



# Sewer Maintenance Division Environmental Management System Manual



Sewer Maintenance Environmental Management System  
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## Revision History Log

Date	Revision No.	Change	Reference Section	Edited By
December 2013	0	Initial Version	ALL	Marti Gibson
September 2016	2	<ol style="list-style-type: none"> <li>1. Updated Cover</li> <li>2. Revised Risk Assessment Matrix</li> <li>3. Revised NCDENR to NCDEQ</li> <li>4. Revised Appendix D / Added and assessed Environmental Impact</li> </ol> Revised Appendix E / Added Significant Aspects/Risks	Manual's Cover Section 3.2.2.2.7 Glossary, p.25 Appendix D Appendix E	C. Perez
May 2017	3	Review and update for conformity to ISO 14001:2015	All	G. Sanders
June 2018	4	Upgrade to ISO 14001:2015	All	SMEMS Team
March 2019	5	Revised Corrective Action Process	Corrective Action	G. Sanders
July 2019	6	Updated internal/external influences Added Key Performance Indicators (KPIs) Updated Environmental Aspects & Risk & Opportunities Procedures	Page 7 Page 17 Pages 9-10	SMEMS Team
September 2019	7	Removed #7 statement under Objectives and targets, "include in annual wastewater report"	Page 11	G. Sanders
March 2020	8	Update the corrective action process by changing: <ul style="list-style-type: none"> <li>• Incidents and accidents" to just "incidents"</li> <li>• "Legitimate public or customer complaint" to "Escalated public or customer complaint"</li> </ul>	Page 19	SMEMS Team
March 2020	9	Updated the documented information process by changing: <ul style="list-style-type: none"> <li>• <b>Purpose:</b> Change "contractor activities within" to "contractor activities in support of."</li> <li>• <b>Procedure:</b> Expanded this section to include roles, an example of naming/title of a document, guide for documents that require and don't require control.</li> </ul>	Page 15	SMEMS Team
April 2020	10	<ul style="list-style-type: none"> <li>• Updated Compliance Obligation by adding "Federal" to Compliance Obligations #4.</li> <li>• Updated Communication section by adding a flow chart for Internal Communication.</li> </ul>	Page 10  Page 15	SMEMS Team
May 2020	11	Updated the Emergency Preparedness section defining HSS and EMC duties noted in #1a, 1b & 1c	Page 17	SMEMS Team
June 2020	12	<ul style="list-style-type: none"> <li>• Replaced "CACs" with "Community Outreach"</li> <li>• Added "Processes" to the purpose of the Management of Change process</li> <li>• Removed chart before planning</li> <li>• Replaced Public Utilities with Raleigh Water</li> <li>• Add level of effort as a criterion for significance.</li> </ul>	Page 7  Page 13  Page 8 Entire Manual Page 9	SMEMS Team

Date	Revision No.	Change	Reference Section	Edited By
March 2021	13	<ul style="list-style-type: none"> <li>Added Contractor control Process</li> <li>Updated Documented Information to include record retention schedule</li> <li>Defined risk levels</li> </ul>	Page 10 Page 15 Page 9 #2	SMEMS Team

## Introduction

Environmental management for the Sewer Maintenance Division (SMD) is a strategic priority. The Sewer Maintenance Environmental Management System (SMEMS) is intended to produce continual improvement through the establishment of the following intended outcomes, consistent with Raleigh Water's Business Plan:

- a. Continue to meet or exceed regulatory compliance
- b. Continue to improve environmental performance
- c. Continue to develop a competent workforce
- d. Continue to improve communication with internal and external interested parties
- e. Continue to improve work processes to meet customer expectations.

The SMD strives to protect the environment through operations, maintenance and inspections. Operations are emphasized by having certified operators manage work programs and maintain compliance with the Grade 4 Sewer Collection System permit. Evaluation of new processes for environmental compliance is a continual effort that promotes environmental excellence.

## Planned Arrangements

The SMEMS is based on the ISO 14001:2015 standards.

## SMEMS Manual Procedure

### **Review and Approval**

- Review manual annually and when regulatory or process changes and/or corrective action dictates.
- Recommend and review any updates and other changes arising prior to the annual review at SMEMS team meetings.
- The Environmental Management Coordinator (EMC) shall summarize changes to the manual in the history log.
- Update manual with approved changes (EMC).

### **Communications and Revisions**

1. Inform APUD for Wastewater and SMEMS team of any significant revisions to the SMEMS manual.
1. Post most recent version of the SMEMS manual on the City's shared locations.
2. Control manual so that changes can be made only by the EMC or designee.
3. Communicate policy to staff, contractors and to interested parties.
4. Recommended manual revisions shall be communicated to the SMEMS team through management review via the EMC.

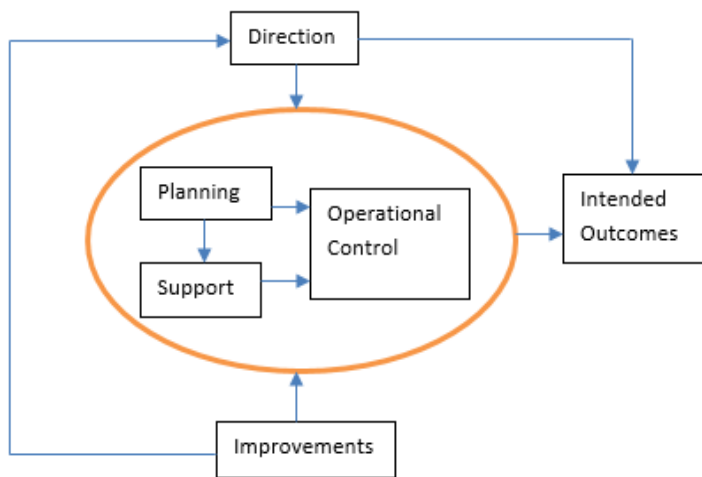
## SMEMS Scope

The SMEMS applies to the sanitary sewer collection system within the Raleigh, North Carolina service area.

