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ENVIRONMENTAL SERVICES' INTEGRATED MANAGEMENT SYSTEM 2011 UPDATE REPORT FOR WATER, WASTEWATER AND WASTE MANAGEMENT

The Environmental Services Committee recommends the adoption of the recommendation contained in the following report dated April 20, 2012, from the Commissioner of Environmental Services.

1. RECOMMENDATION

It is recommended that this report be received for information.

2. PURPOSE

This report updates Council on the status of Environmental Services' Integrated Management System. This report also supports Council in meeting the commitments under the Standard of Care, as prescribed in the *Safe Drinking Water Act, 2002* (see *Attachment 1*).

3. BACKGROUND

Management systems standardize and improve environmental and business practices well beyond regulatory requirements

A management system is a method for an organization to standardize and improve practices by way of continuous improvement that goes well beyond regulatory requirements. Internationally accepted standards such as ISO 14001 and ISO 9001 identify specified components of a management system and have commonly been applied in the private sector, but more recently adopted by municipalities to demonstrate environmental due diligence and superior service delivery. Management systems also provide a framework to identify opportunities for continuous improvement and facilitate structured communication to all levels of the organization.

Building on past success, York Region extends ISO 14001 registration to include waste services

York Region has been a municipal leader with respect to implementing management systems. Over the past twelve years, York Region has expanded its management systems to include all aspects of Environmental Services. As such, delivery of York Region water, wastewater and waste services is conducted in accordance with ISO 14001 and ISO 9001

standards. More recently, the Province regulated the Drinking Water Quality Management Standard under the *Safe Drinking Water Act, 2002*. Each of these standards assists the Environmental Services Department by ensuring adequate operational procedures are documented, verified and modified to meet quality and environmental objectives.

Starting in 2000, York Region's wastewater system voluntarily adopted an Environmental Management System and received its ISO 14001 registration. The standard categorizes activities and processes that contribute to sound environmental management. Capitalizing on early success, York Region's water system adopted a Quality Management System and received ISO 9001 registration in 2001. This standard of excellence focused on quality management in fulfilling a customer's quality and regulatory requirements. Experience gained administrating both these management systems has been leveraged to successfully extend the ISO 14001 registration to include waste management operations, with the most recent registration of the new Elgin Mills Community Environmental Centre in 2012.

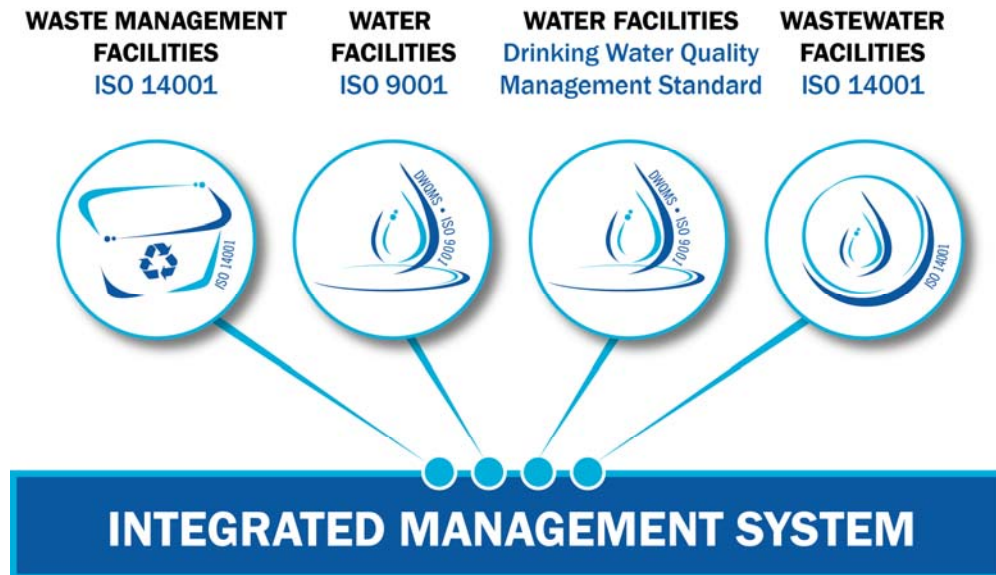
Environmental Services' Integrated Management System combines requirements of ISO 14001, ISO 9001, and Drinking Water Quality Management Standards into one complete framework

Staff identified an opportunity to combine all of the management systems into one integrated system as each of the standards follow a similar administrative framework. The Environmental Services' Integrated Management System consists of three established management systems as highlighted in Figure 1, including:

- ISO 14001 for Wastewater and Waste Management operations
- ISO 9001 for Water operations
- Drinking Water Quality Management Standard as legislated under the *Safe Drinking Water Act, 2002* for Water Operations

Environmental Services now combines all the management systems and processes into one complete framework to demonstrate a commitment to performance and continuous improvement, while remaining financially and operationally effective.

Figure 1
Integration of York Region's Quality and Environmental Management Systems



Environmental Services' Integrated Management System supports Regional Councillors fulfillment of *Safe Drinking Water Act, 2002* standard of care responsibilities coming into force on January 1, 2013

One key benefit of the Integrated Management System in relation to the Drinking Water Quality Management Standard and the Standard of Care responsibilities is the assurance that the required knowledge and expertise to develop and implement appropriate management and controls over drinking water systems has been established.

Municipal Councillors have an important role to play in ensuring that their community has access to safe, high quality drinking water and they are legally obliged to do so. Effective January 1, 2013, Section 19 of the *Safe Drinking Water Act, 2002* extends legal responsibility to people with decision making authority over municipal drinking water systems. It specifically requires that they exercise the level of care, diligence and skill with regard to a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation.

In February 2011, the Ministry of the Environment circulated a copy of "Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils" to members of Regional Council. The guide provides basic information for members of a municipal Council regarding their legal duties and responsibilities related to the Standard of Care under Section 19 of the *Act*.

4. ANALYSIS AND OPTIONS

Management Review identified opportunities to evaluate and improve system performances and meets Standard of Care requirements

A requirement of the Drinking Water Quality Management System and ISO Management Systems is to conduct annual management review meetings. Management review is an important mechanism used by senior management to assess the management systems and ensure their continuing adequacy, suitability and effectiveness. These reviews also provide opportunities to identify administrative and operational business practices that improve efficiency and drive results. Among other things, operational performance, management system performance, audit results, regulatory requirements, and resources are considered. This review can drive fundamental changes to the system as a whole through changes to the management system policy or its objectives.

Key outcomes from the 2011 management review include administrative tasks to improve efficiency and effectiveness, opportunities for improvement and evaluation of key performance indicators. An example of an opportunity for improvement was the recommendation for a task group to investigate impacts of the Ministry of the Environment's Modernization of Approval legislation. The Ministry of the Environment has designated Environmental Compliance Approvals as the new approval to replace Certificates of Approval. By leveraging the new approvals regime, there may be efficiencies available to York Region through harmonizing approvals across various media (i.e. air, noise, waste, sewage works). Evaluation of key performance indicators demonstrates that the Integrated Management System plays a role in driving success. For example, all Operations, Maintenance and Operations staff met York Region's training requirements of 50 hours per year in 2011.

