimum of once per year to evaluate the effectiveness of the vendor (*List of Services and Suppliers*). Three questions are asked of each supplier on the list:

- Was the vendor used this year?
- Did the vendor provide a product/service that met York Region standards?
- Did the vendor do so in a timely manner?

Any nonconformance or other information on vendor performance (eg. packing slips, hold tag logs) are reviewed as part of the evaluation process.

14. Review and Provision of Infrastructure

Management Standard Reference(s):

- DWQMS Element 14

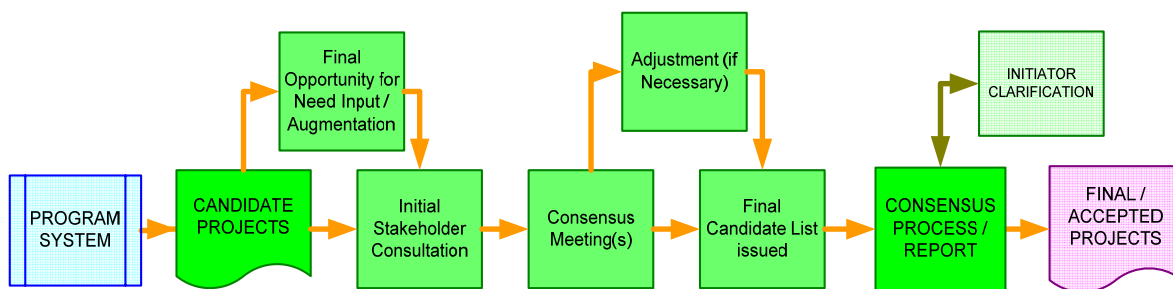
The Environmental Services Department functions include operation and maintenance of infrastructure assets including water treatment plants, transmission watermain, pumping stations, storage facilities and production wells.

The Infrastructure Improvement Plan Program (IIP) is the mechanism for the department to communicate, review and prioritize the infrastructure rehabilitation and replacement needs. The IIP provides the business case and rationale for the short term and long term capital improvement planning.

Infrastructure Improvement Plan Program Framework

The IIP establishes the overall rules and practices to be used by the Environmental Services Department in the identification and selection of non-growth capital projects on an annual basis. The Program combines a series of processes, as well as a supporting database and system to organize and record needs, as well as generates candidate projects, and review and achieve consensus, prior to the inclusion in the annual budgeting exercise and the ultimate project execution.

The program framework is shown below:



For details of the IIP Program, refer to Infrastructure Improvement Program: Program Process and Definitions by Hatch Mott MacDonald, February, 2008.

Departmental staff have access to the IIP database on the intranet (mYnetwORK). A project is entered into the database and prioritized according to an established set of criteria. Management reviews the outputs of the IIP and the projects are prioritized, included in the annual budgeting processes, assigned and executed as required.

The status of the IIP will be reviewed at Management Review (Element 20) on an annual basis.



15. Infrastructure Maintenance, Rehab and Renewal

Management Standard Reference(s):

- DWQMS Element 15

This section summarizes infrastructure maintenance, rehabilitation and renewal programs/activities that the Region is using to maintain and improve the drinking water system reliability.

Infrastructure Maintenance – Planned and Unplanned

All maintenance for the drinking water systems is scheduled and completed as per the *Scheduled and Unscheduled Work Order Procedure*.

Maximo (Computerized Maintenance Management System)

MAXIMO is a computerized maintenance management system. It stores and maintains data about facilities, assets, and inventory. Information within Maximo is used to help schedule maintenance work and track equipment status.

The drinking water systems Hub Team Leads use Maximo to issue preventive maintenance (PM) work orders to the staff within their hub. Corrective work orders are issued by Team Leads to the central maintenance support staff for activities that require the expertise of the mechanical, electrical or PCS staff.

Central Maintenance Team Leads assign the corrective work orders to their staff.

Specific Infrastructure Maintenance Programs

Production Well Management Program

The Production Well Management Program integrates the following programs:

- *Production Well Efficiency and Maintenance Program*: to monitor performance of production wells through established performance indicators, routine operation and maintenance activities, and identify potential performance issues for the purpose of improving maintenance efficiency and effectiveness.
- *Production Well Inspection and Maintenance Program*: to inspect production wells to identify concerns in terms of health and safety, security, drinking water quality in order to determine timely, optimized and cost-effective remedial action plans including maintenance, rehabilitation and renewal of the productions wells.