Boundaries include the Raleigh service area and merger communities. Engineering, design, capital improvements, private property sewer laterals, stormwater, warehousing, facility maintenance and wastewater treatment are not included in this scope. Pump Stations and the maintenance/repair of them are also not included in the scope of the SMEMS.

The above scope has been determined by the SMEMS team to identify environmental aspects.

## Management Direction



## SMEMS Policy

The SMEMS's Environmental Policy is: "To professionally operate and maintain the sanitary sewer collection system, while meeting our compliance obligations, continually improving environmental performance, and providing environmental protection and pollution prevention."

Commitment to upholding this policy is focused on the following areas:

1. **ECONOMIC:** Manage assets and resources by setting goals, objectives and targets for continual improvement.
2. **SOCIAL:** Communicate and educate stakeholders, interested parties and staff.
3. **ENVIRONMENTAL:** Comply with applicable laws, regulations and requirements. Improve in performance, compliance, and system Operation & Maintenance (O&M) for prevention of pollution to protect the environment.

Approved: 01/01/2014

Revised: 07/20/2018

Approved: T.J. Lynch, Assistant Director

### Procedure

- Communicate the policy to employees, relevant contractors and interested parties.
- Post policy statement on the City's intranet and website (raleighnc.gov)
- Train affected employees on the policy. Employees are expected to comply with the letter and intent of this policy.
- Review this policy as required through the Management Review process.

## Leadership and Commitment

SMEMS's top management, which includes the Assistant Director for Wastewater and the Sewer Maintenance Division Manager, is responsible for the establishment, implementation, and maintenance of the SMEMS, while ensuring integration into the Division's processes. Top management ensures that the SMEMS achieves intended outcomes by setting goals, supporting employee contribution to the SMEMS, promoting improvement, and supporting other managers in their leadership.

## Organizational Roles, Responsibilities and Authorities

### Purpose

To define the roles and responsibilities of staff and contractors performing SMEMS functions. In addition, other sections and related documents describe roles and responsibilities where relevant to certain procedures.

### Responsibility

The overall responsibility for overseeing the SMEMS lies with the EMC. The EMC is sponsored and supported managerially by the APUD for Wastewater, who has the authority to commit resources and people to the Sewer Maintenance Division and the SMEMS. The SMEMS manual is approved by the Director of Raleigh Water. Future revision and maintenance of the manual can be made by the EMC in conjunction with the SMEMS Team.

- **Raleigh City Council**  
Has authority to approve citywide budget and resources
- **Raleigh City Manager/Assistant City Manager**  
Top management with responsibility and oversight of citywide budget and resources
- **Director-Raleigh Water**  
Top management with responsibility and authority for oversight Raleigh Water
- **Assistant Director for Wastewater**  
Top management for oversight of the wastewater system
- **Executive Management Team**  
Top management that consists of the Director and the Assistant Directors of Raleigh Water
- **Sewer Maintenance Manager**  
Top management for oversight of wastewater management and overall management of the Sewer Maintenance Division and the environmental performance of the collection system
- **Health and Safety Specialist (HSS)**  
Provides oversight and manages SMEMS's emergency preparedness activities
- **SMEMS Team**  
Sewer Maintenance Division's program managers or team leads. Reviews and implements the SMEMS within the programs they manage
- **Management Systems Coordinator**  
Overall responsibility for implementing and monitoring the SMEMS
- **Environmental Management Coordinator (EMC)**  
Facilitates and coordinates SMEMS activities and reporting the performance for management review
- **Utilities Coordinator**  
Assigned duties of EMC
- **Contractors, Vendors and Suppliers**  
Provides materials, supplies and services for the effective operation and maintenance of the collection system, and to comply with policies and procedures of the Sewer Maintenance Division as listed in service agreements for contracted activities relevant to sewer maintenance.

## Procedure

1. Roles and responsibilities for various individuals (including contractors) that are specific to the SMEMS are assigned by the Manager of Sewer Maintenance and the EMC. They are reviewed and updated as necessary on an annual basis.
2. The Sewer Maintenance Manager and the EMC will also review existing roles/responsibilities whenever significant operational changes are made to ensure that roles/responsibilities are appropriately defined. Revisions to the roles and responsibilities tables are made by the EMC.

## Internal and External Influences

Influences can impact SMEMS’s ability to achieve intended outcomes. The SMEMS team has identified the below internal and external influences using various resources which includes:

1. Call Center data (Cityworks)
2. Interested party meetings: community outreach and/or contractor meetings
3. Electronic links to City website (allows interested parties to contact us)

<b>Internal Influences</b>	<ul style="list-style-type: none"> <li>• Communications</li> <li>• Effectiveness of call routing within the Division</li> <li>• Employee Engagement</li> <li>• Retention (inability)</li> </ul>
<b>External Influences</b>	<ul style="list-style-type: none"> <li>• Customer education (sewer use ordinance)</li> <li>• Public perception/practices</li> <li>• Technology support</li> <li>• Weather/climate change</li> </ul>

External influences are customer service related/focused and align with Raleigh Water’s Business Plan, which highlights the desire to become a world-class utility. External influences include regulatory compliance, customers/end users, environmental convictions, and social, political, and competitive circumstances.

Internal influences include Process Control Points (PCPs) and associated Operational Controls. These influences are identified and monitored by the SMEMS, based on system knowledge and best industry practices. Monitoring is achieved by periodic review of the customer call data through Cityworks; responding to stakeholders who attend community outreach events/meetings or make contact via the City website; and considering feedback and input when establishing targets & objectives and significant environmental aspects. The received input is discussed during management review to ensure both internal and external influences are considered when moving forward to become a work-class utility.



## **Planning**

The SMEMS Team meets regularly (at least monthly) to review and discuss any changes to the following system components:

- a. Environmental aspects/impacts
- b. Risks and opportunities
- c. Compliance obligations
- d. Objectives and targets
- e. Interested party input
- f. Emergency plans
- g. Internal/external influences

Significant environmental aspects are reviewed regularly as determined by the SMEMS team or when changes in processes occur.