To further acquaint Council with detailed information on York Region's drinking water systems and support meeting the Standard of Care requirements, a supplemental report has been specifically provided on the performance of the Region's Drinking Water Quality Management System for 2011 (*see Attachment 1*).

York Region continues to evaluate its conformance with each management system standard through a robust auditing program

Both ISO 9001 and ISO 14001, along with the Drinking Water Quality Management Standard, emphasize the importance of audits as a management tool for monitoring and verifying the effective implementation of an organization's policy for quality and/or environmental management. In 2011, twenty-one internal, forty-four compliance, and four external audits were completed at York Region's water, wastewater and waste management facilities. Findings from internal and external audits were generally administrative in nature as the focus is on the management system processes. Compliance audits evaluate operational activities against applicable environmental regulatory

requirements to ensure conformity to legislation. A summary of the Region's water, wastewater and waste management system audits completed in 2011 are listed in Table 1.

Table 1
2011 Audits of Water, Wastewater and Waste Management Systems

System Type	Internal Audits (internal review to confirm compliance with ISO/DWQMS requirements)	Compliance Audits (to confirm compliance with legal requirements)	External Audits (external review to confirm ISO/DWQMS registration/accreditation)
Water	11	27	2
Wastewater	5	13	2*
Waste Management	5	4	
2011 Total	21	44	4

* ISO 14001 external audits include both waste management and wastewater systems.

York Region achieved a 99.71 per cent compliance score in the Ministry of the Environment's Chief Drinking Water Inspector Report

A robust auditing program is a critical component of the Integrated Management System, and leads to enhanced performance when regulatory agencies inspect Environmental facilities for compliance with legislation. The Ministry of the Environment has a rigorous and comprehensive inspection program for municipal drinking water systems and wastewater systems. The objective of York Region's auditing program is to determine compliance with applicable regulatory requirements and legislation. As a result, York Region achieved a 99.71 per cent compliance score in the Ministry of the Environment's Ontario Chief Drinking Water Inspector's Annual Report, resulting in a tie for first place compared to other Greater Toronto Area municipalities.

Ongoing accreditation to Drinking Water Quality Management Standards remains unclear due to recent Provincial changes

The Canadian General Standards Board, a federal government organization, entered into an agreement with the Ministry of the Environment on April 1, 2008 to provide accreditation services for the purposes of the Municipal Drinking Water Licensing Program. The role of the Canadian General Standards Board, as an independent third-party, was to assess whether quality management systems of operating authorities of municipal residential drinking water systems met the requirements of the Drinking Water Quality Management Standard.

On March 6, 2012 the Ministry of the Environment unexpectedly announced it will be reviewing and updating the accreditation framework. As part of this work, the Ministry of the Environment will be transitioning accreditation bodies over the next few months. Both agencies have stated in written correspondence to work closely to ensure the transition is as seamless as possible. Staff will continue to closely monitor the situation

and forward comments to the Ministry of the Environment reinforcing the notion that oversight of accreditation is key to the success of the Drinking Water Quality Management Standard, and advocate that the transition process be carefully executed for continuity of oversight and accountability.

Link to Key Council-approved Plans

Environmental Services' Integrated Management System 2011 Update Report provides Council with an understanding of the Department's Environmental and Quality Management Systems. The successful administration of these management systems demonstrates how commitments are met with respect to providing water, wastewater, and waste management services that protect public health and the environment, while meeting the needs of our growing and thriving communities.

Available information on the status of Environmental Service's management systems aligns with the Region's 2011 to 2015 Strategic Planning objective of continuing to deliver and sustain critical infrastructure necessary to support our growing communities by identifying and leveraging performance.

5. FINANCIAL IMPLICATIONS

Approximately \$86,000 was spent in 2011 to maintain Environmental Services' Integrated Management System

External costs in 2011 to maintain Environmental Services' Integrated Management System (ISO 9001, ISO 14001, and Drinking Water Quality Management Standard), including completion of compliance audits was approximately \$86,000. These costs include annual external audits performed by a third-party registrar. Development of an internalized Compliance Audit Program is expected to reduce costs associated with completing compliance audits. 2011 program expenditures were within the amounts included in the 2011 Environmental Services Budget.

6. LOCAL MUNICIPAL IMPACT

Implementation of an Integrated Management System for Environmental Services provides a benefit to local municipalities as it aligns with our shared interest in mitigating environmental impacts, improving service delivery and complying with regulatory requirements. In March 2011, Regional staff shared lessons learned with local municipal representatives, and will continue to act as a source of information to local municipalities considering ISO 14001 for their waste management or wastewater related activities.

In accordance with the *Safe Drinking Water Act, 2002*, each local municipality is required to develop and implement a Drinking Water Quality Management System for

their drinking water systems. Each local municipality has achieved either full or limited scope accreditation from the Canadian General Standards Board, and through various inter-municipal committees there are ongoing opportunities for York Region and local municipalities to share lessons learned or concerns. With the recent announcement by the Ministry of the Environment indicating plans to transition accreditation bodies under the Municipal Drinking Water Licensing Program, York Region will work collaboratively with the local municipalities to submit comments to the Ministry of the Environment during this transition process.

7. CONCLUSION

An Integrated Management System allows Environmental Services to create one structure that helps effectively deliver on environmental and quality objectives. Information available on the performance of the Environmental Services' Integrated Management System for water, wastewater and waste management operations support Regional Councillors fulfillment of the pending Standard of Care requirements, coming into force on January 1, 2013. As the Environmental Services' Integrated Management System continues to demonstrate an ongoing review and comprehensive evaluation, Council can be confident in the rigorous and comprehensive audit features entrenched in the integrated management system.

For more information on this report, please contact Laura McDowell, Director of Environmental Promotion and Protection at (905) 830-4444 Ext. 5077.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)