Monitoring Maintenance Programs

Maintenance management performance indicators currently being tracked include:

- scheduled and unscheduled work orders
- open versus closed work orders

The performance indicators are reviewed at Management Review (Element 20).

Infrastructure Rehabilitation and Renewal

Annual Budgeting Requirements

On an annual basis, each Hub and the Central Maintenance group reviews the requirements for rehabilitation and renewal. The review is based on previous performance of assets. The IIP (identified in Element 14) and the Capital Works program (projected 10 year asset upgrade and construction process based on planning projections) are also used to identify asset requirements.

A list of required equipment for the upcoming budget year is compiled and submitted to the senior management team. An evaluation of the requests is completed by the Commissioner and the final budget is submitted to the Owner (Regional Municipality of York Council) for resolution and approval.

Maintenance Management Strategy

Following the concepts and principles of infrastructure management, the Maintenance Management Strategy identifies the tactics applicable to the asset class and equipment, balance preventive, predictive and corrective maintenance in order to ensure the asset continues to perform its intended function for its expected functional life within its current operating environment.

Objectives of Maintenance Management Strategy are as follows:

- Review and evaluate the Region's current maintenance activities, including the work plans, work order scheduling, data completeness and accuracy;
- Analyze and identify critical equipment and develop a maintenance tactics framework;
- Develop an implementation plan and teams to execute and oversee the program development; and
- Monitor the performance and improve maintenance efficiency and effectiveness.

As part of York Region's efforts to proactively and cost-effectively manage the lifecycle of the infrastructure, York Region has embarked on the development of a comprehensive infrastructure management program, which allows York Region to systemically manage and



coordinate the infrastructure lifecycle activities of planning, acquisition, operation, maintenance, rehabilitation, renewal and disposal for the subject systems.

The infrastructure management program consists of the following four major integrated components:

- *Infrastructure Management Framework* – to describe the key elements of the drinking water infrastructure management program and set out the approach to asset life-cycle management and streamlining decision-making processes.
- *A set of practice guidelines* – a set of technical guidelines developed and refined over time to ensure consistent and accountable infrastructure management practices.
- *A series of individual asset type management programs/plans* – to monitor system performance of individual drinking water asset types by applying the established framework and practices to identify infrastructure improvement requirements.
- *An Infrastructure Improvement Plan (IIP)* – a systematic and consensus building approach to review and identify infrastructure improvement needs, which include creation, acquisition, rehabilitation, renewal and disposal of drinking water systems, on an on-going basis through various individual infrastructure management programs to properly address the risks in the drinking water systems in a timely manner.

Details on the procedure for the annual review of adequacy of the infrastructure are described in Review and Provision of Infrastructure (Element 14).



16. Sampling, Testing and Monitoring

Management Standard Reference(s):

- DWQMS Element 16

Sampling Procedures and Results Recording

Standard Operating Procedures have been developed to ensure that sampling and monitoring is carried out according to all regulatory requirements and guidance documents. At a minimum, sampling is carried out as per the legal requirements in Ontario Regulation 170/03 and 169/03.

Sampling procedures for emergency and/or adverse conditions have also been documented.

Sampling practices followed by staff include the MOE's 'Practices for the Collection and Handling of Drinking Water Samples' guidance document and the following Operating Procedures:

- *Water Sampling Procedure*
- *Spill Reporting Procedure*
- *Adverse Water Quality Reporting Procedure*
- *Sampling schedules for Site FX software (Hub specific)*

Sampling results and measurements taken at each facility are located in the following programs:

- *MCADI (Mobile Computing Application Design Implementation)* – drinking water system staff input data from readings and results taken in the facility.
- *SiteFX* – used to track, trend and analyze results, schedule and record samples that are taken and sent to the laboratory for analysis.
- *SCADA* – used to monitor the drinking water system in real-time and take measurements from specified equipment in intervals determined by legal requirements and/or operationally driven requirements.
- *Facility Logbooks* – records are entered based on legal requirements and/or operationally driven requirements.

External Laboratory Sample Testing

The York-Durham Regional Environmental Laboratory (YD Lab) is used for testing of drinking water samples where the internal lab is not sufficient. The schedule of samples collected and sent to the lab is provided in the 'Sampling Schedules' by Hub location found in ISOsoft.