Action plans to address risks are considered when establishing objectives and targets. These plans are factored in when considering action items required to achieve objectives and targets. Interested party input and internal/external influences are also included in the plans to address risks.

The process control points, operational controls, and significant environmental aspects are influences in determining objectives and targets and risk and opportunities. Objectives and targets are reviewed at least monthly by the SMEMS team to evaluate improvement and are linked to the significant environmental aspects. The effectiveness of these components are reviewed during management review.

## **Environmental Aspects and Impacts**

### **Purpose**

To identify environmental aspect and impacts within the SMEMS that could potentially have an environmental impact, either positive or negative.

### **Procedure**

1. The SMEMS team shall identify and document (Appendix D) environmental aspects and impacts that it has control or influence over, based on historical data, staff experience, system knowledge, public input, and compliance obligations by program areas.
2. Where reasonable, the SMEMS shall consider both direct and indirect environmental aspects.
3. Following identification of aspects, assign an impact rating, from 1 to 5 in the areas of environmental, business impact, severity and scale to determine significance. Significance is determined by an overall rating of 12 or above or based on the SMEMS's team reasonable assessment, knowledge and history. Compliance obligations are always considered significant.
4. The criteria for determining significance is based upon reasonable persons judgment or the opinion and consensus of the SMEMS team members. When determining the significance of environmental aspects, the SMEMS considers:
  - a. the level of Sewer Maintenance control or influence
  - b. new or modified developments
  - c. activities, products or services
  - d. normal and abnormal conditions
  - e. reasonably foreseeable emergency conditions
  - f. past environmental incidents (experience/history)

- g. regulation
  - h. business impact, severity, or scale (direct/indirect)
  - i. level of effort needed for continual improvement as related to value
  - j. The SMEMS also considers life cycle stages of products or services that can be controlled or influenced.
5. Document identified significant aspects and actions plans to address them. (Appendix D).
  6. Plans to address significant environmental aspects includes: following established procedures, incorporating them into objectives and targets, internal and external influences, risk, opportunities and interested party input.
  7. Environmental aspects and impacts shall be reviewed by the SMEMS team annually, or when there are regulatory and/or process changes.

## Risks and Opportunities

### Purpose

To identify risks to the SMEMS's operations that could impede or hinder the ability to achieve the intended outcomes and continual improvement and identify opportunities for continual improvement.

### Procedure

The SMEMS Team shall determine risks and opportunities that are relevant to the significant environmental aspects, internal and external influences, and compliance obligations. These areas need to be addressed to achieve intended outcomes, prevent or reduce undesired effects, and achieve continual improvement.

### Determine Risks and Opportunities

1. The SMEMS team shall consider the level of control or influence, normal and abnormal conditions, reasonably foreseeable emergency conditions, lifecycle, and past incidents when identifying risks and opportunities.
2. Risks are assessed according to the following criteria, based upon the experience and reasonable judgement of the SMEMS Team:
  - a. Severity – Consequences of the impact (magnitude)
  - b. Scale – Volume, size, or amount of the impact
  - c. Business Effect – Effect upon business operations
  - d. Likelihood – Probability of an incident happening

Risk levels are identified as high (H)-major/large, medium (M)-minor/small, or low (L)-little to no/very small based off this assessment.
3. The SMEMS team shall determine actions plans to address risks and opportunities to avoid and/or mitigate risks.
4. Note occasions where the Division does not have a degree of management control or influence over the risk for future review.
5. Consider both harmful and beneficial environmental impacts when determining risks.
6. Consider and incorporate risks into objectives and targets.
7. Consider the risk of not meeting the needs and expectations of interested parties.
8. The SMEMS team shall integrate and implement the action plans in the SMEMS process and evaluate the effectiveness of these actions
9. Review Division's activities and risks at least annually, when changes occur to processes and equipment, or other relevant areas.

## Control of Contractors

### Purpose

To establish guidance on the SMEMS's processes as it pertains to contractors, that may have a potential to affect environmental performance and regulatory compliance associated with the SMEMS.

A statement is included in Request for Proposals (RFPs) notifying potential contractors of the SMEMS and their requirement to conform to the expectations of this system. Additionally, contractors who are awarded work with the Sewer Maintenance Division are required to sign the Contractor Memorandum of Understanding. This document communicates the Division's responsibilities to the contractor within the limits of the SMEMS as well as relevant environmental requirements of the contractor.

### Procedure

1. Contractors shall be aware of the SMEMS Environmental Policy and EMS system.
  - i. SMD Contract Liaisons shall retain documented information as evidence of its environmental awareness communications, as appropriate.
2. Contractors performing work on behalf of the SMD shall be deemed competent based on appropriate education, training, and/or experience.
  - i. Contract Liaisons shall retain appropriate documented information to show competency.
3. Contractors are to adhere to applicable regulatory and other requirements as stated in the contract agreement.
4. Contract liaisons shall monitor, record, and identify regulatory and contractual compliance or noncompliance during site inspections.
5. Contractors shall be notified, by the SMD contract liaison, of changes via various methods to include electronic communication and face to face meetings.
6. The Contractor shall implement changes in their work practices, related to changes in compliance obligations that would impact their involvement in the SMEMS. These changes shall be verified through site audits by the contract liaison.
7. Contractors shall notify the SMD contract liaison for any contractual (non-regulatory) noncompliance.

## Compliance Obligations

### Purpose

To identify, monitor, and track regulatory compliance of the Sewer Maintenance Division and its contractors.

### Procedure

1. The SMEMS team shall identify and document compliance obligations for the Sewer Maintenance Division through networking, communication with regulatory agencies, professional associations and publications, management review process, needs and expectations of interested parties, or any other available means. (Appendix H).
2. Establish, document, and maintain operational controls for process control points to ensure regulatory compliance with compliance obligations.
3. To ensure compliance obligations are met, periodic inspections or audits are conducted by local, state and federal regulators. Evaluation of compliance with the SMEMS is conducted once per certification cycle, including regulators.

