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Document #	<i>PW-WW-R-001-003</i>	Document Level	<i>3</i>
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PREFACE

Hamilton Water is committed to the protection of worker health, public health, property, and the environment. Beyond Compliance Operating System (BCOS) was developed to support this commitment. BCOS is an integrated management system that currently oversees the Drinking Water Quality Management System, Environmental Laboratory QMS and the Occupational Health and Safety Management System.

The Wastewater Quality Management System (WWQMS) falls within the BCOS umbrella. WWQMS is being implemented to effectively collect and treat wastewater and protect the environment. As no WWQMS Standard currently exists, the voluntary standard for the WWQMS was developed internally by Hamilton Water by merging the existing ISO14001:2015 and Drinking Water Quality Management Standard. The requirements of the WWQMS are stated throughout the Operational Plan Summary Report and have been developed by subject matter experts within Hamilton Water

BCOS Framework & WWQMS



Access to Reports

Following the endorsements of the WWQMS Operational Plan Summary Report, signed copies of the WWQMS Operational Plan Summary Report will be made available to the public on the City’s website, Clerk’s Office, City Hall and the Hamilton Water storefront at 330 Wentworth.

The WWQMS Operational Plan Summary Report is also accessible to staff through the BCOS Database and the Sectional Workspaces.





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1 QUALITY MANAGEMENT SYSTEM

1.1 Purpose

The purpose of the Wastewater Quality Management System (WWQMS) Operational Plan is to document the City of Hamilton’s WWQMS as part of the City’s efforts to:

- a. consistently process wastewater that meets applicable legislative, regulatory and other requirements, and
- b. enhance environmental performance through the effective application and continual improvement of the Quality Management System.

1.2 Scope

The WWQMS Operational Plan applies to Hamilton Water (HW), which is the Operating Authority for the City’s wastewater collection and treatment system (WWS).

HW has developed a WWQMS Operational Plan Manual (PW-WW-M-001-007) outlining the procedures and documents appropriate to the wastewater systems located in the City of Hamilton. The purpose of the WWQMS Operational Plan Manual (PW-WW-M-001-007) is to ensure that the requirements of the WWQMS is efficiently and effectively communicated to HW staff and key stakeholders. The WWQMS Operational Plan Manual also includes a map entitled “[City of Hamilton Wastewater Collection System Map \(PW-WW-V-011-001\)](#)” which illustrates the geographic scope of the City’s wastewater systems.

1.3 Definitions

BCOS	Beyond Compliance Operating System – Environmental, Health and Safety Management System for the Hamilton Water Division. BCOS is an umbrella system to the Environmental Laboratory QMS, DWQMS, and WWQMS sub-systems.
BCOS Database	Electronic management system software provided by Intelx. Scope of software is EQH&S and meets the requirements of the BCOS standards.
BLT	BCOS Lead Team - Includes SMR, Compliance Support Group, and Sectional QAs or designates from the Hamilton Water Division.
C&R	Compliance and Regulations Section





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CD	Capital Delivery Section
COH	City of Hamilton
Collection System	The entire network of equipment, processes, and service pipes that collect wastewater from customers
Combined Sewer Overflow Tank (CSO Tank)	Tanks designed for the storage of combined sewage during heavy rain events. Gates in the sewer system direct flow into the CSO tanks. The combined sewage is stored in the tanks until the rain event has ceased at which point the wastewater is directed back to the sewer system and onto the WWTP for treatment. These tanks help decrease the volume of water in the combined sewer system being transported to the WWTP and also decrease the number of CSOs to the natural environment.
Combined Sewer System	A wastewater collection system which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and stormwater runoff through a single-pipe system to a Sewage Treatment Plant (STP) or treatment works. Combined sewer systems which have been partially separated and in which roof leaders or foundation drains contribute stormwater inflow to the sewer system conveying sanitary flows are still defined as combined sewer systems.
Continual Improvement	Recurring process of enhancing the management system in order to achieve improvements in overall performance consistent with the organization's policy. Continual improvement tools include identification of existing or potential non-conformances, root cause analysis, implementation of corrective / preventive action requests and verification of the effectiveness of corrective / preventive actions.



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Controlled documents	<p>Document deemed to be important to the functioning of Hamilton Water Division, as updated, reviewed, approved by the indicated staff, and authorized for release and distribution. The document is available to staff in a format that cannot be modified without appropriate approval. The document available to staff is always the most current version of the document. The document is subject to monitoring, auditing and update. Controlled documents have a unique BCOS issuance number.</p> <ul style="list-style-type: none"> Includes: procedures, manuals, checklists, forms, templates, lists, visual aids, guidelines and brochures.
Corrective Action	Action to eliminate the cause of a detected non-conformance or non-compliance.
CSG	Compliance Support Group
CS&CO	Customer Service and Community Outreach Section
DWQMS	Drinking Water Quality Management System
ECA	Environmental Compliance Approval



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E2	<p>The Environmental Emergency (E2) Regulations came into force under the authorities of the Canadian Environmental Protection Act, 1999 (CEPA 1999). The E2 Regulations were put in place to enhance the safety of the environment and human life and health of Canadians by preventing, preparing for, responding to and recovering from environmental emergencies. Under the E2 Regulations, any person who owns or has the charge, management or control of a listed substance on a fixed facility may be required to:</p> <ul style="list-style-type: none"> • identify substance and place; • prepare an environmental emergency plan (E2 plan); • implement, update and test the E2 plan annually; • provide notice of closure or decommissioning; and • report environmental emergencies involving regulated substances.
EQH&S	Environmental, quality, health and safety
Hamilton Water (HW)	Hamilton Water Division, which is the water, wastewater, and stormwater Operating Authority for the City of Hamilton.
HW - SMT	The Hamilton Water Senior Management Team includes the Directors & Section Managers of the Hamilton Water Division.
IPS	Infor Public Sector (formerly HANSEN). Departmental and cross-sectional modular software system, offering a variety of packages designed to handle different aspects of municipal operations such as infrastructure assets inventory, work management, stock inventory systems, service applications and call centers, licensing and enforcement.
Level III Document	A controlled document that applies to the Hamilton Water Division.
Level III Document (Scoped)	A controlled document that applies to two or more but not all the sections of the Hamilton Water Division.