The lab is licensed by the Ministry of the Environment to carry out drinking water tests required under the *Safe Drinking Water Act, 2002*. Where the YD Lab is unable to carry out testing, the testing is outsourced to Becquerel Laboratories Inc. or Maxxam Analytics Inc. Permission must be granted by York Region before any other laboratory is used for outsourcing.

The York-Durham Laboratory is currently accredited to the international standard ISO/IEC 17025:2005 by the Standards Council of Canada (SCC) based on site assessments and proficiency evaluation conducted by the Canadian Association for Environmental Analytical Laboratories (CAEAL) (Canada has adopted this standard verbatim and is called CAN-P-4E). All sub-contracted laboratories used by The YD Lab are also accredited to this standard and for performing laboratory analyses in Ontario.

Sampling During Challenging Conditions

Sampling that may occur during challenging conditions that have been identified or as a result of any designated Operational Challenges is identified in the *Drinking Water System Descriptions* in *Appendix B*.

Sampling Programs within the City of Toronto and the Region of Peel

City of Toronto (Toronto Water)

Toronto Water maintains a comprehensive monitoring program for drinking water quality. Samples for analysis are collected at various stages of process within the Water Treatment Plants, at the points where treated water enters the distribution system and at points in the distribution system deemed to be representative of the system as a whole.

For the distribution system sampling program, drinking water samples are collected from up to 110 pre-determined sites on a weekly basis. Sample locations include all reservoirs and most pumping stations, along with samples from the local distribution systems. All locations are sampled for microbiological analysis, along with chlorine residual and turbidity. Some of these sample locations represent the quality of the drinking water as it leaves the City's system and flows into York Region. Toronto Water also measures the 'end of line' trihalomethanes that would be indicative of the quality of drinking water entering the Region.

Toronto Water maintains a comprehensive notification protocol that exceeds the reporting requirements prescribed by O. Reg. 170/03 under the *Safe Drinking Water Act, 2002*. Where adverse results from samples collected within the City's system may be indicative of an impact on drinking water quality as supplied to York Region, direct verbal notification is immediately provided by way of York Region Control Panel.

The notification protocol also requires York Region staff to inform Toronto Water when and where an adverse result has occurred within its system, which may be attributed to supply of drinking water by the City or may result in a potential impact on the City's system. Such notification is made to the City's Transmission Control Centre.



Peel Region

Peel Region routinely tests the drinking water leaving its plants and within its distribution system including all our reservoirs and pumping stations. The Airport Road Reservoir and Pumping Station feeds the transmission main to York Region's Maple Reservoir.

Tests performed in the Peel Region system include bacteria (E.coli/TC/BKD/HPC) testing performed three times per week (Mondays, Wednesdays and Fridays) as well as organic and inorganic chemistry done on monthly basis. Free and total chlorine residuals and ammonia are monitored via online monitoring equipment and at the time of station visits to better assess the chloramination process. Chloramination is the disinfection method used for the York Region supply.

Communication of Sampling Results

Results of samples taken by York Region are communicated to various stakeholders.

The Annual Water Quality Report is provided to the Owner on an annual basis. This report is also posted on the Regional Municipality of York website and available in hard copy by request.

At the Management Review (Element 20), sample results are reviewed and trending of sample results is provided for discussion.



17. Measurement and Recording Equipment Calibration and Maintenance

Management Standard Reference(s):

- DWQMS Element 17

Monitoring and Measurement Devices

Monitoring devices have been identified on the process flow diagrams (PFDs) for each location. The PFDs are located in Drinking Water System (Element 6) descriptions along with the control limits for the parameters monitored by each device. Monitoring and measurement devices include (but are not limited to):

- Chlorine residual analyzers, and
- Turbidimeters.

Supervisory Control and Data Acquisition System (SCADA)

The SCADA system provides real-time monitoring of equipment and drinking water system status. All equipment that is monitored by SCADA can be found on the 'SCADA screen' for that location. The 'SCADA screen' provides a view (in real time) of the process and various monitoring points and values.

Calibration Activities

Equipment to be calibrated is entered into the maintenance management system, MAXIMO, by Team Leads. Work orders are generated to the Process Control Staff (PCS) within the OMM Branch to complete calibration of equipment (where possible) or contract third party calibration services.

Adjustments to monitoring equipment are to be completed by authorized staff only. Staff are not authorized to adjust equipment in a manner that would invalidate the measurement results.