WATER SUMMARY REPORT FOR COUNCIL

**REPORTING PERIOD:
JANUARY 1 TO DECEMBER 31, 2011**

**REGULATORY COMPLIANCE AND POLICY
ENVIRONMENTAL PROMOTION AND PROTECTION BRANCH
ENVIRONMENTAL SERVICES DEPARTMENT**

May 9, 2012

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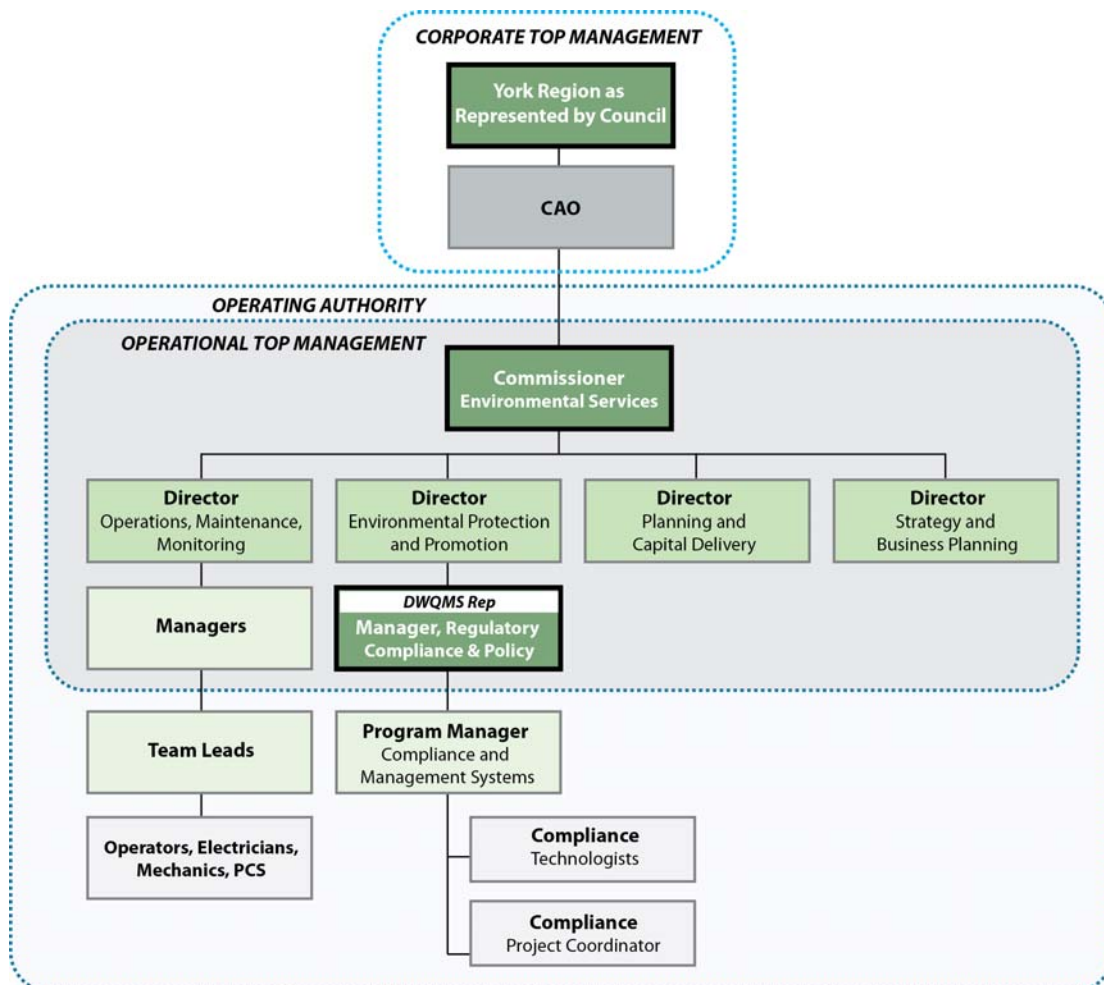
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FOREWORD

In accordance with Element 20 (Management Review) of Ontario's Drinking Water Quality Management Standard, management review meetings are held twice annually with Operational Top Management (Figure 1). The purpose is to review the management system to ensure its continuing adequacy, suitability and effectiveness, as well as evaluating the performance of the system, and address any decisions or actions necessary to improve the management system program. Owners (York Region as Represented by Council) of the drinking water system, who also form Corporate Top Management (Figure 1) are to be provided with an understanding of York Region's Drinking Water Quality Management System. To satisfy this requirement, the Water Summary Report for Regional Council was created as a summary of the management review reporting items that relate to York's drinking water system.

Figure 1
Organizational Structure of Roles



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The “Integrated Management System Policy” was originally developed in December 2008 and it outlines the commitments made for the Region’s management systems. On an annual basis the Integrated Management System Policy is reviewed by Operational Top Management during management review for relevance and alignment to other initiatives.

1.0 INTEGRATED MANAGEMENT SYSTEM POLICY



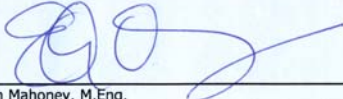
Integrated Management System Policy

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 the latest versions of ISO 9001, ISO 14001, and the Drinking Water Quality Management Standard (DWQMS).



Erin Mahoney, M.Eng.
Commissioner, Environmental Services Department
January 22, 2010

The Regional Municipality of York, Environmental Services Department



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2.0 OPERATIONAL PERFORMANCE

The operational performance section outlines how the drinking-water system is performing, highlighting any operational issues that require attention from the management team.

2.1 INCIDENTS OF REGULATORY NON-COMPLIANCE

All regulatory non-compliances, identified during the Ministry of the Environment inspection process is reported during management review. These results help Management identify regulatory deficiencies in our drinking-water system.

Table 1: Ministry of the Environment Inspections of Water Facilities in 2011

# MOE Inspections Completed:	# Non-Compliance Findings:	# Best Practice Recommendations:
16*	0	4

*Note: The Keswick Water Treatment Plant was inspected twice in 2011.

In 2011, fifteen York Region water facilities were inspected by the Ministry of the Environment. No compliance findings were issued by the Ministry of the Environment, however four best practice recommendations were identified for Aurora, Ballantrae, Keswick and Schomberg's well supply systems.

1) Aurora Well Supply

During the time of the inspection, a vent at the Aurora North Reservoir was found to be damaged. It was recommended that York Region situate the vent to the reservoir in such a way that it prohibits vandalism of any kind, and implement a more frequent inspection schedule of the vent and the grating surrounding the vent to ensure that the owner provides security measures to protect components of the drinking water system.

In response, Operations staff immediately created a work order to repair the vent and grating around the vent. In addition, a preventative maintenance task was issued in Maximo to visually check the vent and surrounding grating monthly.

2) Ballantrae Well Supply and Keswick Well Supply

It was recommended that the Region update the system's Operation and Maintenance manual to include upgrades that have occurred and to satisfy the requirements outlined in Schedule 16 of the respective Municipal Drinking Water License. The Operation and Maintenance manuals are currently being updated by the Region's Capital Planning and

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Delivery Branch through the Infrastructure Improvement Program. The updated manuals will reflect the upgrades that have occurred, as well as the requirements outlined in Schedule 16 of the license.

3) Schomberg Well Supply

It was recommended that a minor administrative change be made to Schomberg Water Treatment Plant's Drinking Water Works Permit to reflect the two fan blowers observed in the field, considering only one blower was recorded in the permit. A Preventative Action Report was filed in the Region's Integrated Management System to monitor future amendment requests associated with this permit. Once a more significant amendment is identified or the Drinking Water Works Permit in question is due for renewal, the minor administrative change recommended by the Ministry of the Environment will be included.

2.2 INCIDENTS OF ADVERSE DRINKING-WATER TESTS

. An adverse water quality incident indicates that a drinking water standard has been exceeded. The report of an adverse event does not indicate that drinking water is unsafe, it indicates that an incident occurred and corrective action must be taken. Corrective action may include re-sampling, adjusting the system or treatment processes or notifying system users.

When a drinking water system owner or operator is made aware of an adverse test result, they must also immediately notify the Ministry of the Environment's Spill Action Centre and the local Medical Officer of Health.

