



Hamilton

2023

City of Hamilton

**Wastewater Quality
Management System
Annual Summary**

WASTEWATER QUALITY MANAGEMENT SYSTEM POLICY



The City of Hamilton owns, maintains and operates various wastewater systems. The City is committed to:

C

Compliance with all legal and other requirements

L

Leaders in pollution prevention

E

Effective Communication with the community

A

Always improving the Wastewater Quality Management System

N

Noteworthy innovation



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1 INTRODUCTION

1.1 PURPOSE

This Wastewater Quality Management System Annual Summary Report is being submitted to the Owner, (Mayor and Council), on behalf of Top Management (General Manager of Public Works and Director of Hamilton Water) of the City of Hamilton’s wastewater system.

The purpose of this Wastewater Quality Management System Annual Summary Report is to keep the Owner of the City’s wastewater system informed about the performance of the Wastewater Quality Management System, including major milestones achieved in 2023.

1.2 SCOPE

The Wastewater Quality Management System Standard requires that the Operating Authority (staff within Hamilton Water responsible for the operation, maintenance and provision of support services to the City of Hamilton’s wastewater system) report on certain Elements of the Wastewater Quality Management System to the Owner, specifically the outcomes of Evaluation of Compliance (Element 14), Review and Provision of Infrastructure (Element 15), and Management Review (Element 21). This report fulfills the communication requirements of these Elements and exceeds the Standard’s requirements by providing information on Environmental Aspects and Impacts (Element 7), Objectives and Targets (Element 8), Wastewater Quality Management System Audits (Element 20) and other major milestones of the Wastewater Quality Management System for 2023.

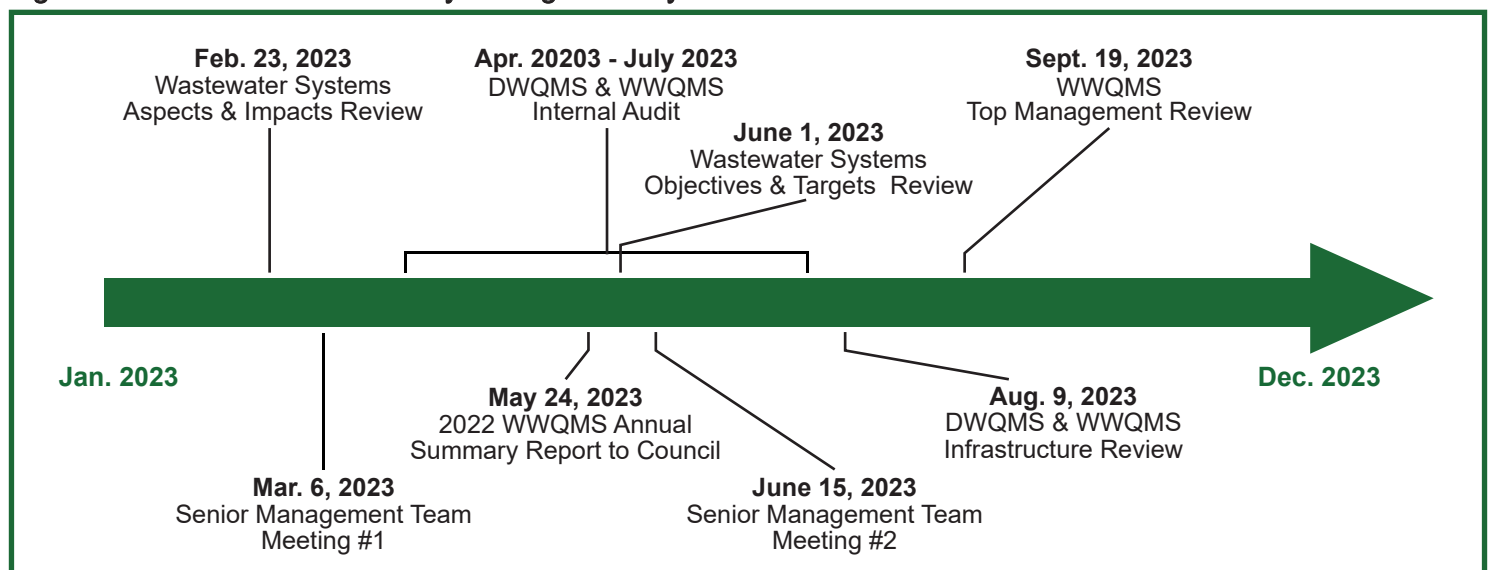
1.3 OVERVIEW OF KEY MILESTONES

On December 16, 2020, the Wastewater Quality Management System Operational Plan was first endorsed by City Council through Report PW20076. Following the endorsement, the Wastewater Quality Management System Operational Plan was posted on the City’s website and made available to the Public at 330 Wentworth Street North and City Hall.