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Level IV Document	A controlled document that applies to one Section of the Hamilton Water Division.
MOE	Ontario Ministry of Environment as amended (i.e. Ministry of Environment (MOE), Ministry of Environment and Energy (MOEE), Ministry of Environment and Climate Change (MOECC), Ministry of Environment, Conservation and Parks (MECP))
Operating Authority	Staff within the Hamilton Water Division responsible for the operation, maintenance and providing support services to the COH DWSs (including water treatment and distribution) and WWSs (including collection and water treatment).
Owner (DWS / WWS)	Every person who is a legal or beneficial owner of the City's DWSs and WWSs. Since the City's DWSs and WWSs are publicly owned and operated, the Mayor and Council of the City of Hamilton have been identified as Owners of the City's DWSs and WWSs.
PMATS	Plant Maintenance and Technical Services Section
PO	Plant Operations Section
Preventative Maintenance	Schedule of planned maintenance actions aimed at the prevention of breakdowns and failures.
QA	<p>Quality Assurance (process): Planned and systematic pattern of actions necessary to ensure that management and technical controls are being followed.</p> <p>Quality Assurance (staff): Staff who are responsible for maintaining quality within HW's Quality Management Systems. e.g. Sectional Quality Assurance Analyst, Quality Assurance Supervisor etc.</p>
RTC	Real Time Control



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SMR	Systems Management Representative (for the BCOS, DWQMS, and WWQMS Systems) - Manager of Compliance and Regulations Section. Equivalent to QMS Representative as described in the DWQMS Standard.
Top Management (DWQMS / WWQMS)	The DWQMS and WWQMS Top Management has been identified as: the General Manager of Public Works and the Director of Hamilton Water Division.
Wastewater	Water that has been used at home, in a business or as a part of an industrial process. Excludes surface runoff or stormwater unless it enters combined sewer systems.
Objective	Objective set by Hamilton Water consistent with its WWQMS Policy
Target	Means for providing verifiable evidence that wastewater objectives have been met
Wastewater System (WWS)	Any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing
WD&WWC	Water Distribution and Wastewater Collection Section
WWQMS	Wastewater Quality Management System
WWWPC	Water & Wastewater Planning & Capital
WWWSP	Water & Wastewater Systems Planning Section

2 QUALITY MANAGEMENT SYSTEM POLICY

2.1 Requirements

2.1.1 The Operational Plan shall document a Quality Management System Policy that provides the foundation for the Quality Management System, and:



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- c. includes a commitment to the maintenance and continual improvement of the Quality Management System,
- d. includes a commitment to comply with applicable legislation and regulations,
- e. includes a commitment to pollution prevention, and
- f. is in a form that can be communicated to all Operating Authority personnel and the Owner.

2.1.2 The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Quality Management System Policy.

2.2 **WWQMS Policy**

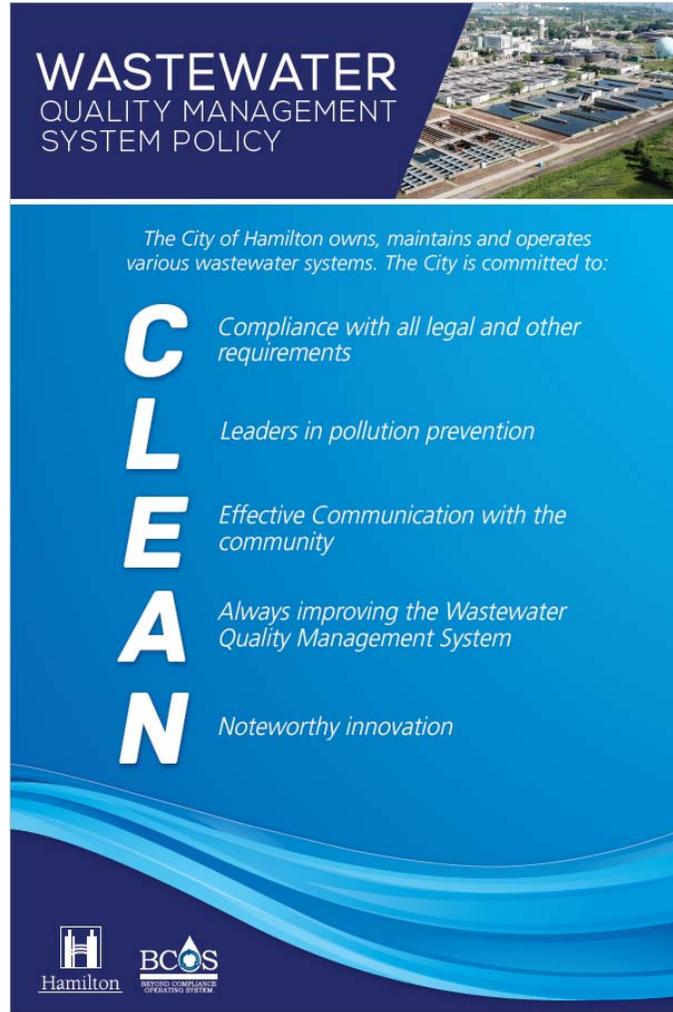
2.2.1 The WWQMS Policy was approved by Top Management on January 27, 2020. It has been communicated to HW staff as per the [Internal Communications \(PW-WW-P-008-001\)](#) procedure.

