

The Regional Municipality of York

Regional Council
Environmental Services
April 27, 2023

Report of the Commissioner of Public Works

2022 Integrated Management System Update Report for Water, Wastewater and Waste Management

1. Recommendation

The Regional Clerk circulate this report to the Clerks of the local municipalities and the Ontario Chief Drinking Water Inspector (Ministry of the Environment, Conservation and Parks) for information.

2. Summary

This annual update on the efficacy of the Integrated Management System for water, wastewater and waste management operations summarizes key strategies to mitigate service delivery risk and demonstrates operational due diligence. This report is a helpful companion report to the 2022 Drinking Water Systems Report (also on this agenda). Together, these reports support Council in meeting statutory standard of care requirements and outlines Drinking Water Quality Management Standard progress under the *Safe Drinking Water Act, 2002*.

Key Points:

- The Integrated Management System is mature, well-established and provides a structured approach to risk mitigation and continual improvement.
- Audits performed at water, wastewater and waste management facilities provided valuable insight into delivery of our services and resulted in improved operational performance and regulatory due diligence. Internal audits were delivered both on-site and virtual components.
- In 2022, water, wastewater and waste management operations participated in three extensive multi-site external audits, which resulted in zero non-conformities and successful re-accreditation to Drinking Water Quality Management Standard.

3. Background

Members of Regional Council have a legal obligation to ensure safe drinking water is provided to residents under the *Safe Drinking Water Act, 2002*

Regional Councillors have an important role in ensuring York Region's drinking water systems provide safe, high-quality drinking water. *Safe Drinking Water Act, 2002* establishes a legal duty on municipal Councillors to exercise a level of care and diligence with respect to municipal drinking water system oversight that a reasonably prudent person would be expected to exercise. Public Works' role is to help ensure that York Region Council members have the information needed to meet this legal obligation. The Integrated Management System (the system) encompasses three standards focusing on quality and environmental management. The system provides a consistent framework to mitigate risk, comply with applicable legal requirements, minimize operational impacts on the environment and continually improve processes. Council supports the system by providing financial resources and supporting continual improvement initiatives.

Table 1 summarizes roles and responsibilities, as defined in the Integrated Management System. Council and the Chief Administrative Officer, identified as Corporate Top Management, are required to provide oversight to ensure suitability and effectiveness of the Integrated Management System. Operational Top Management, fulfill their role in the system by making strategic and operational decisions and preparing this annual report to Council.

Table 1
Roles and Responsibilities for Water, Wastewater and Waste Management Integrated Management System (IMS)

Who	Roles and Responsibilities for IMS
<p>Corporate Top Management</p> <ul style="list-style-type: none"> • Council • Chief Administrative Officer 	<ul style="list-style-type: none"> • Exercise standard of care • Overall direction for IMS • Approval of resources and budget
<p>Operational Top Management</p> <ul style="list-style-type: none"> • Commissioner • General Manager • Directors • Managers 	<ul style="list-style-type: none"> • Strategic direction for IMS • High-level operational decision-making • Assign Drinking Water Quality Management Standard representative to oversee standard implementation
<p>Water, Wastewater and Waste Management Operations</p> <ul style="list-style-type: none"> • Water and Wastewater Operators • Waste Management Coordinators • Technical Support Staff • IMS Coordinators 	<ul style="list-style-type: none"> • Front line operations • Water and wastewater quality sampling • Maintenance, inspections and asset management • Documentation, data capture and validation • Internal audits and regulatory reporting • Operational training requirements

Integrated Management System supports Council with meeting standard of care

The Integrated Management System supports Council with meeting standard of care, providing confidence that water, wastewater and waste management services are delivered in accordance with policies and procedures. These policies and procedures outline our service delivery standards that support regulatory compliance requirements. Conformance to policies and procedures are confirmed through audits. Audits help identify and mitigate operational risks, deliver feedback for continual improvement, offer transparency and gauge operational resilience. Audit outcomes demonstrate to top management that the system is achieving intended results and supports statutory standard of care obligations.

York Region is a leading municipality in management system implementation

York Region was the first organization in North America to apply International Organization for Standardization's Environmental Management Standard (ISO 14001) to a wastewater system. York Region's Integrated Management System continues to evolve through a focused approach of continual improvement to program and service delivery.

Table 2 summarizes standards applied to each operational area. York Region's adherence to International Organization for Standardization (ISO) standards is voluntary, while adoption of the Drinking Water Quality Management Standard (DWQMS) is a legal requirement under the *Safe Drinking Water Act, 2002* and the Municipal Drinking Water Licensing Program. By subscribing to multiple standards, the system effectively mitigates environmental and quality risks, while supporting service delivery excellence and compliance with regulatory requirements.