The Wastewater Quality Management System Operational Plan was re-endorsed by City Council on March 29, 2023, through Report PW23017.

More information about the Wastewater Quality Management System Operational Plan, Wastewater Quality Management System Policy CLEAN, Wastewater Quality Management System Annual Summary Report and Hamilton Water Financial Plan is now available on the City’s website: www.hamilton.ca/WWQMS.

Figure 1: 2023 Wastewater Quality Management System Milestones



DWQMS = Drinking Water Quality Management System & **WWQMS** = Wastewater Quality Management System

1.4 WASTEWATER QUALITY MANAGEMENT SYSTEM OPERATIONAL SUMMARY

Figure 2 illustrates the Plan, Do, Check, and Act Elements of the Wastewater Quality Management System Standard that were voluntarily developed and adopted by the City of Hamilton. The following sections of this report include these Elements of the Wastewater Quality Management System:

Section 2 – Element 7 Environmental Aspects and Impacts

Section 3 – Element 8 Objectives and Targets

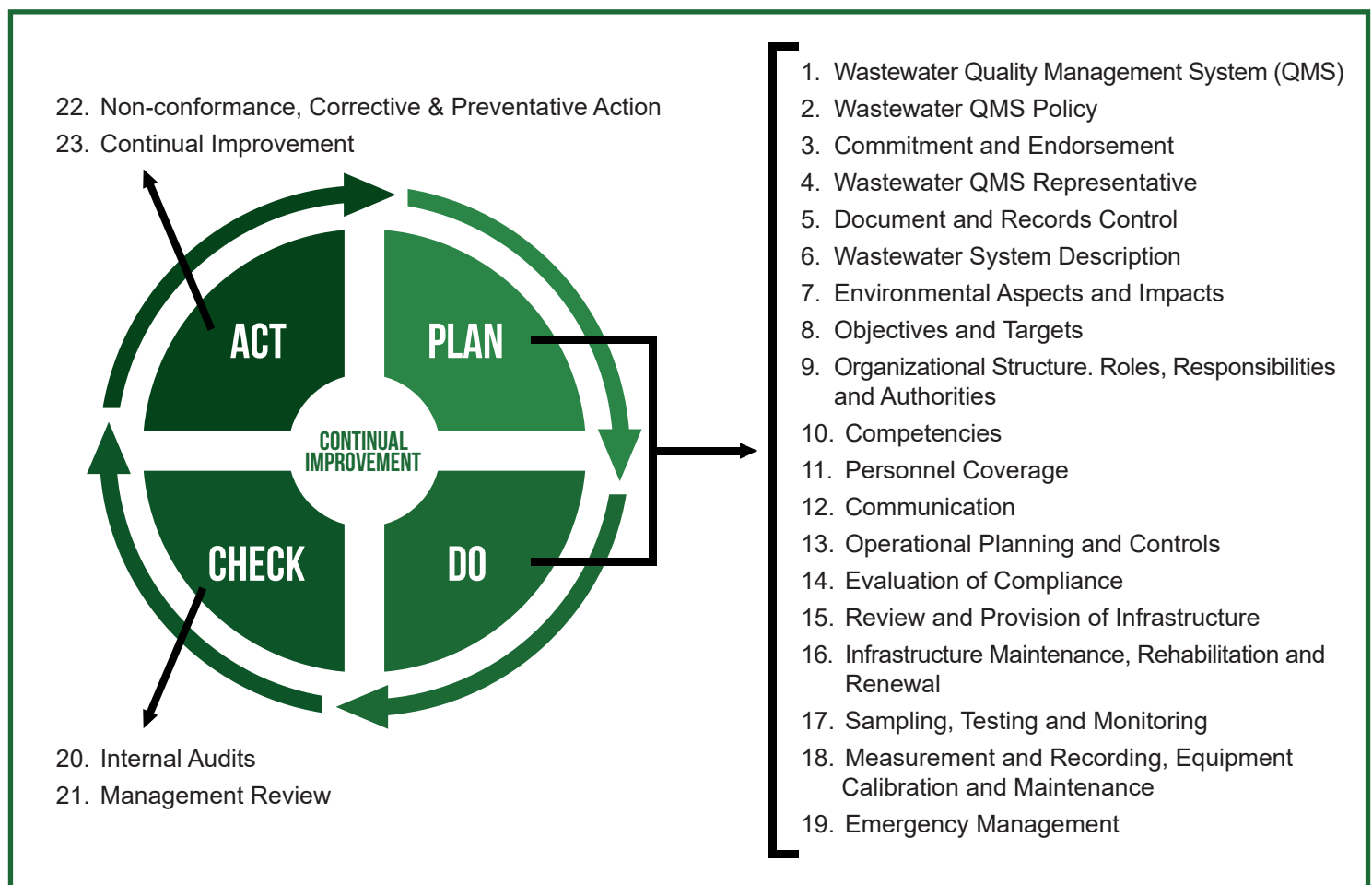
Section 4 – Element 14 Evaluation of Compliance