The WWQMS Policy is communicated to the public through posting on the City's website.



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WWQMS Policy



3 COMMITMENT AND ENDORSEMENT

3.1 Requirements

- 3.1.1 The Operational Plan shall contain a written endorsement of its contents by Top Management and the Owner.
- 3.1.2 Top Management shall provide evidence of its commitment to an effective Quality Management System by:





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- a. ensuring that a Quality Management System is in place that meets the requirements of this Standard,
- b. ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- c. communicating the Quality Management System according to the procedure for communications, and
- d. determining, obtaining or providing the resources needed to maintain and continually improve the Quality Management System.

3.2 Commitment and Endorsement

- 3.2.1 The Owner (Mayor and Council) and Top Management (General Manager of Public Works and the Director of HW) of the Operating Authority (HW) support the development, implementation, maintenance and continual improvement of the WWQMS, which supports the COH’s WWS.
- 3.2.2 The Owner acknowledges their role through the receipt and review of WWQMS reports related to the adequacy of infrastructure, audits and management reviews, and by provision of resources to support the WWQMS.
- 3.2.3 Top Management supports the WWQMS through provision of resources, ensuring staff are aware of relevant legal requirements, and supporting WWQMS communications.
- 3.2.4 The WWQMS Operational Plan will be endorsed at minimum every four years, following the municipal election cycle. The signatures that follow serve as evidence of the endorsement of the WWQMS Operational Plan Manual (PW-WW-M-001-007).





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Fred Eisenberger
Mayor
WWS Owner Representative

Dan McKinnon
General Manager, Public Works Department
WWQMS Top Management Representative

Andrea Holland
City Clerk
(Signing Authority on Behalf of Council)

Andrew Grice
Director, Hamilton Water Division
WWQMS Top Management Representative

4 WWQMS SYSTEM REPRESENTATIVE

4.1 Requirements

- 4.1.1 The Operational Plan shall identify a Quality Management System representative.
- 4.1.2 Top Management shall appoint and authorize a Quality Management System representative who, irrespective of other responsibilities, shall:
 - a. administer the Quality Management System by ensuring that processes and procedures needed for the Quality Management System are established and maintained
 - b. report to Top Management on the performance of the Quality Management System and any need for improvement,
 - c. ensure that current versions of documents required by the Quality Management System are being used at all times,
 - d. ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the Subject System, and
 - e. promote awareness of the Quality Management System throughout the Operating Authority.



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4.2 WWQMS Representative

4.2.1 The Manager of Compliance & Regulations has been appointed as the Systems Management Representative (SMR) for WWQMS. The SMR is responsible for:

- ensuring that the WWQMS is established, implemented, and maintained,
- reporting to Top Management and HW - SMT regarding WWQMS performance including recommended continual improvement initiatives,
- promoting awareness of the WWQMS and of HW staff roles and responsibilities,
- overseeing the document control process including the development, review, approval and release of WWQMS System procedures and revoking obsolete documents,
- ensuring that HW and other staff are aware of all applicable legal requirements related to their duties and the WWQMS, and
- managing the WWQMS Internal Audit Program.

5 DOCUMENTS AND RECORDS CONTROL

5.1 Requirements

5.1.1 The Operational Plan shall document a procedure for Documents and Records Control that describes how:

Documents required by the Quality Management System are:

- a. kept current, legible and readily identifiable,
- b. retrievable,
- c. stored, protected, retained and disposed of, and

Records required by the Quality Management System are:

- a. kept legible, and readily identifiable,
- b. retrievable, and
- c. stored, protected, retained and disposed of.

5.1.2 The Operating Authority shall implement and conform to the procedure for Document and Records control and shall ensure that the Quality Management System documentation for the WWQMS includes:

- a. the Operational Plan and its associated policies and procedures,





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- b. documents and records determined by the Operating Authority as being needed to ensure the effective planning, operation and control of its operations, and
- c. the results of internal and third-party Audits and management reviews.

5.2 Hamilton Water Document and Record Management System

- 5.2.1 Procedures have been developed that outline the document and record control processes for the Operating Authority.
- 5.2.2 The procedure entitled [Control of Documents \(PW-WW-P-010-001\)](#) is an integrated procedure that outlines document control processes for the Operating Authority. The purpose of this procedure is to control the issue, change, and approval of documents, ensuring that only up to date, approved documentation is used by Operating Authority staff. The Control of Documents procedure also ensures that staff can locate and access documents relevant to their work, in the format most suitable to their work, whether the documents are created internally or externally to the Operating Authority.
- 5.2.3 [Control of Records \(PW-WW-P-016-001\)](#) is an integrated procedure that applies to all HW sections. The purpose of this procedure is to ensure that both COH and externally generated non-COH records identified as critical are properly collected, identified, accessed, filed, stored, maintained, reviewed, and disposed of after their designated retention times.

6 WASTEWATER SYSTEMS DESCRIPTIONS

6.1 Requirements

- 6.1.1 The Operational Plan shall document for the Wastewater System:
 - a. the name of the Owner and Operating Authority,
 - b. a general description of the system including all components of Wastewater Collection and applicable Treatment System processes
 - c. a description including:
 - general characteristics of the receiving water body(ies),
 - common event-driven fluctuations, and
 - any resulting operational challenges and threats.
- 6.1.2 The Operating Authority shall ensure that the description of the Wastewater System is kept current.