## Objectives and Targets

### Purpose

To establish objectives and targets for continuous improvement of the SMEMS (see Objectives and Targets chart).

### Procedure

1. Objectives and targets shall be established annually based on the following criteria:
  - a. Management Policies
  - b. Risk and Opportunities
  - c. Compliance Obligations
  - d. Significant Environmental Aspects
  - e. Interested Party Input
2. Use the SMART Criteria as a guide for suitability when establishing SMEMS's objectives and targets.
3. Set objectives that support performance improvements based on the intended outcome areas.
4. Final objectives and targets shall be posted on the City of Raleigh's webpage and internal shared locations.
5. Develop an action plan assigning responsibility, necessary resources, action items for established objectives and targets.
6. The SMEMS team shall continually monitor progress towards objectives and targets and evaluate results at management reviews and internal audits. Objectives and targets shall be considered during the Division's annual budget development process to ensure appropriate resources are made available.
7. Use the corrective action process if progress is considered inadequate or items are not met.

## Management of Change (MOC)

### Purpose

To identify and address when there are changes in conditions, processes, significant environmental aspects, impacts, regulations, other requirements or when new development occurs that affects the operation of the Sewer Maintenance Division.

### Procedure

1. Monitor for changing conditions, requirements, or regulations that necessitate modification to the operation of the Sewer Maintenance Division.
2. Assess divisional processes affected by changing conditions or requirements; assess if there are effects on aspects, impacts or risks; and review initiation of those changes at SMEMS team meetings.
3. Assign staff to design and implement the changes.
4. Document the changes using the MOC form and implement approved changes.
5. Update procedures and documents per established procedures.
6. Retrain affected staff and contractors on revised procedures and practices as soon as practical (SMEMS Team and appropriate supervisors).

## Process Control Points (PCPs)

Process control points are a point in a process that can be controlled by the activities of the SMEMS to achieve desired outcomes and mitigate risks.

1. The SMEMS Team shall be responsible for evaluating processes, procedures, and management activities to identify PCPs and related operational controls.
  - a. Identified PCPs shall be documented in writing and can be found in Appendix C.
2. Factors to consider during PCP evaluation and determination included:
  - a. Compliance Obligations
  - b. Significant Environmental Aspects
  - c. Institutional Knowledge
  - d. Customer Expectation/External Input
3. Establish Divisional Operating Procedures (DOPs) for monitoring and measuring, operating performance, and fulfilling compliance obligations at PCPs.
4. Review PCPs when there are regulatory changes or whenever operational changes occur.
5. If revisions to the PCPs are made, information related to operational controls, monitoring and measurement or any other relevant areas of the SMEMS (including significant environmental aspects) shall also be reviewed, modified, and documented as appropriate.

## Support

The Sewer Maintenance Division shall provide the necessary resources for the SMEMS. Resources include, but are not limited to: human resources, specialized skills, technology, and financial support. These identified resources are needed for the effective functioning and improvement of the SMEMS. This will be verified by establishing a training program, conducting internal audits, holding regularly scheduled management reviews, and fulfilling the roles and responsibilities of the SMEMS team.

## Competence and Awareness

### Purpose

To identify, track, and ensure competence of staff in the operation of the sewer collection system and SMEMS functions, including training activities of contractors.

### Procedure

#### Competence

1. Evaluate competency based on discussions, including managers, to better identify opportunities for future training needs.
2. Assess staff competency in performing their assigned responsibilities using some of the following methods:
  - a. City of Raleigh Job Descriptions
  - b. Position Description Questionnaires
  - c. Oral or written tests
  - d. Peer reviews
  - e. Communication
  - f. On the job observations and compliance audits
  - g. Annual goal setting meetings, mid-year performance review and annual performance evaluations.

## **Awareness**

1. Conduct awareness training, to improve competence in the areas of environmental policy, significant aspects; their contribution to the effectiveness of the SMEMS, benefits of the SMEMS; implications for not conforming to SMEMS requirements and not fulfilling compliance obligations.
2. Conduct awareness training with new and transferred employees on policy and general SMEMS awareness as part of New Employee Orientation (NEO).
3. Conduct awareness training on facility emergency action procedures.
4. Post SMEMS policy at locations throughout the facility.

## **Recordkeeping**

1. Document attendance at SMEMS training sessions and maintain records.
2. Maintain employee training records.
3. Program Managers shall maintain competency records for their programs that can be used as a reference for performance evaluations.

## **Communications**

### **Purpose**

To establish and maintain a process for the receipt and evaluation of internal and external communications relevant to SMEMS processes, procedures, and/or performance. (Appendix F)

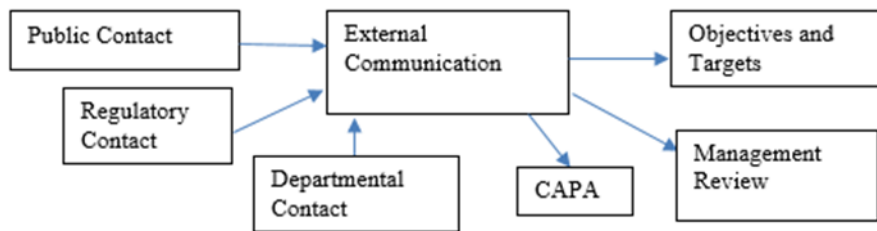
- a. Internal Communication- Contact from within the Sewer Maintenance Division.
- b. External Communication- Contact from interested parties outside the Sewer Maintenance Division. Examples of which include contact from the public, regulatory agencies, or City of Raleigh Departments.