Section 5 – Element 15 Review and Provision of Infrastructure

Section 6 – Element 20 Internal Audits

Section 7 – Element 21 Management Review

Figure 2: Wastewater Quality Management System Standard Elements



1.5 LEGAL AND OTHER REQUIREMENTS

In 2023, Hamilton Water received the following two new Environmental Compliance Approvals for pumping stations.

- HC011: Calvin Street, Environmental Compliance Approval #0185-CMXL2M issued March 29, 2023

- HCG03, HCG07, HCG08, HCG14: Real-Time Control Facilities, Environmental Compliance Approval # 5433-CJ7JMB issued April 5, 2023.

The City of Hamilton received drafts of the Sewage Consolidated Linear Infrastructure Environmental Compliance Approval from the Ministry of the Environment, Conservation and Parks in 2023. The City of Hamilton and the Ministry of the Environment, Conservation and Parks continue to work towards a finalized Consolidated Linear Infrastructure Environmental Compliance Approval.

The Woodward Wastewater Treatment Plant, Environmental Compliance Approval # 9410-B65QRT Contract 1: Main Pumping Station and Contract 2: Electrical Upgrades related to the Woodward Upgrades Project reached substantial performance in 2023. Contract 3: Tertiary Treatment Facility is expected to reach substantial performance in 2024.

Other Projects related to the Woodward Wastewater Treatment Plant that reached substantial performance in 2023 are listed below:

- Headworks Biofilter Media Replacement and Rehabilitation
- Aeration Gallery Walkway and Access Repairs
- Anaerobic Digester Improvements
- Emergency Boiler Line Repair
- South Plant Waste Activated Sludge Piping Upgrades

Part A of the Pollution Prevention and Control Plan: Final Combined Sewer System Characterization Study was submitted to the Ministry of the Environment, Conservation and Parks on March 14, 2023. Part B of the Pollution Prevention and Control Plan: Additional Combined Sewer Overflow Control Alternatives and Proposed Remedial Measures was submitted to the Ministry of the Environment, Conservation and Parks on August 1, 2023.

All legal reports were submitted by the required deadlines and there were no self-declared non-compliances.

The Woodward Wastewater Treatment Facility was inspected by the Ministry of the Environment, Conservation and Parks on July 5, 2023. Documents requested for the Inspection were submitted to the Ministry of the Environment, Conservation and Parks on July 26, 2023. To date, the City has not received the draft Inspection Report from the Ministry of the Environment, Conservation and Parks.

The Ministry of the Environment, Conservation and Parks also inspected the following wastewater outstations on July 11, 2023:

- HCS02 – Strachan Combined Sewer Overflow Tank
- HCS04 – Main and King Combined Sewer Overflow Tank
- HC017 – Eastport Sewage Pumping Station

2 ENVIRONMENTAL ASPECTS AND IMPACTS

2.1 OVERVIEW

The Wastewater Quality Management System Standard requires that an Environmental Aspects and Impacts Assessment be conducted in its entirety every three years and reviewed on an annual basis to verify the information is current and valid. In 2023, the Environmental Aspects and Impacts Assessment was conducted in its entirety.

Staff from across Hamilton Water collaborated on updating the existing information considering the following key questions:

- Have there been any major process changes that affected existing Environmental Aspects or created new aspects?
- Are identified operational control measures still valid?
- Have additional controls been implemented?
- Were there any changes to aspects identified as “Significant”?