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6.2 Wastewater System Process Descriptions

6.2.1 Process descriptions meeting the WWQMS requirements are found in [WWQMS Descriptions of Hamilton Wastewater Systems \(PW-WW-P-004-009\)](#). The map entitled [City of Hamilton Wastewater Collection System Map \(PW-WW-V-011-001\)](#) illustrates the geographic scope of the COH's wastewater collection and treatment systems.

7 ENVIROMENTAL ASPECTS & IMPACTS

7.1 Requirements

7.1.1 The Operational Plan shall develop an environmental aspects and impacts process to identify and assess environmental aspects and impacts associated with the collection and treatment of wastewater that:

- a. identifies the environmental aspects of its activities, and services (outputs) within the scope of the WWQMS that it can control or influence,
- b. takes into account planned or unplanned changes or modified activities, products and services,
- c. takes into account abnormal conditions and reasonably foreseeable emergency situations,
- d. identifies the environmental aspects that can have a significant impact on the environment using established criteria,
- e. identifies control measures to address the potential impacts,
- f. ensures that the significant environmental aspects are taken into account in establishing, implementing and maintaining the wastewater management system,
- g. describes how it shall communicate its significant environmental aspects among various levels and functions of the organization,
- h. identifies a method to verify, at least once every calendar year, the currency of the information, and
- i. conducts the assessment at least once every three years.

7.1.2 The Operational Plan shall document:

- a. the identified environmental aspects and associated impacts,
- b. criteria used to determine its significant environmental aspects, and
- c. the impacts rated significant.



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The Operating Authority shall ensure that the record of environmental aspects and impacts is kept current.

7.2 Hamilton Wastewater Systems’ Aspects and Impacts Assessment

7.2.1 The procedure entitled [Environmental Aspects & Impacts Assessment \(PW-WW-P-003-001\)](#) has been developed to document the process followed by HW to identify and assess the environmental aspects and impacts associated with the activities, products and services related to the collection and treatment of wastewater. Once the Aspect and Impact pairs are identified and rated, their Significant Impact Rating can be calculated as the product of likelihood, severity and detectability. A summary of the significant aspects and associated control measures are identified and recorded in [Aspects and Impacts Register \(PW-WW-R-003-001\)](#).

7.2.2 The Aspects and Impacts Assessment is conducted every 3 years and the WWQMS Environmental Aspects and Impacts Register is assessed annually. The Aspects and Impacts Assessment is also conducted for a new wastewater facility or a major process modification within six months after the commissioning date. Communication about significant environmental aspects is carried out as per the [Internal Communications \(PW-WW-P-008-001\)](#) procedure.

8 OBJECTIVES & TARGETS

8.1 Requirements

8.1.1 The Operating Authority shall ensure that wastewater objectives and targets are established considering significant environmental aspects and associated compliance obligations. The environmental objectives shall be:

- a. consistent with the policy,
- b. measurable (if practicable),
- c. monitored,
- d. communicated, and
- e. updated as appropriate.

When setting objectives, the Operating Authority shall determine:

- a. what will be done,
- b. what resources will be required,
- c. who will be responsible,





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- d. when it will be completed, and
- e. how the results will be evaluated, including applicable indicators for monitoring progress towards achievement.

The Operating Authority shall establish, implement and maintain a programme(s) for achieving its objectives and targets. Programme(s) shall include:

- a. designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization, and
- b. the means and time frame by which they are to be achieved.

8.1.2 The Operating Authority shall maintain documented information about its environmental objectives, targets and management programmes.

The Operating Authority shall consider how actions to achieve its environmental objectives can be integrated into the organization’s business processes.

8.2 Hamilton Wastewater Systems’ Objectives and Targets

8.2.1 The procedure entitled [Wastewater Objectives and Targets \(PW-WW-P-005-001\)](#) documents the process by which Hamilton Water sets objectives and targets to avoid or minimize environmental impacts of WWS. Objectives are established after considering evaluation criteria outlined in the procedure. Targets established provide quantifiable milestones for measuring performance against set objectives. Management programmes established list the specific tasks or means by which to achieve the desired objective and target.

8.2.2 The list of objectives, targets and wastewater management programmes is recorded in [Objectives and Targets Summary \(PW-WW-R-005-001\)](#) and approved by Top Management annually.

9 ORGANIZATIONAL STRUCTURE, ROLES, RESPONSIBILITIES & AUTHORITIES

9.1 Requirements

- 9.1.1 The Operational Plan shall:
- a. describe the organizational structure of the Operating Authority including respective roles, responsibilities and authorities,
 - b. delineate corporate oversight roles, responsibilities and authorities where the Operating Authority operates multiple Wastewater Systems,





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- c. identify the person, persons or group of people within the management
- d. identify the structure of the organization responsible for undertaking the Management Review described in Section 21,
- e. identify the person, persons or group of people, having Top Management responsibilities required by this Standard, along with their responsibilities, and
- f. identify the Owner of the Wastewater System.

9.1.2 The Operating Authority shall keep current the description of the organizational structure including respective roles, responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.