Table 2
Integrated Management System Framework

Operations	Management Standard	Registered Since
Wastewater	ISO 14001 Environmental Management Standard	2000
Water	ISO 9001 Quality Management Standard	2001
	Drinking Water Quality Management Standard	2009
Waste Management	ISO 14001 Environmental Management Standard	2010
	ISO 9001 Quality Management Standard	2018

Integrated Management System is a risk management framework that protects public health and the environment

The Integrated Management System Policy (Figure 1) is a requirement of our registration and provides the foundation for management system commitments. It sets the framework for water, wastewater and waste management quality and environmental objectives. In 2022, the policy was updated to reflect the importance of digital initiatives and improved appearance through modified graphics. It is displayed at all registered water, wastewater and waste management facilities.

Figure 1 Integrated Management System Policy



Auditing confirms system effectiveness by evaluating conformance with each management system standard

An effective audit program is a critical component of the Integrated Management System. Audit programs monitor conformance with internal processes, compliance with regulatory requirements and strengthen system performance by identifying continual improvement opportunities. In 2022, audits included a thorough document review, on-site facility tours (conducted in-person) and in-depth staff interviews (conducted virtually). Internal proactive audits are required by DWQMS and ISO standards and our audit approach complies with these requirements.

Facilities and programs are audited via three main types of audits:

- Internal proactive audits
 - Completed regularly by qualified Public Works staff to confirm conformance to management system requirements and evaluate compliance with regulatory requirements
- International Organization for Standardization external audit
 - Completed annually by a third-party registration body to confirm conformance to ISO 9001 and ISO 14001 requirements
- Regulatory Drinking Water Quality Management Standard external audit
 - Completed annually by a third-party registration body to confirm conformance to the DWQMS, on behalf of the Ministry of the Environment, Conservation and Parks

4. Analysis

Audit results confirmed high level of conformance, demonstrating system maturity

In 2022, staff conducted 80 internal proactive audits resulting in 80 findings. Each year, audit findings identify internal process improvements and system enhancements. Table 3 summarizes the number of audit findings by audit type, from 2020 to 2022. Number of audit findings have remained relatively consistent year over year, demonstrating a rigorous audit program and well-managed service delivery resulting in zero findings from external audits. Audit results fluctuate based on audit techniques, technology and data management practices, which continue to evolve, allowing for refinement of audit delivery and data analysis.

Table 3

Number of Audit Findings for Water, Wastewater and Waste Management

Audit Type	Number of Audit Findings		
	2020	2021	2022
Internal Proactive Audits	78	67	80
ISO External Audits	1	1	0
Regulatory DWQMS Audits	0	0	0

Audit findings highlight key priorities and continual improvement initiatives

Key areas of focus for 2022 included assessing chemical management practices for water and wastewater operations, ensuring sufficient procurement practices to support supply chain management and evaluating consistent implementation of operational practices, such as electronic approvals, work order completion and asset changes. Table 4 identifies internal audit findings by category. Year-over-year, audit findings per category have minor variances. In 2022, the “miscellaneous” category had an increase in findings, with majority related to operating facilities, including chemical labeling issues, material control gaps and identification of minor site repairs.

Corrective actions are put in place to address each audit finding. Actions include updating guidance documents to reflect process changes, implementing process enhancements to drive efficiencies, updating chemical storage and labeling requirements, improving software function to reduce errors, monitoring staff training requirements and reducing work orders delays. Trends in audit findings and corrective actions will inform key areas of focus for 2023 internal audits. Our systematic approach to addressing audit findings over the past 20 years minimizes risk to the Region and ensures public safety.

Table 4
Number of Internal Audit Findings by Category

Category	2020	2021	2022
Asset Tracking and Calibration	17	9	11
Documentation	39	31	38
Process Improvements	13	14	9
Training	7	7	8
Miscellaneous	2	6	14

Third-party audits resulted in zero non-conformities and successful re-accreditation to Drinking Water Quality Management Standard

Third-party audits are intended to confirm the Integrated Management System complies with requirements of DWQMS and ISO standards. Audits are completed by certified external auditors who stringently review internal processes. In 2022, three external audits were conducted over 19.5 audit days. Third-party audits resulted in zero non-conformities, a testament to the maturity of the Integrated Management System and diligent operational practices. External audits provide insight into the system by leveraging industry experience and providing feedback on system performance. Audit results and feedback received during

2022 external audits indicate operations are performing well, and the Integrated Management System is effectively mitigating risks.

Risk mitigation is a key component of the Integrated Management System

The Integrated Management System provides a multi-pronged approach to identify and mitigate system risks through established risk management practices and proactive audits. Operational Top Management meets quarterly to evaluate emerging risks and track progress on related mitigation projects. In 2022, an annual review of drinking water system risks was conducted (as required by the Drinking Water Quality Management Standard) and environmental risks were reviewed for wastewater and waste management operations (as required by ISO 14001). An example of a system risk that was identified and continues to be actively managed is the Region's approach to managing cybersecurity threats against its automation and control system. Cybersecurity risks are continually monitored and evaluated with mitigation measures identified, tested and implemented. These mitigation measures include technical controls, training and procedures to ensure staff follow best practices related to cybersecurity.