### **Procedure**

1. Provide opportunities for interested parties to communicate their input on environmental impacts, program performance, and potential improvements utilizing various forms of communication media.
2. Review input received (if any) at SMEMS team meetings for relevancy and consideration into planning Sewer Maintenance operations.
3. Document SMEMS related education and outreach efforts on shared locations.
4. Report the performance and outcomes of the SMEMS, at least annually, in the development of the Annual Wastewater Collection and Treatment System Report.

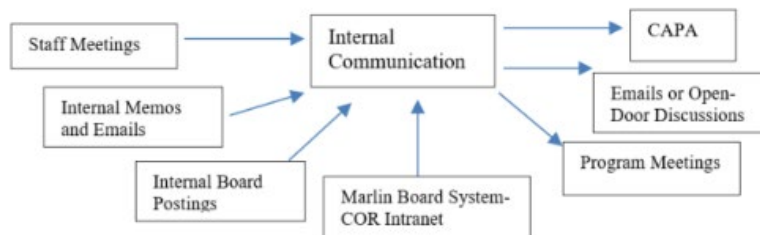
### External Communications

1. Communicate through press releases, notices of discharge, paid legal advertisements, and informational brochures, bill stuffers, door hangers, COR website, public community outreach, and vehicle informational wrap.
2. Document contact, input and information received, from formal and informal, via Cityworks.
3. Review and update objectives and targets to help address and incorporate comments and/or concerns received when feasible and/or appropriate.
4. SMEMS information and input from Contractors may be communicated by and to the appropriate SMEMS staff (contract liaison).



### Internal Communications

1. Report relevant and required information as detailed in Appendix F about Sewer Maintenance activities to staff via emails, memos, staff meetings, postings on the Marlin boards or other methods. SMEMS information is also available on the City's intranet.
2. Provide opportunities for employee input into the SMEMS via CAPAs, emails, open door discussions, the Department's Hazard Zero program, and program specific SMEMS meetings.
3. Input shall be considered in the development of objectives and targets and identifying risk and opportunities for continual improvement of the SMEMS.



## Documented Information

### Purpose

To describe the methods in which the SMEMS shall control documents to ensure they are updated, correct, and available when needed and to describe the methods on how records are controlled to ensure they are identifiable, legible, and protected.

### Procedure

1. The SMEMS Team is responsible for ensuring this procedure is effectively established, implemented and maintained.
2. Documents or records requiring control shall be determined by the consensus of the SMEMS Team with oversight from the EMC. Retention and storage practices will follow all applicable State and Local guidelines.
3. Documents are to be titled, numbered and formatted electronically by the EMC, to include the SMEMS title, original date, revision date, and page number.  
Example of title: CAPA: 02-5250-19 EAP Update.
4. Document owners shall submit documents to the EMC to be reviewed and approved for suitability and adequacy.
  - a. If the document does require control, the EMC shall number it and add to appropriate location.
  - b. If the document does not require control (sign-in rosters, supporting documents, etc.)
    - i. But is suitable to the SMEMS, the EMC shall add the document to the appropriate location.
    - ii. But is unsuitable to the SMEMS it shall be returned to the document owner with an explanation.
5. Control of Documents and Records Information:
  - a. Controlled documents and records are published in shared locations.
  - b. Review of controlled documents or records may be made in response to management of change, corrective action, regulatory requirement, management review, interested party input, review of DOPs or periodic review.
  - c. Modifications of documents can be made by the responsible party, EMC, Sewer Maintenance Manager, or their designee, after the SMEMS team has reviewed and authorized changes.
  - d. Printed copies of SMEMS documents are labeled uncontrolled.
  - e. Follow the NC Records Retention and Disposition Schedules for Counties and Municipalities and the US EPA records retention guidelines for controlled records.
  - f. Archive or properly dispose of obsolete versions of the documents. Printed documents shall be disposed by confidential shredding and electronic versions shall be deleted.



6. The following documents and records used in the SMEMS require control

<b>Documents</b>	<b>Responsible Party</b>	<b>Location</b>	<b>Retention</b>
Emergency Plans	Health and Safety Specialist	Shared Locations	Current Version
EMS Manual	Environmental Management Coordinator	Shared Locations	Current Version
Standard Operating Procedures (SOPs)	Process Owner(s)	Shared Locations	Current Version
Regulations and Permits (External Origin)	Sewer Maintenance Manager, Assistant Sewer Maintenance Managers & System ORC	Shared Locations	
Objectives & Initiatives	EMC/SMEMS Team	Shared Locations	Current Version
O&M Manual for equipment (External Origin)	Process Owners(s)	Process Owner(s) Office(s)	Current Version
<b>Records</b>	<b>Responsible Party</b>	<b>Location</b>	<b>Retention</b>
Competency Records	Program Managers	Program Manager's Offices	At Least 5 Years
Corrective Actions	Environmental Management Coordinator	Shared Locations	At Least 5 Years
Environmental Aspects	EMS/SMEMS Team	Shared Locations	Current Version
Gas Monitor Service Records	Safety Technician	Safety Technician's office	External Vendor
Internal and External Audit Reports	Environmental Management Coordinator	Shared Locations	At Least 5 Years
Maintenance Work Orders	Program Managers & Maintenance Analyst Planners	Cityworks	Life
Management Review Minutes	Environmental Management Coordinator	Shared Locations	At Least 5 Years
Operation Work Orders	Program Managers & Maintenance Analyst Planners	Cityworks	Life
Public Inquires and Responses			Life
Reports to Regulatory Agencies	Operator in Responsible Charge (ORC) or Permit Holder	ORC's Office	Life
Training Documents/Records	EMC/Utilities Coordinator Health & Safety Specialist	Shared Locations	At least three years after termination of employment

## Operational Control

### **Purpose**

To implement and maintain operational controls for identified process control points. To maintain a life cycle perspective, the SMEMS addresses environmental requirements of the Sewer Collection Permit and the SMEMS. At process control points, operational controls (Appendix C) can be utilized to effectively manage outcomes.