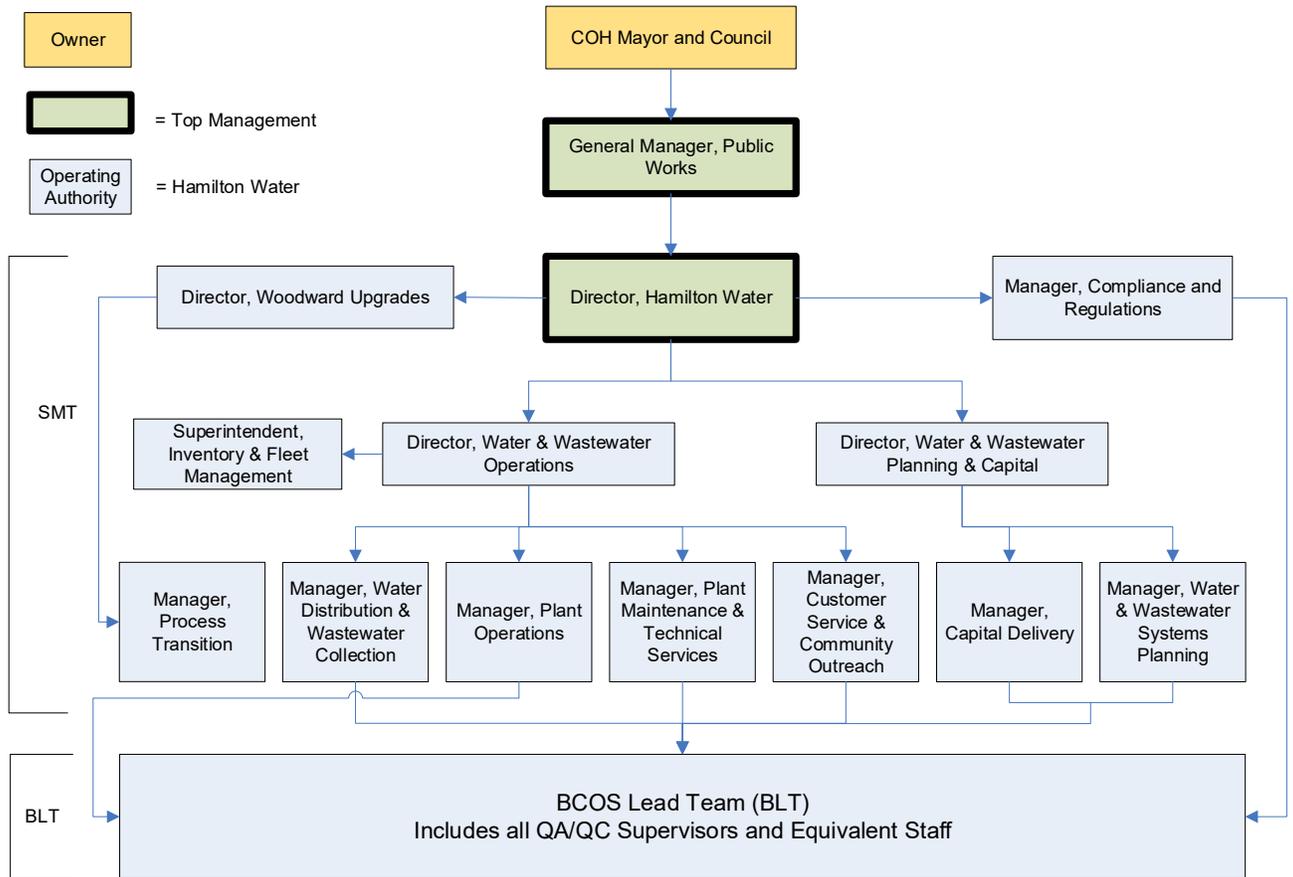
9.2 Hamilton Water Organizational Structure, Roles, Responsibilities, and Authorities

9.2.1 [Roles, Responsibilities & Authorities \(PW-WW-P-006-001\)](#) is an integrated procedure for BCOS including DWQMS and WWQMS that describes how roles, responsibilities, and authorities are defined, communicated, and maintained to ensure accountability in the implementation of these systems. The [Hamilton Water – Photo Organizational Chart \(PW-WW-R-006-002\)](#) identifies key roles and/or titles within HW. The [Roles, Responsibilities and Authorities Matrix \(PW-WW-G-006-001\)](#) outlines the roles, responsibilities and authorities relating to the BCOS systems.

9.2.2 The Roles, Responsibilities & Authorities Procedure applies to all sections of HW. CSG and BLT are responsible for ensuring that Operating Authority staff are kept aware of their respective roles, responsibilities and authorities as they relate to WWQMS. The organizational chart below delineates key wastewater positions.



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10 COMPETENCIES

10.1 Requirements

10.1.1 The Operational Plan shall document:

- competencies required for personnel performing duties directly affecting quality of wastewater collected and treated,
- activities to train, develop and/or maintain competencies for personnel performing duties directly affecting quality of treated wastewater, and
- activities to ensure that personnel are aware of the relevance of their duties and how they affect the quality of wastewater discharges into the environment.

10.1.2 The Operating Authority shall undertake activities to:

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- a. meet and maintain competencies for personnel directly affecting quality of treated wastewater and shall maintain records of these activities, and
- b. ensure that personnel are aware of the relevance of their duties and how they affect the quality of wastewater discharges into the environment and shall maintain records of these activities.