In 2023, five significant Environmental Aspects of the Wastewater System were identified:

1. Damage to sewer due to continuous hazardous wastewater discharge from Industrial, Commercial and Institutional properties resulting in spills to the environment.
2. Cross-connections (Sanitary/Combined to Storm).
3. Major breaks (including construction activities).
4. Bypass / overflow.
5. Cross-connections (Lateral).

2.2 KEY UPDATES

As part of the Environmental Aspects and Impacts Assessment, process changes, including capital upgrades in the wastewater system are considered and the associated ratings (i.e. the likelihood of occurrence, severity of impacts and their detectability) are updated as needed. The following includes a list of information that was considered in the 2023 Assessment:

- Changes in wastewater system capacity due to upgrades to pumping stations
- Bypasses at the treatment plants and overflows of combined sewage overflow tanks
- Upgrades and maintenance at the Woodward Avenue Wastewater Treatment Plant
- Instances of incidents and complaints related to the processing of biosolids

In 2024, an interim review of the Environmental Aspects and Impacts Assessment process and outcomes will be completed in accordance with the Wastewater Quality Management System Standard. The Wastewater Quality Management System Environmental Aspects and Impacts Assessment and Infrastructure Review will be updated to incorporate any new changes in accordance with Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure that came into effect on January 1, 2018.

3 OBJECTIVES AND TARGETS

3.1 OVERVIEW

The Wastewater Quality Management System Standard requires that Objectives and Targets be established to avoid or minimize environmental impacts from the City’s Wastewater System. The Objectives and Targets were set based on evaluation criteria identified in the Wastewater Quality Management System Standard. The following is the list of evaluation criteria:

- Significant aspects
- Wastewater Quality Management System Policy
- Compliance obligations
- Technological options
- Financial, operational, and business requirements
- Views of interested parties
- Preventative measures
- Audit results

The Objectives are:

- To minimize discharges to the environment
- To regulate the quality of wastewater received from industrial, commercial, and institutional properties
- To meet all Environmental Compliance Approvals and Hamilton Harbour Remedial Action Plan requirements for final effluent quality for the Dundas and Woodward Avenue Wastewater Treatment Plants

The Objectives and Targets are reviewed and updated annually.

Management Programmes have been established to meet the Objectives and Targets. Updates to the Management Programmes are made throughout the year to add any new projects or reflect changes in project status.

3.2 KEY UPDATES

The Wastewater System Objectives were reviewed on June 1, 2023 to ensure that they were still appropriate based on evaluation criteria outlined in the Wastewater Quality Management Standard. No changes were made to the three Objectives for the City’s Wastewater System.

In 2023, the City’s performance Targets were reviewed at the Top Management Meeting on September 19, 2023. The following are the outcomes of the review of Targets:

- Wet weather flow capture rate was 91.30% in 2022 for Ministry of the Environment, Conservation and Parks CSO Reporting for April 15 - Nov 14. Thus, F-5-5 requirements were met (i.e. over 90% of wet weather flow was captured; primary level of treatment was achieved for carbonaceous biochemical oxygen demand and total suspended solids removal in combined flows above the dry weather flow).
- 63% of industrial, commercial and institutional permits were processed within 90 days. Twenty-nine permits expired without new permits in place. 85% of Notice of Violations were sent within three weeks of being posted. 89 properties were assessed.
- Woodward and Dundas Wastewater Treatment Plants were in 100% compliance with their Environmental Compliance Approvals. The Hamilton Harbour Remedial Action Plan limits were met for total ammonia nitrogen although the limits were exceeded for total suspended solids and total phosphorous.

The Management Programmes were updated throughout the year to add new projects or reflect changes in project status.

4 EVALUATION OF COMPLIANCE

4.1 WASTEWATER SYSTEM COMPLIANCE AUDIT

The Operating Authority voluntarily retained the services of Wood PLC in March 2020 to evaluate the compliance of the Wastewater System with legal and other requirements. Due to the COVID-19 pandemic, the audit was conducted off-site virtually. There were 10 non-compliances, nine recommendations and four best practices identified.

4.2 STATUS OF FINDINGS

Of the 10 non-compliances from the 2020 audit, four were closed in 2020, three were closed in 2022, and three remain open in 2023. The three open non-compliances are tied to maintenance projects and corrective actions are ongoing. The recommendations and best practices were considered for future action as required.