### **Procedure**

1. Evaluate PCPs to identify operational controls that can affect or influence outcomes.
2. Document identified operational controls.
3. Monitor operational data daily for compliance and record in Cityworks.
4. Update operational controls and monitoring and measurement procedures as necessary.
5. Consider life cycle perspective when developing operational controls.

## Emergency Preparedness

### **Purpose**

To ensure effective response to accidents and emergency situations associated with Sewer Maintenance activities, and to help minimize consequences or associated risks, including activities of contractors.

### **Procedure**

1. Review and update the Sewer Maintenance Emergency Action Plan (EAP) at least annually, based on desktop exercises, actual exercises, drills, after action reviews or change in personnel.
  - a. The Health and Safety Specialist (HSS) shall ensure that the EAP is updated and added to the shared locations.
    - i. The HSS shall communicate with the EMC to add the EAP to the shared locations. In the absence of the EMC, the Administrative Specialist can add to those locations.
  - b. The HSS shall complete an MOC detailing the changes
  - c. The EMC shall route the MOC for notification and signatures.
2. Evaluate and have input in updating the comprehensive Emergency Operations Plan (EOP) and Raleigh Water's Employee Evacuation Plan (EEP) at least every three years.
3. Conduct periodic emergency response testing and training.
4. Conduct investigations of emergency situations associated with Sewer Maintenance activities and document corrective action plans for incidents and emergency situations.
5. Monitor Sewer Maintenance contractors during periodic site visits, by assigned contract liaison, to verify they have the most current version of the EOP/EAP on file and follow the guidelines in these documents that are applicable to Sewer Maintenance activities as stated in their service agreement and Memorandum of Understanding.
6. Identify and document potential environmental incident and emergencies, the environmental impacts and risk of those incidents or emergencies, and planning actions to address them (Appendix I).

## **Performance Evaluation**

Periodic review of the SMEMS takes place through internal audits, monitoring and measuring and management reviews to track and evaluate performance of the system and to identify opportunities for improvement.

### **Monitoring, Measurement, Analysis and Evaluation**

#### **Purpose**

To monitor environmental performance with applicable compliance obligations requirements, measure performance at PCPs, and track progress toward achievement of objectives.

#### **Procedure**

1. The SMEMS monitors and measures the following Key Performance Indicators (KPIs):
  - a. SSO rate (reportable vs. reportable dry weather)
  - b. Spill mitigation costs
  - c. Footage (miles) of pipe cleaned (permit mandates 10% of system)
  - d. Footage (miles) of easement maintained
  - e. Footage (miles) pipe inspected via CCTV
  - f. Service request response times
  - g. Vacancy rate
  - h. Average SSO volume
  - i. Accident/injuries by type
  - j. Repair reactive vs. corrective work
  - k. Backlog by work type
  - l. FOG enforcements
2. Items related to compliance obligations, monthly performance, objectives and initiatives as well as significant aspects shall be monitored.
3. The methods for monitoring are based upon compliance obligations and/or existing performance metrics requested by the Executive Management Team. Information is analyzed, evaluated, documented, and reported via periodic performance reports.
4. Data input by staff are evaluated and analyzed by the program managers on a continual basis and may be discussed in regularly scheduled SMEMS Meetings, SMEMS Committee (Program) Meetings, and Management Review Meetings.
5. Review monitoring and measurement activities whenever significant changes in process, operations or regulatory compliance occur.
6. The SMEMS does not have equipment that needs calibration.

## Internal Audit

### Purpose

To perform periodic review of the SMEMS to evaluate its performance and identify opportunities for improvement.

### Procedure

1. The SMEMS team shall develop a three-year audit schedule, for conducting internal and process (program) audits, based upon the SMEMS's processes.
2. The SMEMS team develops the purpose, scope, criteria and plans for internal audits.
3. Evaluate SMEMS's performance in the areas of continual improvement as it relates to the intended outcomes and objectives and targets.
4. The designated auditor shall conduct audits, develop reports, and review preliminary audit results (findings and/or opportunities) with the process owner and the SMEMS team.
5. Findings shall be addressed by using the corrective action process.
6. The SMEMS team considers opportunities and may address any through the corrective action process.
7. Corrective actions shall be presented to the auditor and the auditors shall follow-up to verify corrective action results.
8. The EMC shall present audit reports as part of the Management Review process.

### Selecting and Training Auditors

1. The SMEMS team selects auditors to conduct internal audits. Auditors must be impartial and objective in the area being audited.
  - a. Internal auditors cannot audit areas where they have direct job responsibilities.