10.2 WWQMS Competencies

- 10.2.1 The [Competency and Training Procedure \(PW-WW-P-033-001\)](#) provides the framework for the identification, delivery and tracking of training requirements related to the Hamilton Water Division. The procedure is also created to document how the Division ensures competencies of staff that could have a direct impact on wastewater collection and treatment.
- 10.2.2 The [Hamilton Water Division Core Training Guideline \(PW-WW-G-033-002\)](#) lists required core and developmental competencies for job positions that could impact wastewater quality. Positions potentially impacting quality of wastewater have been identified as:
 - Positions that require a Wastewater Operator’s License (Treatment or Collection) Positions that supervise licensed Operators or Water Quality Analysts and
 - Other positions recommended by Section Manager
- 10.2.3 All Operating Authority staff are expected to be aware of their roles, responsibilities and authorities. WWQMS Awareness Training is a core training requirement for all staff of the Operating Authority. WWQMS Awareness Training is an on-going training provided to new staff at the Hamilton Water New Employee Orientation. In addition, refresher training may be provided as needed. Staff are also updated about WWQMS as per [Internal Communications \(PW-WW-P-008-001\)](#) procedure.
- 10.2.4 Further, this training may be provided to other City staff outside of the Operating Authority as required.
- 10.2.5 In order to better connect staff to available training, use training resources effectively and help manage training records, HW utilizes the IT Tool – the Learning Management Database.



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11 PERSONNEL COVERAGE

11.1 Requirements

11.1.1 The Operational Plan shall document, implement and conform to a procedure to ensure that sufficient personnel meeting identified competencies are available for duties that directly affect wastewater collection and treatment.

11.2 WWS Personnel Coverage

11.2.1 The [Personnel Coverage \(PW-WW-P-034-003\)](#) procedure outlines the process by which the Hamilton Water Division ensures that adequate staffing and personnel coverage are maintained for its water and wastewater operations. The procedure details personnel coverage measures followed during regular business hours as well as evenings, weekends and holidays. Where applicable, Level 4 (Sectional) personnel coverage procedures should be referenced for Section-specific Personnel Coverage processes.

12 COMMUNICATION

12.1 Requirements

12.1.1 The Operational Plan shall implement, document and conform to a procedure for communications that describes how the relevant aspects of the WWQMS are communicated between Top Management and:

- a. the Owner,
- b. Operating Authority personnel,
- c. Suppliers that have been identified as essential, and
- d. the Public.

12.2 Communications

12.2.1 The [Internal Communications \(PW-WW-P-008-001\)](#) procedure describes processes for internal communications on various elements of the organization 's management systems, policies and objectives. This procedure has been developed to ensure effective and timely communication with internal stakeholders.

12.2.2 [External Regulatory and Other Communications \(PW-WW-P-008-002\)](#) describes HW communication processes with regulatory agencies, general public and other external stakeholders.



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13 OPERATIONAL PLANNING AND CONTROLS

13.1 Requirements

13.1.1 The Operational Plan shall establish, implement, control and maintain processes needed to meet WWQMS requirements, and shall implement actions identified in the aspects and impacts assessment process and Objectives planning process by:

- a. establishing operating criteria for the process(es), and
- b. implementing control of the process(es), in accordance with the operating criteria.

The Operating Authority shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

The Operating Authority shall ensure that outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process(es) shall be defined within the WWQMS.

13.1.2 The Operational Plan shall maintain documented information to the extent necessary to have confidence that the processes have been carried out as planned.

13.2 WWQMS Operational Planning Controls for WWS

13.2.1 The [Environmental Aspects & Impacts Assessment \(PW-WW-P-003-001\)](#) procedure documents the process followed by Hamilton Water to identify operational controls to address significant environmental impacts related to the collection and treatment of wastewater. The [Aspects and Impacts Register \(PW-WW-R-003-001\)](#) records the control measures associated with aspects and impacts including preventative maintenance, inspections and monitoring, standardized work instructions and/or improvement projects.

13.2.2 The [Essential Supplies and Services \(PW-WW-P-035-001\)](#) procedure documents the process followed by Hamilton Water to identify and review the quality of essential supplies and services provided from outside of the City of Hamilton Drinking Water and Wastewater Systems managed by the HW Division that can introduce quality, safety or environmental risks.

14 EVALUATION OF COMPLIANCE

14.1 Requirements

14.1.1 The Operational Plan shall:





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- a. document a procedure for periodically evaluating compliance with legal and other requirements and taking actions if needed,
- b. keep records of the results of the periodic evaluations and action taken,
- c. maintain knowledge and understanding of its compliance status, and
- d. establish implement and maintain processes to evaluate and fulfill its compliance obligations.

14.1.2 The Operating Authority shall implement and conform to the procedure and communicate the findings to Owner.

14.2 Hamilton Wastewater Systems' Compliance

14.2.1 The [Legal and Other Requirements \(PW-WW-P-004-004\)](#) procedure indicates how applicable legal and other requirements related to COH's WWS are identified, communicated and managed. The BCOS Database is used to list requirements, track and assign tasks associated with legal and other requirements. Wastewater approval related requirements are tracked in the [Approvals Register \(PW-WW-R-004-020\)](#) that is updated at least annually. In addition, external third-party compliance audits of WWS may be conducted as required.

15 REVIEW AND PROVISION OF INFRASTRUCTURE

15.1 Requirements

15.1.1 The Operational Plan shall document a procedure for reviewing the adequacy of the infrastructure necessary to operate and maintain the wastewater System that:

- a. considers the significant impacts described in Section 7, and
- b. ensures that the adequacy of the infrastructure necessary to operate and maintain the wastewater System is reviewed at least once every Calendar Year.

15.1.2 The Operating Authority shall implement and conform to the procedure and communicate the findings of the review to the Owner.

15.2 Hamilton Water Infrastructure Review

15.2.1 The [Review and Provision of Infrastructure procedure \(PW-WW-P-025-001\)](#) documents the process followed by Hamilton Water in reviewing the adequacy of its wastewater system infrastructure. The procedure applies to all City of Hamilton WWS infrastructure, including both vertical and horizontal infrastructure and other





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infrastructure required for the operation of the WWS including offices, workspaces, buildings and critical software.