5 REVIEW AND PROVISION OF INFRASTRUCTURE

5.1 PURPOSE

The Operating Authority must ensure and verify, on an annual basis, the adequacy of the wastewater infrastructure. In order to satisfy the requirements of the Wastewater Quality Management System Standard, the Operating Authority conducted a formal review of its vertical (wastewater treatment, storage and pumping) and horizontal (wastewater collection pipes, regulators, etc.) infrastructure. The scope of the review also considered the operation, maintenance and replacement of existing infrastructure assets as well as new infrastructure planned for immediate and future needs. An Infrastructure Review meeting was held with the Management Team of Hamilton Water to discuss the outcomes of both the horizontal and vertical infrastructure reviews. This section of the Wastewater Quality Management System Annual Summary Report (2023) includes a brief summary of the results of the Wastewater Quality Management System Infrastructure Review.



5.2 PROCESS

Teams were assembled from across relevant sections of Hamilton Water, Engineering Services and Planning, and Economic Development to conduct the review of wastewater infrastructure. The Infrastructure Review Meeting was held on August 9, 2023, to discuss the adequacy of vertical and horizontal wastewater infrastructure.

The teams collected and examined input data related to various asset management, maintenance and capital programs. A summary of the type of “indicator” data examined is provided below:

Infrastructure Type	Input Data
Horizontal Infrastructure Operations & Maintenance	<ul style="list-style-type: none"> • Linear Sewer Inspections and Condition Assessments including Sewer Age • Profiles, Closed-Circuit Television and Cured in Place Pipe Lining • Wastewater Collection Maintenance Program • Sewer Maintenance, Repair and Replacement Program • Inspection Programs – Maintenance Hole, Sewer Boom, Combined Sewer Regulators, Air Valve, Combined Sewer Outfall, Sewer Lateral Backup • Sewer Lateral Management Program • Mainline Sewer Blockages
Horizontal Infrastructure Capital	<ul style="list-style-type: none"> • Capital Maintenance Projects • Mainline Sewer Rehabilitation Projects • Asset Management Plan Updates • Master Plan Updates
Vertical Infrastructure Operations & Maintenance	<ul style="list-style-type: none"> • Preventative Maintenance Program • Inspection Programs by Enhanced City of Hamilton Outstations Team
Vertical Infrastructure Capital	<ul style="list-style-type: none"> • Large Capital Projects • Condition Assessment • Asset Management Plan Updates • Master Plan Updates

5.3 OVERVIEW OF RESULTS

The outcomes and recommendations from the Infrastructure Review Meeting were documented in meeting minutes. Attendees at the Infrastructure Review meeting utilized the outcomes from the meeting as input to capital planning and budget preparation. Hamilton Water discussed the 2023 Infrastructure Review at the Top Management Review Meeting on September 19, 2023.

The 2023 Infrastructure Review process concluded that our vertical and horizontal infrastructure is generally found to be adequate and available when needed. It was also concluded that there is an increased demand on maintenance staff and resources as assets remain in operation beyond their intended life cycle.

6 INTERNAL AUDITS

6.1 WASTEWATER QUALITY MANAGEMENT SYSTEM AUDITS

The Operating Authority must conduct annual Internal Audits to evaluate the conformity of the Wastewater System with the requirements of the Wastewater Quality Management System Standard and its procedures.

In 2023, the Wastewater Quality Management System Internal Audit was integrated with the Drinking Water Quality Management System audit. The results of the 2023 Annual Wastewater Quality Management System Internal Audit demonstrated that the City of Hamilton’s Wastewater Quality Management System contains the required procedures and records to illustrate the establishment and continual improvement of the Management System.

With the timely completion of the corrective actions issued as a result of this audit, the overall conformance to the Wastewater Quality Management System Standard and the City of Hamilton’s Wastewater Quality Management System is suitable, the audit process is adequate, and the implementation and maintenance effective.

6.2 2024 WASTEWATER QUALITY MANAGEMENT SYSTEM AUDIT PLAN

The Compliance Support Group of the Compliance & Regulations Section will be developing an Audit Plan for the 2024 Wastewater Quality Management System Internal Audit. The audit is to take place between September and November 2024. The plan will include a number of process and Element audits. The Audit Plan will be reviewed by the Hamilton Water Senior Management Team and approved by the Systems Management Representative prior to implementation.