*Note: micro (microbiology), Cl (chlorine)

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Table 2: Summary of Drinking-Water Tests

Parameter:	Q1	Q2	Q3	Q4	Total
# micro tests performed	1,963	2,182	2,027	1,954	8,126
# micro exceedances	0	0	0	0	0
# reported adverse (*all other parameters)	8 Kleinburg-2 Sharon/Queensville Holland Landing Keswick Stouffville Newmarket-2 (***Sodium)	7 Holland Landing Queensville York-3 Kleinburg Newmarket (***Sodium)	1 Ansnorveldt (**Lead)	4 Schomberg (UV, ***Sodium) Georgina (Turbidity) Newmarket (***Sodium)	20
# reported system adverse	0	0	0	2 Ansnorveldt (Pressure) Kleinburg (Pressure)	2

*All other parameters as required by Schedules 1, 2 and 3 in O.Reg. 169/03, and Schedules 6, 10, 23 and 24 in O.Reg. 170/03.

**Lead incident reported was a result of a sampling error. A re-sample was taken and the result was within the regulatory limit.

***Sodium adverse reports are required to be reported to the Ministry of the Environment and the local Medical Officer of Health once every 57 months. In 2011, the 57 month reporting cycle was triggered for a number of water facilities.

Sodium is often found naturally in surface and groundwater as it is present in most rocks and soils across Southern Ontario. Sodium in drinking water is not a health concern for most people, but it may be an issue for persons with specific underlying health concerns or those on a low sodium restricted diet.

York Region tests the sodium levels in water four times a year and the results are summarized on the Region's web site annually. According to federal guidelines and provincial standards for drinking water quality, the aesthetic objective for sodium is 200 mg/L. Sodium concentrations above 200 mg/L may alter the taste of water. The *Ontario Drinking Water Systems Regulation 170/03* under the *Safe Drinking Water Act* is more stringent than the aesthetic objective and requires reporting to the Ministry of the Environment and the local Medical Officer of Health when sodium levels in public drinking water exceed 20mg/L or more. At this point, the local Medical Officer of Health informs local physicians, as such information is intended to help persons on sodium restricted diets control their sodium intake.

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2.3 DEVIATIONS FROM CRITICAL CONTROL POINT (CCP) LIMITS AND RESPONSE ACTIONS

This section is a requirement of the DWQMS Management Review process. A critical control point (CCP) is considered an essential step or point in the subject system where control is applied, to prevent or eliminate a drinking-water health hazard or to reduce it to an acceptable level. In York Region's drinking-water systems, critical control points include, but are not limited to:

- primary disinfection;
- secondary disinfection;
- system pressure; and
- turbidity (for surface water).

A critical control limit is considered the point at which a response procedure is initiated for each critical control point.

Critical control points and limits were established for each drinking-water system facility through the risk assessment exercise in late 2008. Critical control points are monitored and tracked through the Supervisory Control and Data Acquisition System (SCADA) system. In cases where there is a possibility of improperly disinfected water being directed to users, the SCADA system functions to lock-out the facility from directing water to the distribution system, record the information, and send out an alarm for the operators to respond. If there was an adverse sample received, operators use applicable Operating and Emergency Procedures/plans to respond and report as required to the Ministry of the Environment and other parties.

Note: system lock-out levels are set well above regulatory requirements.

2.4 OPERATIONAL KEY PERFORMANCE INDICATORS (KPIs)

The operational performance section of management review is used to cover operational performance parameters that are tracked and measured in Regional drinking-water management system. A number of health-related water quality parameters will be reported. There are many operational control measures in place to assist in maintaining peak performance of water systems to ensure regulatory requirements and stakeholder expectations are met. For water, Supervisory Control and Data Acquisitions-SCADA (a computer system that monitor and control water facility-based processes), Maximo (a computerized work management system), SiteFX (a scheduled sampling program) and numerous operating and emergency procedures are examples of the control measures that ensure peak operational performance.

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Table 3: Key Performance Indicators for Compliance

INDICATOR	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2011
Turbidity - average value for turbidity (NTU) (Objective: < 1 NTU)	0.089	0.094	0.049	0.035	0.067
Trihalomethanes (THMs) - average value for THMs (mg/L) (Maximum Acceptable Concentration (MAC): 0.100 mg/L)	0.018	0.023	0.027	0.027	0.032
Coliforms - number of occurrences with TC counts (P/A) (MAC: absent/not detected)	0	0	0	0	0
Nitrates - average value for nitrates (mg/L) (MAC: 10 mg/L)	0.177	0.119	0.237	0.174	0.177
Lead - average value for lead (mg/L) (MAC: 0.01 mg/L)	0.0002	0.0002	0.0003	0.0002	0.0002
Boil water advisories - number issued by York Region	0	0	0	0	0
Percentage of staff meeting York Region training requirements of 50 hours per year (cumulative by quarter) (target 100%)	5%	40%	55%	100%	100%

All operational key performance indicators (KPIs) are within regulatory requirements.

2.5 RAW WATER SUPPLY AND DRINKING WATER QUALITY TRENDS

As part of each Municipal Drinking Water Licence application, York Region is required to provide information pertaining to raw water supply and drinking water quality trends. This information should identify key water quality issues that need to be addressed by Management.

In general, all key water quality parameters meet the Ontario Drinking Water Standards as summarized in York Region's State of the Aquifer and Lake Report. Iron is one of the main exceptions in most of the well sites, as it is consistently over the minimum detection limit of 0.3 mg/L. This is a characteristic of the York Region aquifers. Chloride and sodium show some increase over time, but minimal when compared against the Ontario Drinking Water Standards aesthetic objectives. Production wells, where sodium is above the reportable level of 20mg/L,

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are monitored for compliance issues. York Region surpasses the required sampling frequency and results consistently meet or are below health related limits. Quarterly water quality is reviewed against all standards and reported to Operations, Maintenance and Monitoring.

There are key parameters that can be considered as indicators of human influence, such as road salting and agricultural activities. These parameters include chloride, sodium, nitrate, sulphate and phosphate. In addition, general water quality conditions, such as conductivity, pH, iron, manganese, total trihalomethanes, and total haloacetic acids are considered parameters of interest, as they affect water quality and treatment.

Annual Water Quality Report

Section 11 of Ontario Regulation 170/03 requires that an Annual Report be prepared for water systems by February 28th each year. The 2011 Annual Water Quality Reports were completed by the Regulatory Compliance and Policy Group using operational data. Water quality reports are available to the public through the york.ca website.

2.6 EXTERNAL COMMUNICATION AND CUSTOMER/CONSUMER FEEDBACK

This section of management review provides a summary of communication received from our customers/consumers regarding water services. For water, all communications received from customers/consumers is documented on External Concern and Response Forms and Spill-Odour Response Forms, which are completed by Operations, Maintenance and Monitoring and managed by the Regulatory Compliance and Policy group.