16 INFRASTRUCTURE MAINTENANCE, REHABILITATION & RENEWAL

16.1 Requirements

16.1.1 The Operational Plan shall document:

- a. a summary of the Operating Authority’s infrastructure maintenance, rehabilitation and renewal programs for the wastewater System, and
- b. a long term forecast of major infrastructure maintenance, rehabilitation and renewal activities.

16.1.2 The Operating Authority shall:

- a. keep the summary of the infrastructure maintenance, rehabilitation and renewal programs current,
- b. ensure that the long-term forecast is reviewed at least once every Calendar Year,
- c. communicate the programs to the Owner, and
- d. monitor the effectiveness of the maintenance program.

16.2 Hamilton Water Infrastructure Maintenance, Rehabilitation and Renewal

16.2.1 The procedure [Infrastructure Maintenance, Rehabilitation and Renewal \(PW-WW-P-026-001\)](#) describes how Hamilton Water implements infrastructure maintenance, rehabilitation, and renewal programs depending on the condition of infrastructure, redundancy of equipment and the related operational risk. Infrastructure maintenance is addressed by both planned and unplanned maintenance activities carried out by PMATS, PO and WD&WWC.

17 SAMPLING, TESTING & MONITORING

17.1 Requirements

17.1.1 The Operational Plan shall document:

- a. a sampling, testing and monitoring procedure for process control and finished wastewater quality including requirements for sampling, testing and monitoring at the conditions most challenging to the wastewater System,





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- b. a description of relevant sampling, testing or monitoring activities, if any, that take place downstream of the wastewater System, and
- c. a procedure that describes how sampling, testing and monitoring results are recorded and shared between the Operating Authority and the Owner, where applicable.

17.1.2 The Operating Authority shall implement and conform to the procedures.

17.2 Hamilton Water Sampling, Testing and Monitoring

17.2.1 The [Sampling, Testing and Monitoring \(PW-WW-P-013-004\)](#) procedure describes how wastewater sampling, testing and monitoring activities are undertaken and how the results are communicated as per regulatory requirements.

17.2.2 The responsibilities for performing the required sampling in the City of Hamilton’s wastewater collection system and wastewater treatment plants are outlined in the [City of Hamilton Wastewater Sampling Plan \(PW-WW-P-013-006\)](#). The [City of Hamilton Wastewater Sampling Schedule \(PW-WW-L-013-003\)](#) identifies the list of samples to be collected and tests to be performed by staff to meet City of Hamilton’s compliance obligations.

18 MEASUREMENT & RECORDING EQUIPMENT, CALIBRATION & MAINTENANCE

18.1 Requirements

18.1.1 The Operational Plan shall document, implement and conform to a procedure for the calibration and maintenance of measurement and recording equipment.

18.2 Hamilton Water Measurement and Recording Equipment, Calibration and Maintenance

18.2.1 The procedure entitled [Calibration & Maintenance of Measurement and Recording Equipment \(PW-WW-P-036-001\)](#) describes the requirements for the calibration, verification and maintenance of measurement and recording equipment used in the operation of WWS. The procedure identifies responsible personnel, recording requirements, frequency and method for calibration, verification and maintenance of measurement and recording equipment.





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19 EMERGENCY MANAGEMENT

19.1 Requirements

- 19.1.1 The Operational Plan shall document a procedure to maintain a state of emergency preparedness that includes:
- a. a list of potential emergency situations or service interruptions,
 - b. processes for emergency response and recovery,
 - c. emergency response training and testing requirements,
 - d. Owner and Operating Authority responsibilities during emergency situations,
 - e. references to municipal emergency planning measures as appropriate, and
 - f. an emergency communication protocol and an up-to-date list of emergency contacts.

19.1.2 The Operating Authority shall implement and conform to the procedure.

19.2 Hamilton Water Emergency Management

19.2.1 The [Hamilton Water Emergency Response Plan \(PW-WW-P-012-001\)](#) describes the City's Corporate, Departmental, Divisional, and Sectional Emergency Response structure. Emergency Response Plan (ERP) Manuals (binders) are available at various locations within Hamilton Water inclusive of the Hamilton Water Emergency Response Plan. A Risk Assessment approach is used to identify possible risks or emergencies that could potentially impact the City's WWS, Annual testing of the COH (Corporate) Emergency Response Plan, the HW Emergency Response Plan, and the Plant Operation's E2 Plan is required. Upon completion of testing, a debrief is held to determine possible improvement actions and document any procedural upgrades that may be required.

19.2.2 HW staff must receive training for all emergency response plans and/or procedures related to their job or responsibilities. Divisional training requirements are listed in the [Hamilton Water Division Core Training Guideline \(PW-WW-G-033-002\)](#). The City's Emergency Management Office determines training requirements for the COH's Emergency Response Plan.



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20 INTERNAL AUDITS

20.1 Requirements

- 20.1.1 The Operational Plan shall document a procedure for internal Audits that:
- a. evaluates conformity of the Quality Management System with the requirements of this Standard,
 - b. identifies internal Audit criteria, frequency, scope, methodology and record-keeping requirements,
 - c. considers previous internal and third-party Audit results, and
 - d. describes how Quality Management System Corrective Actions are identified and initiated.
- 20.1.2 The Operating Authority shall implement and conform to the procedure and shall ensure that internal Audits are conducted at least once every Calendar Year.