7 MANAGEMENT REVIEW

The “Plan” component of Element 21 Management Review of the Wastewater Quality Management System Standard requires a documented procedure to describe how the Operating Authority reviews the suitability, adequacy and effectiveness of the Wastewater Quality Management System. The “Check” component of the Element requires that Top Management participate in a management review at least once per year to review the Wastewater Quality Management System and consider recommendations for continual improvement. Required outputs of the meeting are:

- Consideration of the results of the management review and identifying deficiencies and action items to address deficiencies
- Provide a record of decisions and action items including responsibilities and timelines
- Report the results of the management review to the Owner

In 2023, the Wastewater Quality Management System Top Management Review was held on September 19, 2023. Attendees included Top Management (General Manager of Public Works and Director of Hamilton Water), Directors, Section Managers, Overall Responsible Operators for Collection and Treatment, the System Management Representative (i.e., Manager of Compliance and Regulations) and staff from the Compliance Support Group.

Overall, Top Management, Directors and Section Managers concluded that the Wastewater Quality Management System is suitable, adequate and effective.

Action Items were assigned following the 2023 Wastewater Quality Management System Top Management Review that will result in operational improvements, improved communication and better coordination between Hamilton Water and other City departments.

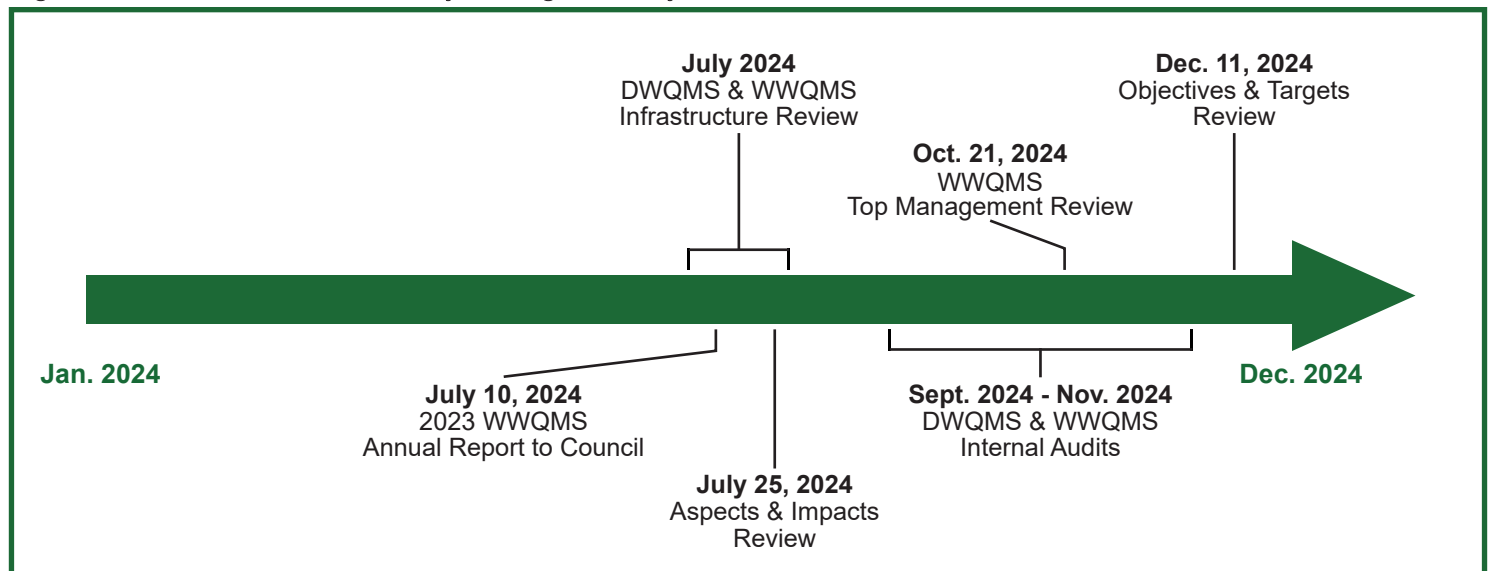
8 CONCLUSIONS

The outcomes from the internal Wastewater Quality Management System audit and the Management Review concluded that the Wastewater Quality Management System is adequate, suitable, effective and conforms to the requirements of the Wastewater Quality Management System Standard. Corrective action plans from the audit and action items from the Management Review will be implemented to ensure continual improvement of the Wastewater Quality Management System.

9 NEXT STEPS

The management system requires ongoing commitment by staff and management. Maintenance and improvement of the system continue to be a high priority of the Operating Authority. Major milestones related to the maintenance of the Wastewater Quality Management System in 2024 are detailed in Figure 3.

Figure 3: 2024 Wastewater Quality Management System Milestones



DWQMS = Drinking Water Quality Management System & **WWQMS** = Wastewater Quality Management System