For equipment that is verified by internal PCS staff, Job Plans have been developed for each type of instrument and are attached to each Maximo PM work order. Each work order for calibration identifies the manufacturers recommended acceptable error range (as outlined in the manufacturer's manuals).

Equipment that is used for the purpose of verification/calibration by internal PCS staff, is sent out on an annual basis for calibration by a third party. Third party calibration reports are filed at the Bayview Operations Centre (originals) and on the network drive in PDF format. Internal calibration reports are recorded currently recorded in the database used by the PCS group.



PCS staff maintain a database that lists all monitoring and measuring devices to generate and track calibration activities. The database includes the:

- description of the equipment and location;
- frequency of calibration and date of last calibration;
- method of calibration; and
- the calibration report.

All calibrated equipment must be identified with a sticker to indicate the date of the most recent calibration and the next scheduled calibration. Operators are to notify the Team Lead if any equipment in use is past due for calibration. The manufacturer's equipment manuals are to be referenced for frequency and method of calibration required, where applicable.



18. Emergency Management

Management Standard Reference(s):

- DWQMS Element 18

Emergency Procedures

Emergency Procedures have been developed for the OMM group for emergency response and recovery. The procedures developed address types of emergencies that could result in the loss of ability to maintain a supply of safe drinking water or emergencies that relate specifically to legal requirements for the drinking water systems. Types of emergencies include (but are not limited to):

- responding to adverse sample results;
- responding to spills;
- emergency communication with local area municipalities;
- loss of hydro;
- samples required outside normal operating hours; and
- responding to a watermain break.

Emergency procedures contain requirements for communication between Operating Authority staff and the Owner.

Emergency procedures are provided to OMM staff and are assigned to each work truck. The procedures are maintained and controlled as per Document and Records Control (Element 5). Procedures are also available and electronically controlled on ISOsoft.

Emergency Communication and Planning

There may be situations that arise that are large scale and can be planned for in advance and the response must be tailored to meet the specific requirements for that event (e.g. large pending storm event, localized flooding).

A generic template has been developed that can be used to assist in planning for these types of events called the *Emergency Management Checklist*.

York Region's Emergency Measures group is available for assistance and communication during large emergency events. The mandate of this group is to provide overall coordination of events from the regional perspective and they are governed by legal and regulatory requirements. The Corporate Emergency Plan is maintained and controlled from the Emergency Measures group within the CAO's office.



Emergency Response Follow-up Meetings

After an emergency event has occurred, the Director of OMM may call a meeting to review the event. Attendees for at the meeting include the people involved in the event. The agenda includes the following items:

- review of the event;
- review of the notifications and communication made;
- what can be done to prevent reoccurrence?; and
- were the emergency procedures adequate?

Emergency Contact List

An *Emergency Contact List for Water Systems* has been developed that includes contact information for various individuals and utilities. The *Emergency Contact List for Water Systems* is controlled as per Document and Records Control (Element 5).

The list of critical suppliers, as per Essential Supplies and Services (Element 13), also contains contact information for external services that may be required in the event of an emergency.

Emergency Training and Testing

Several methodologies have been identified to train staff and test emergency procedures including:

- large-scale mock emergency testing of procedures related to a specific event;
- small-scale, localized emergency testing that audits a specific procedure; and
- requirement for Operations and Maintenance staff to review all emergency procedures annually during the Emergency Procedures Annual Review and Sign-Off (required by December 31st of each calendar year and tracked in ISOsoft).

A testing schedule has been developed in conjunction with other affected groups (e.g. Operations, Maintenance and Monitoring and managed by the Regulatory Compliance and Policy Group) and the schedule is managed through ISOsoft. If emergency training and testing results are deemed to be unacceptable, a follow-up meeting shall occur within 2 weeks of the test. An action plan to address the issue shall be developed at the follow-up meeting.

The Environmental Services Department is also involved in the corporate emergency planning scenarios as required by the *Municipal Act, 2001* and Emergency Measures Ontario. Periodically, the services of the York Region Emergency Measures group (located within the CAO's office) may be consulted in various emergency situations or testing scenarios as subject matter experts.



19. Internal Audits

Management Standard Reference(s):

- DWQMS Element 19 & 21

York Region has developed a procedure regarding the conduct of internal audits for its drinking water systems.