2.6.1 DRINKING WATER SYSTEMS

- February 2, 2011: A resident was concerned about vibrations from the North Markham Reservoir/Stouffville Zone 2 Pumping Station. Operations, Maintenance and Monitoring staff made multiple visits to the residence and found no evidence of vibrations. Staff turned pumps on and off remotely while at the residence and no vibrations were witnessed by the resident or Operations, Maintenance and Monitoring staff. Ultrasonic equipment was used to test vibrations in an access chamber close to the residence, which resulted in no vibrations being detected. It was determined that Regional activity is not the source of the vibration. A letter was sent to the resident, summarizing the investigation conducted by Operations, Maintenance and Monitoring.
- June 15, 2011: A resident inquired about the ongoing activity at the Nobleton Elevated Tank. The resident also suggested painting the Elevated Tank and putting a hedge along the fence line. Rogers Wireless was also onsite for installations in June, however work was completed by month-end. Hedge planting and fence fabric replacements were scheduled in the summer of 2011 (issued Preventative Action Report 603 to ensure work is completed by September 30, 2011). Operations Maintenance and Monitoring staff completed all the work surrounding the Nobleton Elevated Tank on November 4, 2011. An email thanking the Region for the prompt response was received from the resident.

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- October 12, 2011: A Georgina resident had a concern about a chlorine taste and odour in his water. An Operator visited the resident to discuss allowable parameters, compliant historical trends, collected a grab sample (Chlorine free: 0.71 mg/L and Chlorine total: 0.99 mg/L) and explained composition and variance in source water quality. The resident was satisfied with York Region's response and follow-up.
- December 23, 2011: A Nobleton resident had a concern regarding the amount of iron in his tap water. A Water Resources Technologist received the complaint and contacted the resident to explain. A few suggestions were provided. The resident was satisfied with York Region's response and follow-up.
- December 29, 2011: A resident was concerned because he noticed running water near the North Richmond Hill Reservoir. An Operator responded to the site. Upon arrival, water was no longer running. Contractors were onsite flushing a new watermain and taking samples. The Operator followed-up with the resident who had no further concerns. The resident was satisfied with York Region's response and follow-up.

2.6.2 OTHER COMMUNICATION

Communication material is developed and delivered to York Region residents throughout the year. A York Works newsletter is distributed semi-annually (Volume 17 delivered Winter 2011 and Volume 18 delivered Summer 2011). The york.ca website has links to a plethora of communication material for residents. Numerous media releases are also available to residents. The following topics were communicated to York Region residents through media releases:

January 2011

- January 24, 2011: Watermain breaks resulting in lane reductions on Keele Street and Bathurst Street

February 2011

- February 17, 2011: The Regional Municipality of York creates long-term Water Conservation Strategy

March 2011

- March 3, 2011: Winter edition of York Works discusses strategic vision for our community over the next 40 years
- March 17, 2011: The Regional Municipality of York releases Our Water Future

May 2011

- May 13, 2011: The Regional Municipality of York educates students on importance of water conservation at York Children's Water Festival
- May 31, 2011: The Regional Municipality of York reminds residents to conserve water during hot summer months ahead

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June 2011

- June 1, 2011: The Regional Municipality of York invites residents to 'green' their garden with annual rain barrel sale
- June 6, 2011: The Regional Municipality of York upgrades King City water supply
- June 20, 2011: The Regional Municipality of York continues work on water supply improvements for King City
- June 29, 2011: The Regional Municipality of York offers free landscape visits to York Region residents

July 2011

- July 13, 2011: The Regional Municipality of York reminds residents to be water-smart during hot, dry weather
- July 20, 2011: Outdoor water ban in effect for the communities of Kleinburg and Nashville in the City of Vaughan

August 2011

- August 2, 2011: Outdoor water ban lifted for communities of Kleinburg and Nashville in the City of Vaughan

September 2011

- September 21, 2011: It's time to test your well this fall
- September 22, 2011: The Regional Municipality of York continues research partnership with the University of Toronto

November 2011

- November 4, 2011: The Regional Municipality of York extends road closure on Bayview Avenue due to watermain break
- November 10, 2011: All lanes re-opened on Bayview Avenue between John Street and Steeles Avenue

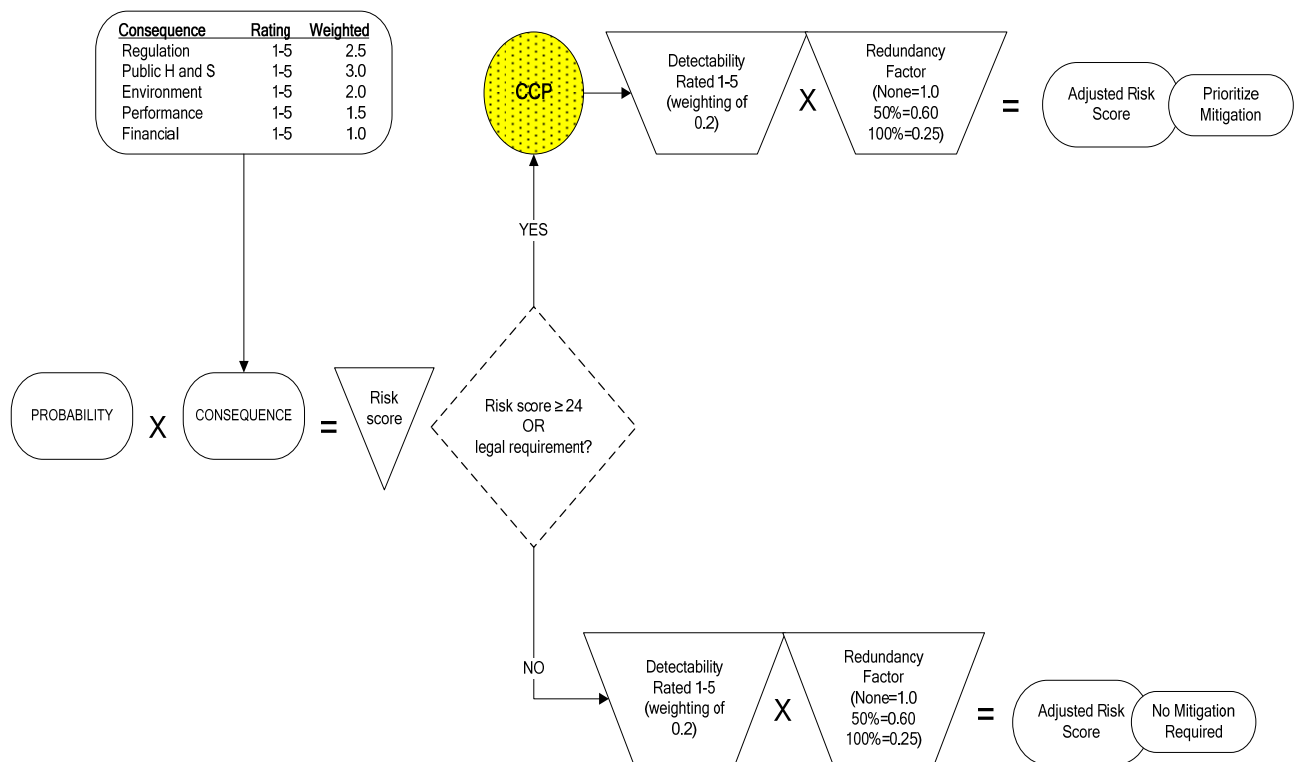
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3.0 MANAGEMENT SYSTEM PERFORMANCE

This section outlines how defined processes in the management systems are performing systemically.