20.2 WWQMS Internal Audit

- 20.2.1 The [Internal Auditing procedure \(PW-WW-P-017-001\)](#) is an integrated procedure that describes how HW conducts objective and systematic internal audits as a means of measuring the performance of its BCOS, including WWQMS.
- 20.2.2 The SMR holds overall responsibility for ensuring that internal audits are planned and executed annually according to the requirements of this procedure. Internal auditors are appointed by HW - SMT and are identified in the [Internal Auditor List \(PW-WW-L-017-003\)](#).
- 20.2.3 Audit findings are recorded in the BCOS database and may indicate the need for corrective, preventive, or improvement actions (See Section 22.0 of this Operational Plan).
- 20.2.4 Once scheduled internal audits are completed, the SMR (or designate) reviews audit findings and compiles the information for presentation to SMT. In addition, the Internal Audit Program is reviewed on an annual basis as an input to Management Review (See Section 21.0 of this Operational Plan).



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21 MANAGEMENT REVIEW

21.1 Requirements

21.1.1 The Operational Plan shall document a procedure for management review that evaluates the continuing suitability, adequacy and effectiveness of the Quality Management System and that includes consideration of:

- a. incidents of regulatory non-compliance and response actions,
- b. the effectiveness of the wastewater aspects and impacts process (changes in significant wastewater aspects),
- c. objectives and targets, and status of wastewater Management Programmes,
- d. internal audit results,
- e. summary of WWQMS non-conformance reports, including Essential Supplies and Services' non-conformances,
- f. results of emergency response testing,
- g. operational performance,
- h. influent and effluent wastewater quality trends,
- i. follow-up on action items from previous management reviews,
- j. the status of management action items identified between reviews,
- k. changes that could affect the Quality Management System,
- l. internal & external communication,
- m. the resources needed to maintain the Quality Management System,
- n. the results of the infrastructure review,
- o. Operational Plan currency, content and updates, and
- p. staff suggestions.

21.1.2 Top Management shall implement and conform to the procedure and shall:

- a. ensure that a management review is conducted at least once every Calendar Year,
- b. consider the results of the management review and identify deficiencies and actions items to address the deficiencies,



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- c. provide a record of any decisions and action items related to the management review including the personnel responsible for delivering the action items and the proposed timelines for their implementation, and
- d. report the results of the management review, the identified deficiencies, decisions and action items to the Owner.

21.2 Hamilton Water Management Review

- 21.2.1 The [Management Review procedure \(PW-WW-P-018-001\)](#) documents the process for planning, executing, and documenting Management Reviews, including provision of feedback to the Hamilton Water Division and reporting of review results to the Owner.
- 21.2.2 The SMR coordinates the annual Management Review meetings and compiles the required input data for presentation to Top Management. Top Management is responsible for reviewing the input materials presented and generating outputs as specified in the Management Review procedure. The SMR or delegate prepares minutes of Management Review meetings as proof of completion.
- 21.2.3 Top Management or their delegates are responsible for communicating Management Review results to the Owner. In addition, results of management reviews are summarized in the annual WWQMS Summary Report which is circulated to the WWS Owner.

22 NON-CONFORMANCE, CORRECTIVE & PREVENTIVE ACTION

22.1 Requirements

- 22.1.1 The Operating Authority shall develop a procedure for tracking and measuring effectiveness of its Quality Management System by:
 - a. documenting a process for identification and management of Quality Management System Corrective Actions that includes:
 - investigating the cause(s) of an identified non-conformity,
 - documenting the action(s) that will be taken to correct the nonconformity and prevent the non-conformity from re-occurring, and
 - reviewing the action(s) taken to correct the non-conformity, verifying that they are implemented and are effective in correcting and preventing the re-occurrence of the nonconformity.





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b. documenting a process for identifying and implementing Preventive Actions to eliminate the occurrence of potential non-conformities in the Quality Management System that includes:

- reviewing potential non-conformities that are identified to determine if preventive actions may be necessary,
- documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and
- reviewing the action(s) taken to prevent a non-conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity.

22.1.2 The Operating Authority shall implement and conform to the procedure

22.2 Hamilton Water Non-Conformance, Corrective and Preventative Action Process

22.2.1 The integrated [Non-conformance, Corrective & Preventive Action Process procedure \(PW-WW-P-015-002\)](#) documents the non-conformance, corrective and preventative action process that ensures the effective resolution of system non-conformances and legal non-compliances related to the WWQMS.

Non-conformances are entered into the "Findings" Application of the BCOS Database. Once details of the nature of the non-conformance are entered into BCOS, a root cause analysis can be completed, and an action plan can be developed to correct or prevent the non-conformance. All action plans are verified as being complete. Verification for effectiveness may occur at the discretion of the SMR. All of the above information must be entered into the BCOS Database. Once the completion of the plan has been verified, the non-conformance report can be closed out.

23 CONTINUAL IMPROVEMENT

23.1 Requirements

23.1.1 The Operating Authority shall develop a procedure for tracking and measuring continual improvement of its Quality Management System.

23.1.2 The Operating Authority shall strive to continually improve the effectiveness of its Quality Management System by implementing and conforming to the procedure.





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23.2 Hamilton Water Continual Improvement Process

23.2.1 The COH is committed to continually improving its WWQMS. The Public Works departmental Continual Improvement procedure is currently under development. In addition, Hamilton Water follows the section on continual improvement found in [Non-conformance, Corrective & Preventive Action Process procedure \(PW-WW-P-015-002\)](#). Hamilton Water uses tools such as management reviews, internal audits, communications, BIMA scorecard and benchmarking initiatives to track and measure the continual improvement of WWQMS.

BCOS software tracks the revision history of document.