The internal audit schedule will ensure that each drinking water system facility is audited in a three year cycle.

Results of the internal audits will be communicated at the Management Review (Element 20) meetings.

Selection of Auditors

An internal auditor must meet the following criteria:

- knowledge of the requirements of the DWQMS and/or the ISO 9001:2000 standard and the content of those management system(s);
- independent of the area to be audited;
- ability to make objective observations and record audit activities and results; and
- completion of internal auditing training (internal or external).

The Audit Process and Schedule

The audit process is detailed in *Procedure A3 – Internal Audits*.



20. Management Review

Management Standard Reference(s):

- DWQMS Element 20

The management review process evaluates the continuing suitability, adequacy and effectiveness of the QMS.

Management Review shall be conducted on a semi-annual basis for York Region's drinking water systems by the Operational Top Management team. The first management review meeting held in a calendar year will cover the information for the previous year (in its entirety) and the second management review meeting in a calendar year will review only the first two quarters of that calendar year.

At a minimum, the Commissioner of Environmental Services, the Director of OMM, the DWQMS Representative and one additional representative from the Operational Top Management team must be in attendance to hold the meeting.

The Corporate Top Management team will receive an annual report on the progress of the DWQMS as per the Operational Plan 'Communication' policy.

Procedure A5 – Management Review Preparation and Performance outlines the requirements of the DWQMS Management Review.

A defined agenda for the meeting includes the information below. Meeting minutes and action items are recorded and stored in ISOsoft.

Inputs to Management Review will include current performance and improvement opportunities related to the following:

- legal and other requirements including but not limited to:
 - incidents of regulatory noncompliance
 - incidents of adverse drinking water tests
 - deviations from critical control point limits and response actions
- continued efficacy of the:
 - operational plan and policy
 - risk management process
- results of audits (internal and third party)
- customer feedback



- process performance (including statistical analysis) and product conformance including:
 - operational performance
 - raw water supply and drinking water quality trends
 - results of the infrastructure review
 - results of emergency response testing
 - status of preventive and corrective actions
- required resources (including staff, technology and financial)
- follow-up actions from previous management review meetings
- changes that could affect the quality management system (including, but not limited to regulatory, business or operational changes)
- recommendations and suggestions for improvement

Outputs from Management Review shall include action items related to improvement of the Quality Management System and its processes and products.

Communication with Corporate Top Management/Owner

As per Communication (Element 12), an annual report will be provided to the Corporate Top Management/Owner that provides an update of the Management Review meetings.



21. Continual Improvement

Management Standard Reference(s):

- DWQMS Element 21

York Region strives to continually improve the effectiveness of the DWQMS through the use of corrective actions.

Procedure A4 – Nonconformance, Corrective and Preventive Actions outlines how the corrective action process is carried out.



APPENDIX A:
INTEGRATED MANAGEMENT SYSTEM POLICY



Integrated Management System Policy

The Regional Municipality of York's Environmental Services Department is comprised of dedicated people providing water, wastewater, and waste management services that protect public health and the environment while meeting the needs of our thriving communities. We do this by demonstrating leadership and through our commitment to:

- Ongoing review and evaluation of our quality and environmental objectives;
- Providing safe drinking water to our nine local municipalities;
- Preventing pollution relating to our activities in conducting our day-to-day business;
- Promoting and educating our residents, businesses and industries on the practices of conservation as well as waste reduction and diversion;
- Complying with applicable legislation, regulations, and other requirements to which we subscribe, as they relate to the provision of our environmental services;
- Maintaining and continually improving our various Management Systems;
- Providing effective, efficient and fiscally responsible services in an environmentally sustainable and accountable manner;
- Ensuring that existing infrastructure required to provide our services, is maintained and monitored; and
- Supporting responsible expansion of our services to meet the future needs of our local municipalities.

The Environmental Services Department recognizes that our staff is our most important resource in achieving continued success. We strive to create a culture of awareness of our management systems while recognizing the contributions and strengths of our employees in meeting our commitments.

This Policy complies with the requirements outlined in ISO 9001:2000, ISO 14001:2004, and the Drinking Water Quality Management Standard (DWQMS).

Erin Mahoney, M.Eng.
Commissioner, Environmental Services Department
December 16, 2008



NOTE: APPENDICES B – E HAVE NOT BEEN INCLUDED IN THIS VERSION