THE RISK ASSESSMENT PROCESS

Element 7 of the Drinking Water Quality Management Standard requires a risk assessment process to be documented that identifies potential hazardous events, as well as assesses and ranks the risks related to each hazardous event. Furthermore, control measures must be identified and critical control points must be realized. Reliability and redundancy of equipment must also be considered. The currency of information and assumptions used in the risk assessment process is verified annually and a re-assessment of the risks in the drinking-water systems occurs every 36 months.



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The risk assessment process used to satisfy the Drinking Water Quality Management Standard Element 7 was based on the Region's existing Infrastructure Improvement Program process. The Infrastructure Improvement Program establishes the overall rules and practices that are used to identify and select non-growth capital projects on an annual basis. Projects are determined through a consistent manner and provide the opportunity to address a wide range of needs and ensure that all risks and opportunities are reviewed. Examples of projects generated through the Infrastructure Improvement Program process, include structural assessment and upgrades of water and wastewater facilities. Given its comparability, the methodology and formulas used in the Infrastructure Improvement Program process is applied to the Drinking Water Quality Management Standard's Risk Assessment Process. Instead of assessing the probability of equipment failure, the basis for Drinking Water Quality Management Standard is assessing the probability of event driven risks relevant to the drinking water system, including extreme weather situations (natural hazardous event) or equipment failure (technological hazardous event).

The risk assessment database contains all drinking-water facilities and their associated risks. The database was created and is maintained by the Regulatory Compliance and Policy group.

3.1.1 CHANGES TO THE RISK ASSESSMENT PROCESS

- A new module, called "York Region Water System" has been developed in Intelex (web based document and task management system) to replace the Access based database. The addition of this module eliminates the need for an external database and helps streamline the storage and access of data. The Drinking Water Quality Management System's annual risk assessment was completed in April 2011. The risk re-assessment, which occurs every three years, is scheduled to be completed in 2012.

3.1.2 NEW SITE ASSESSMENTS

- King City Wells 3 and 4 were updated with the addition of the aqueous Ammonia and King City Elevated Tank 2 (Dufferin Street) was updated following the commissioning in Q4 2011.
- Future assessments/reviews include: Nobleton Well 4, Nobleton Elevated Tank, Ballantrae Wells (following upgrades), Georgina Water Treatment Plant (following upgrades), Richmond Hill (Bloomington Road), and Richmond Hill (Coon's Road) Elevated Tank.

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3.2 SUMMARY OF AUDIT RESULTS

Audits are required in all management systems. Internal audits are designed to evaluate conformance. York Region policy specifies that each drinking water system facility is audited internally once every three years. Internal and third-party audit results are communicated during management review. Internal and third-party audit reports are available in Intellex.

Non-Conformance Reports and Preventive Action Reports provide an opportunity to demonstrate continual improvement of the management systems. Non-conformance reports are generated when an individual notes that there has been a nonconforming activity, product or procedure. Non-conformance Reports are evaluated by the Compliance Technologists, follow up action is assigned to an individual with a timeline for completion, and the close-out of the Non-Conformance Reports is approved by the Director, Operations, Maintenance and Monitoring.

Opportunities for Improvement are suggestions made, in an effort to improve the system, in the spirit of continual improvement.

Preventive Action Reports are raised when something is found that will prevent a Non-conformity report from occurring. The presence of Preventive Action Reports are truly the sign that a management system is functioning well as individuals become comfortable recognizing activities that could be non-conforming before they actually happen.

3.2.1 INTERNAL AUDITS

- Eight internal audits for the water systems (Drinking Water Quality Management Standard, ISO 9001) were completed in 2011. No major Non-Conformance Reports were issued, although three minor Non-Conformance Reports were identified. Seven Opportunity For Improvements, and three Preventative Action Reports were identified through the internal audit process. These numbers demonstrate a strong internal audit program with a commitment to continual improvement.

3.2.2 THIRD-PARTY AUDITS

- ISO 9001:2008 External Surveillance Audit (SGS) – February 14-16, 2011. Two minor Non-Conformance Reports were identified. A corrective action plan was developed and approved by the registrar on April 1, 2011.
- On December 10, 2010 the Canadian General Standards Board conducted a Drinking Water Quality Management System Year One Surveillance Audit. The surveillance audit report was released on July 14, 2011 and the auditor identified three minor non-conformances with the Operational Plan in areas including document and records control, drinking water system descriptions, and essential supplies and services. Corrective action records were submitted by York Region and closed by the Canadian General Standards Board on November 4, 2011
- Drinking Water Quality Management System Year Two Surveillance Audit was initiated by the Canadian General Standards Board in December 2011. All requested documentation has

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been submitted for review, although a summary report has not been released by the Canadian General Standards Board at this time.

3.3 EMERGENCY RESPONSE TESTING

Emergency preparedness and management is essential for the provision of safe drinking water. An emergency is considered a potential situation or service interruption that may result in the loss of the ability to maintain a supply of safe drinking water. There are approximately 30 procedures that have been developed to effectively handle emergency situations in the Region's drinking water systems.

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
- requirement for staff to review all emergency procedures annually during the "Emergency Procedures Review and Sign-Off" (required by December 31st of each calendar year)

Results of emergency response testing are reported during management review.

3.3.1 EMERGENCY TESTS

Water

May 30, 2011 "Exercise Collaborative Storm"

York Region's 2011 emergency exercise dubbed "Exercise Collaborative Storm" involved The Regional Municipality of York and York Regional Police, in partnership with the Town of Georgina and the Town of East Gwillimbury. The Regional Emergency Operations Centre was fully activated, staffed and operational.

The exercise was designed to evaluate the response to a hypothetical severe weather scenario. This scenario was classified as a "functional" exercise that focused on communications between the Town of Georgina, the Town of East Gwillimbury, the Regional Emergency Operations Centre, and the Simulation Cell. It focused on eight major "notional" event sites (for Environmental Services it included the Georgina Transfer Station, the Mount Albert Pumping Station, the Georgina Water Treatment Plant and the Keswick Water Treatment Plant). The exercise addressed emergency response and decision-making processes emphasizing communications, public information, emergency response coordination, inter-EOC response coordination, resource integration, situation reporting, and action planning cycles. In addition, it also served as an opportunity to identify any gaps in ISO operational and emergency procedures.

A summary of the exercise, including key observations, recommendations and next steps, was distributed by the York Region Emergency Management group. There were no other emergency response tests conducted in Q3 and Q4 of 2011.

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3.4 ACTION ITEMS FROM PREVIOUS MANAGEMENT REVIEW(S)

Action items from management review meetings are initiated to address deficiencies in the management systems. At each management review, the statuses of action items from previous management reviews are reported.