Emergency preparedness tools in the Integrated Management System provide critical support during emergency situations

The Integrated Management System has a strong foundation in emergency preparedness, through emergency procedures, training and testing, which supports corporate and departmental emergency management. In 2022, emergency testing included hands-on scenarios, tabletop discussions and after-action debriefs of actual emergency situations. Testing activities resulted in 35 actions that address areas for improvements in procedures, clarify notification requirements, streamline frontline response measures and provide line of sight to mitigate future emergencies. Emergency support tools developed and tested through the Integrated Management System continue to prepare staff for emergency situations and response

Continual improvement initiatives drive system performance efficiencies

Within the Integrated Management System, staff completed several process enhancements in 2022 to drive efficiencies in water, wastewater and waste management service delivery, including:

- Conducted seven debriefs and root cause analysis workshops reviewing incidents such as watermain breaks, procurement-related/supply chain challenges and operational incidents. Staff identified 42 actions to capture lessons learned and prevent incident recurrence.
- Advanced digital processes in training and incident tracking to improve data accuracy and data availability for decision making

- Provided students in co-operative education opportunities to support sustainability via work terms with the Integrated Management System team. Received an award from the University of Waterloo for this initiative.

Together, these improvement initiatives and results support system efficiency and performance, cost savings and risk mitigation, which strengthen service delivery in water, wastewater and waste management operations.

Operational Top Management confirm adequacy, suitability and effectiveness of the Integrated Management System

Annual management review meetings are required by all three standards to review system performance and verify implementation of continual improvement initiatives. Operational Top Management use this opportunity to assess efficacy of the Integrated Management System. The review focuses on system and regulatory performance, audit results, resources, legal changes, customer feedback and operational risks and opportunities. The annual review is critical to sustaining accountability within each standard, it helps identify opportunities to improve efficiency and ultimately drives the high-performing results shared with Council year-after-year.

Operational Top Management met at the end of March 2023 to review system performance for 2022. Management confirmed the adequacy, suitability, system roles and responsibilities and effectiveness of the Integrated Management System.

5. Financial

Integrated Management System generates a value-added return on investment for risk mitigation and regulatory compliance

In 2022, total actual program costs to operate the Integrated Management System were \$743,828, representing less than 0.1% of Public Works' gross operating costs. Program costs, including staffing and external audit services, are funded 80% through water and wastewater user rates and 20% from the tax levy designated for waste management activities.

Council's support of the Integrated Management System generates a value-added return on investment and helps sustain the Region's reputation as environmental stewards. Strong regulator inspection scores in water and wastewater are in part attributed to the activities and rigour of the Integrated Management System. The system provides substantial risk mitigation and consistent management of quality and environmental objectives, resulting in cost avoidance of potential environmental restoration or water quality situations. A worthwhile investment, the system supports Council in meeting standard of care obligations prescribed in the *Safe Drinking Water Act, 2002*.

6. Local Impact

York Region and local municipal partners benefit from a collaborative approach to service delivery

Public Works' Integrated Management System provides benefits to local municipalities as it supports a structured approach to mitigating full-system risks and environmental impacts. Local municipalities benefit from an integrated systems view, which drives continual improvement and risk mitigation, meeting regulatory requirements in the shared service delivery model for water, wastewater and waste management operations.

All local municipalities maintain a quality management system to meet requirements of the DWQMS. York Region staff meets regularly with municipal and provincial partners to address challenges, share best practices, evaluate operating procedures and develop common approaches for efficient and effective service delivery.

7. Conclusion

Providing a summary of York Region's performance and enhancements on the Integrated Management System supports Council in meeting standard of care requirements under the *Safe Drinking Water Act, 2002*. Work delivered through the Integrated Management System demonstrates York Region's commitment to ongoing improvement and effective delivery of programs and services. Continual improvement initiatives support system efficiencies and improved risk mitigation.

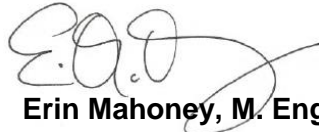
Successful external audits in 2022, including seamless re-accreditation to Drinking Water Quality Management Standard, confirm the Integrated Management System is well-established, mature and systematically reduces operational risk. Through various checks and balances that occur throughout the year, management confirms adequacy and effectiveness of the Integrated Management System to strengthen delivery of York Region's water, wastewater and waste management services.

For more information on this report, please contact David Szeptycki, Director, Strategy and Innovation at 1-877-464-9675 ext. 75723. Accessible formats or communication supports are available upon request.

Recommended by:



Laura McDowell, P. Eng.
General Manager, Interim Transition – Environmental



Erin Mahoney, M. Eng.
Commissioner of Public Works



Approved for Submission:

Bruce Macgregor
Chief Administrative Officer

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