## Corrective Action

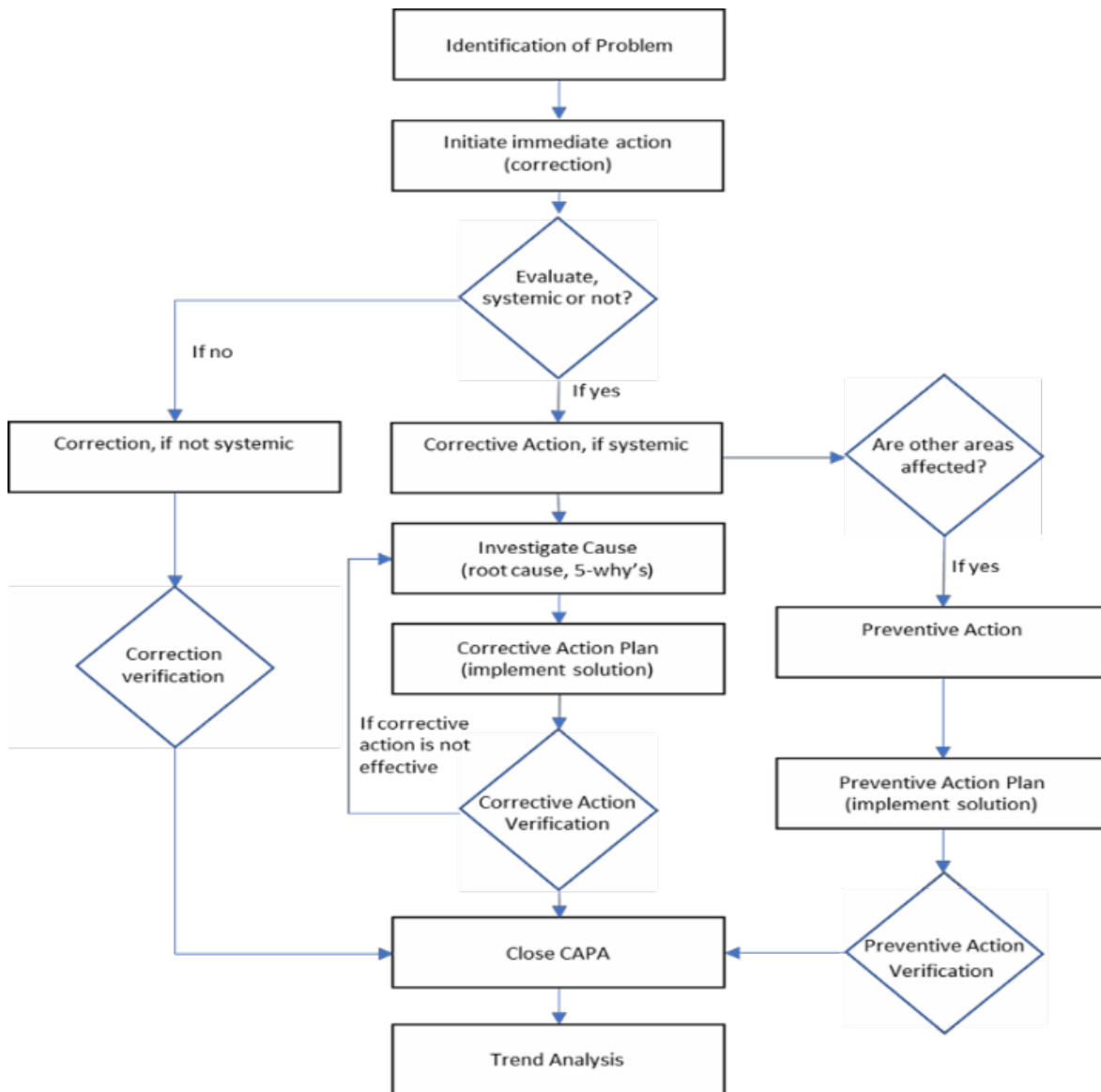
### Purpose

The corrective action process identifies actual or potential findings or problems and/or opportunities discovered during routine monitoring and measurement, emergency incidents, audits, experience or other methods and determines actions needed to prevent them from occurring or reoccurring. In many cases, problems can be corrected without extensive investigation or root cause analysis. Equipment problems and minor gaps in performance are examples. The following type of problems may require further investigation, root cause analysis, and corrective actions:

- Incidents
- Noncompliance with legal or other requirements
- Nonconformance with third-party audits
- Findings from internal audits
- Escalated public or customer complaint
- Systemic issues (i.e problems for which immediate correction is not sufficient to prevent it from repeating)
- Any other problems the SMEMS team determines requires corrective action
- Any problem or issue that causes environmental impacts.

## Procedure

1. Identify, investigate and evaluate nonconformance, noncompliance, problems or potential problems discovered via complaints, routine monitoring and measurement, incidents and accidents, audits or regulatory compliance.
2. Determine if correction is all that is needed or if corrective action is necessary. Determine the root cause if issue is systemic. Document correction only for non-systemic issues.
3. Document the problem using the corrective and preventive action (CAPA) form and report problem to the process owner and EMC.
4. Perform root cause analysis for problems or issues using the 5-why method. Determine if cause can affect other things or area.
5. Develop corrective action plan(s) to implement necessary corrective or preventive actions that will address the root cause of the problem, and identify responsibility, resources and timing of the plan.
6. Monitor and review progress toward resolution at SMEMS meetings.
7. Verify effectiveness of the solution to ensure the cause has been eliminated, so the problem will not re-occur, and close the CAPA (closed loop). The person verifying effectiveness is typically the person that identified the issue.
8. Maintain status tracking log of CAPAs (EMC).
9. CAPAs identifying change in procedure, policy, workflow and/or equipment needs are addressed through the Management of Change (MOC) process.
10. Report nonconformances, noncompliances, and corrective actions to management as part of the management review process.
11. The EMC shall periodically review CAPA logs for systemic problems or trends identifying areas of concern.
12. Noncompliance of Sanitary Sewer Overflows (SSOs) shall be tracked through the BasinWide Information Management System (BIMS) process.



## Management Review

### Purpose

To provide a strategic review of the SMEMS, at scheduled intervals, to ensure SMEMS's suitability, adequacy and effectiveness and to identify continual improvement opportunities.

### Procedure

1. The SMEMS EMC or designee shall conduct periodic Management Reviews with Top Management, which includes the Assistant Director for Wastewater and Sewer Maintenance Manager.
2. Management Review shall include:
  - a. Status of actions from prior management reviews
  - b. Changes in external and internal influences relevant to SMEMS, needs and expectations of interested parties including compliance obligations, significant environmental aspects and risk and opportunities
  - c. Progress towards achieving objectives and targets
  - d. Update on SMEMS's environmental performance, to include nonconformities and corrective actions, monitoring and measurement results, fulfilment of compliance obligations and audit results
  - e. Adequacy of SMEMS's resources
  - f. Relevant communication, including complaints, with interested parties
  - g. Opportunities for continual improvement
3. Discuss and provide information to Management Review participants in advance of management review along with recommendations for improvements (SMEMS Team).
4. Top Management shall review suitability, effectiveness, and adequacy of the SMEMS, including actions required when environmental objectives are not achieved; opportunities to improve SMEMS's integration with other business processes; and implications for a strategic direction.
5. Prepare and post minutes on discussions and action items from Management Review.
6. Assign responsibilities on action items with timelines.