A requirement of the Drinking Water Quality Management System and ISO Management Systems is to conduct annual management review meetings. Management review is an important mechanism used by senior management to assess the management systems and ensure their continuing adequacy, suitability and effectiveness. These reviews also provide opportunities to identify administrative and operational business practices that improve efficiency and drive results. Among other things, operational performance, management system performance, audit results, regulatory requirements, and resources are considered. This review can drive fundamental changes to the system as a whole through changes to the management system policy or its objectives. Below is the summary of key action items generated from the Drinking Water Quality Management Standard, ISO 9001 and ISO 14001 management review meeting on October 18, 2011.

- Ensure scheduled management review meetings are held during prescribed reporting quarter
- Include additional details in management review report on reported wastewater exceedances
- Form a task group to investigate the impacts of the Ministry of the Environment's new Environmental Compliance Approvals process
- Satisfy the Ministry of the Environment's Standard of Care requirements through annual IMS Update Council reports
- Promote the achievement of ISO registration through signage at various water, wastewater and waste management facilities
- Identify other Regional staff who may be interested in participating in the internal Compliance Audit Program
- Update the Adverse Water Quality table in the management review report
- Clarify in the management review report the deletion of an obsolete Adverse Water Quality database
- Investigate updates on the Ministry of the Environment's proposed composting facilities guidelines
- Provide more details in the management review report on the methodology and formulas used to complete the Drinking Water Quality Management System risk assessment process

These items are primarily administrative in nature and demonstrate a rigorous commitment to continuous improvement through our integrated management system.

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3.5 CHANGES THAT COULD AFFECT THE MANAGEMENT SYSTEMS

Changes that could affect the management systems allow for discussion of changes that have occurred within the organization or management system over the review period. This section provides an opportunity to discuss changes that have occurred, report plans for the management system and program updates.

York Region Staff Attain Provisional Environmental Auditor Designation by the Auditing Association of Canada

Compliance audits are required periodically by the ISO 14001 standard to ensure facility operations are meeting the applicable environmental legislative and regulatory requirements which govern them. In the spirit of continual improvement, York Region is moving from outsourcing to internalizing the compliance audit program through a three phased approach. As part of the first phase, York Region staff shadowed the consultant performing compliance audits to observe compliance auditing activities and practices.

The intent of developing and implementing an internal Compliance Audit Program is to develop qualified in-house capability to conduct this recurring work, reduce the turn around time in completing audit finding reports, and foster a learning development opportunity for Regional staff in attaining auditing certification. As a first step towards attaining the required Environmental Professional Compliance Environmental Auditor designation from Environmental Careers Organization of Canada, seven Regional staff have attained the Provisional Environmental Auditor designation in adherence with the Auditing Association of Canada qualification criteria. Over the next two phases of the program through the support of the consultant, York Regional staff will acquire the applicable field experience to qualify for the Environmental Professional, Compliance Environmental Auditor designation by 2014.

Development of Integrated Management System Enhancement Plan

For over a decade, York Region has been a leader with respect to the implementing of the International Organization for Standardization program in the fields of water, wastewater and waste management services. As with every management system, an organization makes a concerted effort to establish, maintain and continually improve upon their activities and business processes. This commitment is reflected with the recent hiring of a consultant to provide a business process assessment and enhancement plan to improve the efficiency and effectiveness of the Region's Integrated Management System, as well as guide the Integrated Management System into the future. The assessment will encompass a detailed analysis of the Region's Integrated Management System business processes and activities, examine the level of employee engagement, perform a best-in-class review of leading management system programs in both private and public jurisdictions, and review the Region's existing web based document and records management software. By understanding the Region's management system assets and reviewing key findings from the best-in-class review, the consultant will be in a favourable position to develop an enhancement plan, and recommend continuous improvement initiatives.

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Transition of Accreditation Bodies Under Municipal Drinking Water Licensing Program

The Canadian General Standards Board, a federal government organization entered into an agreement with the Ministry of the Environment on April 1, 2008 to provide accreditation services for the purposes of the Municipal Drinking Water Licensing Program. The role of the Canadian General Standards Board, as an independent third party was to recognize whether quality management systems of operating authorities of municipal residential drinking water systems met the requirements of the Drinking Water Quality Management Standard.

On March 6, 2012 the Ministry of the Environment unexpectedly announced it will be reviewing and updating the accreditation framework. As part of this work, the Ministry of the Environment will be transitioning accreditation bodies over the next few months. Both agencies have stated in written correspondences to work closely to ensure the transition is as seamless as possible. Staff will continue to closely monitor the situation and forward comments to the Ministry of the Environment reinforcing the notion that oversight of accreditation is key to the success of the Drinking Water Quality Management Standard, and advocate that the transition process be carefully executed for continuity of oversight and accountability.

Annual Root Cause Analysis Workshops to Manage Training Requirements

Root cause analysis is a structured step-by-step technique that focuses on finding the underlying causes of a problem and resolving it, rather than continuing to deal with the symptoms. In an effort to build on previous well attended root cause analysis sessions by Environmental Services' staff, Regulatory Compliance and Policy staff facilitated a workshop in December 2011 that investigated enhancements to tools and practices available to assist Operations, Maintenance and Monitoring staff to manage training requirements. Several recommendations were derived from the workshop and are currently being implemented.

New Guidelines to Verify Corrective Actions

During the ISO 14001 external audit (January 18-20, 2011), a recommendation was made by the third party auditor to review the close out procedure for Non-Conformance and Preventative Action Reports to ensure evidence of effectiveness is adequately recorded and/or referenced prior to Non-Conformance and Preventative Action Reports being closed. To satisfy the recommendation and also help prevent the recurrence of non-conformities, a new set of guidelines that enable a corrective action to be verified for effectiveness has been developed and recently approved by the third party auditor (August 2011). In short, the new guideline requires a corrective action to be fully implemented and entered in Intelex with clear and concise comments described in the past tense. Prior to any approval is given by the Director, Operations, Maintenance and Monitoring or the Manager, Waste Operations and Optimization a Verification of Effectiveness Form must be completed by Regulatory Compliance and Policy staff. The form confirms the corrective action has been effectively implemented by the staff member assigned the task.

Consolidation of DWQMS Operational Plan with the existing IMS Policy Manual

The Region's Integrated Management System Policy Manual currently reflects the requirements of both ISO 9001 and ISO 14001, while the Region's Operational Plan satisfies the requirements of the Drinking Water Quality Management Standard. As discussed in Section 3.11 "Operational Plan: Currency, Content, Updates" there are similar guidelines with respect to the Drinking

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Water Quality Management Standard and ISO standards that warrant the consolidation of the Integrated Management System Manual with the Operational Plan. The benefits of consolidating will be the elimination of any redundancies and inconsistencies with respect to specific procedures and governing documents, thus contributing to a streamlined review and approval process.

ISO 9001 Re-Certification Audits

A reassessment of a management system is an ISO requirement. In the case of ISO 9001, a periodic reassessment of an organization's quality management system is expected to be completed every three years. The purpose of the reassessment is to verify overall continuing effectiveness of the organization's management system in its entirety, as well as review of past performance of the system over the period of certification and registration. To satisfy this requirement an ISO 9001 re-certification audit is scheduled over five "audit" days starting January 25, 2012.

3.6 RESOURCES TO MAINTAIN THE MANAGEMENT SYSTEMS

Resources are broadly defined as those things needed to implement and maintain the management systems – they include human, physical work environment and financial resources. As part of the maintenance and continual improvement of the management systems, resources required to run the system will be discussed at management review.

- Resources in Regulatory Compliance and Policy (2011) that help to maintain the existing management systems:
 - Manager, Regulatory Compliance and Policy
 - Program Manager, Compliance and Management Systems
 - Compliance Technologists/Compliance Project Coordinator (4 PFT)
 - ISO Students (1 TFT, 1 Summer Student)
 - 25 Internal Auditors from the Environmental Services Department: Operations, Maintenance and Monitoring, Capital Planning and Delivery, and Environmental Promotion and Protection.
- Resources in Operations Monitoring and Maintenance that help to maintain the management systems: 100 PFTs
- External costs of maintaining the Region's quality management system (ISO 9001) and the Drinking Water Quality Management System, including both external and surveillance audits was approximately \$ 13,000.

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3.7 INFRASTRUCTURE REVIEW

A summary of York Region's infrastructure maintenance, rehabilitation and renewal programs are documented to ensure adequate infrastructure is in place to operate and maintain our systems, as well as communicated to the owners. The Environmental Services Department has extensive infrastructure management programs, such as the Infrastructure Improvement Program and Maximo. This section of management review is used to report on system reliability, system capacity and provide updates with respect to the Infrastructure Status reports and Infrastructure Improvement Program.

Table 3: Key Performance Indicators for Infrastructure

	Q1	Q2	Q3	Q4	2011
Number of scheduled Preventive Maintenance work orders	6,872	6,095	5,932	6,630	25,529
Number of Preventive Maintenance work orders identified as unplanned/unscheduled (by reported date)	800	875	870	801	3,346
Watermain breaks	1	0	1	0	2
Watermain breaks caused by incorrect stakeout	0	0	0	0	0
Days with water restrictions	0	0	14	0	14
Annual distribution (ML)*	57,663		65,022		122,685
Total daily consumption (m ³ /day)*	316,883		351,604		334,243

* Received from billing data as of March 20, 2012

Water Infrastructure Status Report

Annually, Regional Council (Owner) is provided with updates on the status of key water projects required to meet system demands identified as triggers for release of additional capacity and approvals under the Planning Act. In 2011, there have been three "Water and Wastewater Infrastructure Status Reports" presented to Regional Council on January 27, 2011 and April 13, 2011, and September 22, 2011 respectively.

Infrastructure Improvement Program

The Infrastructure Improvement Program is a multi-year planning tool that identifies non-growth capital projects to be funded and completed during a given planning period. The establishment of the Infrastructure Improvement Program provides the Environmental Services

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Department with a systematic and consistent approach to identifying and prioritizing infrastructure improvement needs on an on-going basis.

3.8 OPERATIONAL PLAN: CURRENCY, CONTENT, UPDATES

As part of the Drinking Water Quality Management Standard requirements, an Operating Authority is required to document a Quality Management System for each drinking-water system in the form of an Operational Plan. The Operational Plan is required by the Director's Direction; therefore it must be submitted to the Ministry of the Environment for acceptance. Essentially, the Operational Plan is the document that describes how York Region plans to meet the requirements of the Drinking Water Quality Management Standard. It is then the responsibility of the Operating Authority to implement the plan.

The Drinking Water Quality Management Standard provides the minimum requirements for an Operating Authority to document a quality management system in an Operational Plan for each subject drinking water system that it operates. On December 22, 2008, the Region's Drinking Water Quality Management System's Operational Plan was submitted to the Ministry of the Environment and the Canadian General Standards Board (the accreditation body). Comparatively, both ISO 9001 and ISO 14001 have similar guidelines with the respect to the establishment and maintenance of a quality and environmental manual. The Region's Integrated Management System Policy Manual reflects the respective guidelines that satisfy both ISO 9001 and ISO 14001, including the scope of the Integrated Management System and associated documented procedures.

The advantage of adopting the International Standard enables York Region to align or consolidate its own quality and environmental management systems with other related management system requirements, such as the Drinking Water Quality Management Standard. Given the similar requirements that exist between both the Drinking Water Quality Management Standard and ISO standards there is a benefit to consolidate the Region's Operational Plan with the existing Integrated Management System Policy Manual. By having one manual it will eliminate redundancies and inconsistencies with respect to procedures and governing documents, thus contributing to a streamlined review and approval process.

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3.9 DRINKING WATER QUALITY MANAGEMENT SYSTEM FINANCIAL PLAN

In Part Two of the Walkerton Inquiry Report, Justice Dennis O'Connor highlighted the importance of ensuring that municipalities plan for the long-term financial sustainability of their drinking-water systems to guarantee the safety of their drinking water into the future.

As part of the province's commitment to implement all of Justice O'Connor's Walkerton Inquiry recommendations, the Minister of the Environment has made a regulation (O. Reg. 453/07) under the Safe Drinking Water Act, 2002 that prescribes the requirements for Financial Plans to be prepared as part of the Municipal Drinking-Water Licence Program set out in Part V of the SDWA.

Watson & Associates Economists Ltd. was retained by York Region to prepare a water financial plan as part of the five submission requirements for the purposes of obtaining a municipal drinking water license as per the *Safe Drinking Water Act, 2002*. The Region's Water Financial Plan was approved by Regional Council on June 24, 2010.

In general, the Region's financial plan presents an in-depth analysis of capital and operating needs, a review of current and future demand versus supply, and consideration of available funding sources. The financial plan spans a period of at least six years, with the ability to amend the plan at any time, and add information beyond what is prescribed in the guidelines, if deemed necessary.

4.0 COMMENTS, SUGGESTIONS AND RECOMMENDATIONS

Staff suggestions and recommendations for improvement are an integral part of the management review process.

- 2011 Enhancement Initiatives:
 - Enhance Integrated Management System training program with the addition of interactive training videos for new and existing staff, along with refresher training and quiz modules on selected emergency procedures.
 - Provide an Integrated Management System Update Report (2011) to Regional Council.
 - Consolidation of the Drinking Water Quality Management System Operational Plan with the existing Integrated Management System Policy Manual.
 - Implement the Verification of Effectiveness process with respect to the closing out of Non-Conformance and Preventative Action Reports
 - Add a status option in Intellex to recognize completed corrective actions in response to Non-Conformance and Preventative Action Reports that are still awaiting verification and final approval.



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- Update the Region's website with information on the Region's Integrated Management System
- Members of the In-House Compliance Audit Team to complete the Auditing Association of Canada's Provisional Environmental Auditor Application process
- Conduct a root cause workshop that investigates enhancements to tools and practices available to assist Environmental Services' staff manage their training requirements