## Glossary of Terms

- **Abnormal Conditions** – Occur infrequently and are not part of day to day operations.
- **Appendices** - Documents that relate more to the sewer maintenance management system as a whole. The manual is complete without the appendices, but appendices add insight into the sewer maintenance management program.
- **BIMS** – BasinWide Information Management System is an incident portal used for entering incidents (i.e. SSOs, Bypasses, Complaints, Spills.) and 5-day SSO follow-up reports by municipalities.
- **CAPA** – Corrective and preventive action.
- **Contractor** – An individual or company that has a written agreement (contract) to provide goods or services.
- **Contractor Memorandum of Understanding** – Document signed by contractors or suppliers stating their understanding of the SMEMS program and detailing their responsibilities under that program; this document also details the City’s responsibility to contractors under the SMEMS program and is located in SMEMS’ shared location.
- **Direct Environmental Aspects** – Activities that the SMEMS has influence or control over (Example: Emissions from processes).
- **Documents** – Content files that can be edited, revised and changed as needed.
- **DOP/DOI** – Divisional Operating Procedures/Departmental Operating Instructions. Standard work instructions and practices for employees describing the “how to” steps in managing PCPs of a specific management activity affecting sewer maintenance activities, compliance with legal and other requirements.
- **EMC** – Environmental Management Coordinator
- **Environmental Aspects** – Activities or services or products that can interact with the environment.
- **Environmental Impacts** – Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organizations activities or services (environmental aspects).
- **Emergency Conditions** - Occurs as a result of an unexpected sudden/severe event.
- **EAP** – Emergency Action Plan.
- **EEP** – Employee Evacuation Plan.
- **EOP** – Emergency Operations Plan
- **Formal Communication**- Any communication routed through the call center and documented in Cityworks.
- **Goals** –Desired outcomes and/or improvements to the system.
- **Indirect Environmental Aspects** – Activities that the SMEMS can be expected to have an influence but no control over. (Example: customer control, supply chain, etc.)
- **Informal Communication**– Any communication received outside of the call center for example: meetings, out in the field, direct phone calls or direct face-to-face contact.
- **Interested Parties** – Person or organization that can affect, be affected by or perceive itself to be affected by a decision or activity of the SMEMS.
- **Internal Audit** – A systematic internal investigation process for objectively evaluating the conformance to the requirements of the SMEMS and identifying deficiencies to be corrected or resolved.
- **Intelex** – Cloud based software used to store training records and controlled documents.
- **Intranet** - the CORPUD shared drive.



- **ISO 14001:2015 Standards** – International Organization for Standardization (ISO) is a guidance document designed to assist in the development and implementation of a management system that meets the requirements set forth in the ISO 14001 standards (EMS Elements).
- **Life cycle** – The consecutive and interlinked stages of a product or service system, from raw material acquisition or generation from natural resources to final disposal. The life cycle stages include: acquisition of raw material, design, production, transportation/delivery, use, end-of-life treatment and final disposal.
- **Noncompliances** – A deviation from federal, state and local laws, regulations and other compliance requirements applicable to sewer maintenance activities.
- **Nonconformances** - a deviation from wastewater management policy, SMEMS procedures/requirements, ISO 14001:2004 American National Standards. They include circumstances that can create a noncompliance situation or significant environmental impacts.
- **Normal Conditions** – Occurs as a result of normal operations, on a day to day basis.
- **O&M Manuals** – Operation and Maintenance manuals.
- **Objectives** – Measurable improvements to established goals.
- **Operational Controls** – Include associated DOPs/DOIs, O&M manuals, maintenance procedures, contracts and employee skills that are required to effectively manage PCPs and meet legal and other requirements; including conformance with policy requirements and achievement of objectives and targets.
- **Other Requirements** – Other binding sewer maintenance management practices and requirements to which the Sewer Maintenance Division follows as part of the sewer maintenance management system. Examples include binding agreements with customers, suppliers, public organizations and commitments to going beyond compliance.
- **PCP** – Process Control Point: the points in the processes where legal compliance and requirements, public acceptance and environmental impacts can be controlled.
- **Records** – Historical files that provide proof of existence. Records are not editable and cannot be recreated. Note: All records are documents but not all documents are records.
- **Relevant Interested Parties:** Persons or organization that are affected by or can affect the decisions and/or activities of the SMEMS's compliance obligations.
- **Responsible Party:** Individual(s) who are designated to complete actions or tasks defined in CAPAs or MOCs.
- **Risk and Opportunities** – Potential adverse effects (threats) and potential beneficial effects (opportunities) related to the organization's environmental issues (its context) scope and SMEMS requirements.
- **Service Agreements** – The contract between the City (Sewer Maintenance) and other person(s) to perform specific activities and services.
- **Shared Locations** – Electronic applications where documents or records are saved as in shared drives, Intellex, or MS Teams.
- **SMART Criteria** – Specific, Measurable, Achievable, Relevant, Time-bound; criteria that is used to define and evaluate the suitability of a goal or objective/target.
- **SME** – Subject Matter Expert
- **SMEMS** – Sewer Maintenance Environmental Management System: management framework for integrating environmental considerations into day-to-day operations and decision-making, and for improving organizational performance over time.
- **SMEMS Top Management Team** – Includes Assistant Director for Wastewater, Sewer Maintenance Manager, Assistant Sewer Maintenance Managers, and the EMC.

- **SMEMS Team** – Includes Sewer Maintenance Manager, Assistant Sewer Maintenance Managers, program managers, and process leads for the Sewer Maintenance Division. Also includes the EMC.
- **Systemic Issue:** Recurrence of the same issue or a problem due to issues inherent to the overall system, rather than due to specific, individual or isolated factor.
- **Third party Verification Audit** – A systematic, structured audit of the SMEMS; performed by a qualified independent third-party auditor using a standardized protocol for verification.
- **Trend** - A pattern of change in a condition, output, or process.