Raleigh Water

Resource Recovery & Sewer Maintenance Divisions

ISO 14001 Certification Process

July 2023

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How One City's Sewer Maintenance Division Optimized Operation

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City of Raleigh
Public Utilities Department

Raleigh Water

Serving people of Garner, Knightdale, Raleigh, Rolesville, Wake Forest, Wendell, and Zebulon.

Operational Optimization

Strategic Objective

Extend a management system framework…

…to bridge the gap

Action Items

What framework to implement?

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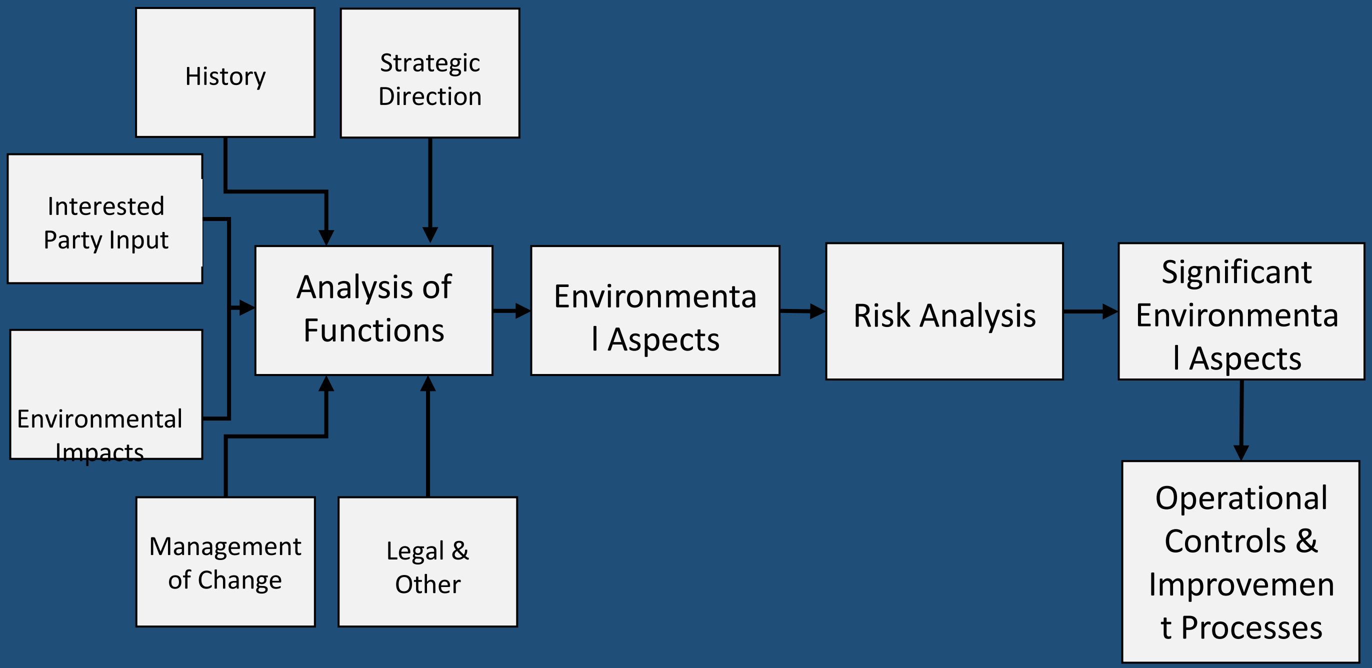
The ISO 14001:2015 Standard

And the Environmental Management System

Environmental Aspects



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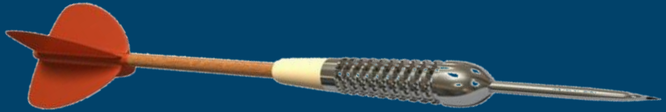
SEVERITY				
	High	Medium	High	High
	Med	Low	Medium	Medium
	Low	Low	Low	Low
		Low	**Med**	**High**
		LIKELIHOOD		


Permits
City Council
NC DEQ (CMOM)
Strategic Plan
CORPUD Handbook
Serving the Areas of:
•Garner •Wake Forest •Knightdale
•Wendell •Zebulon •Rolesville
PLANS



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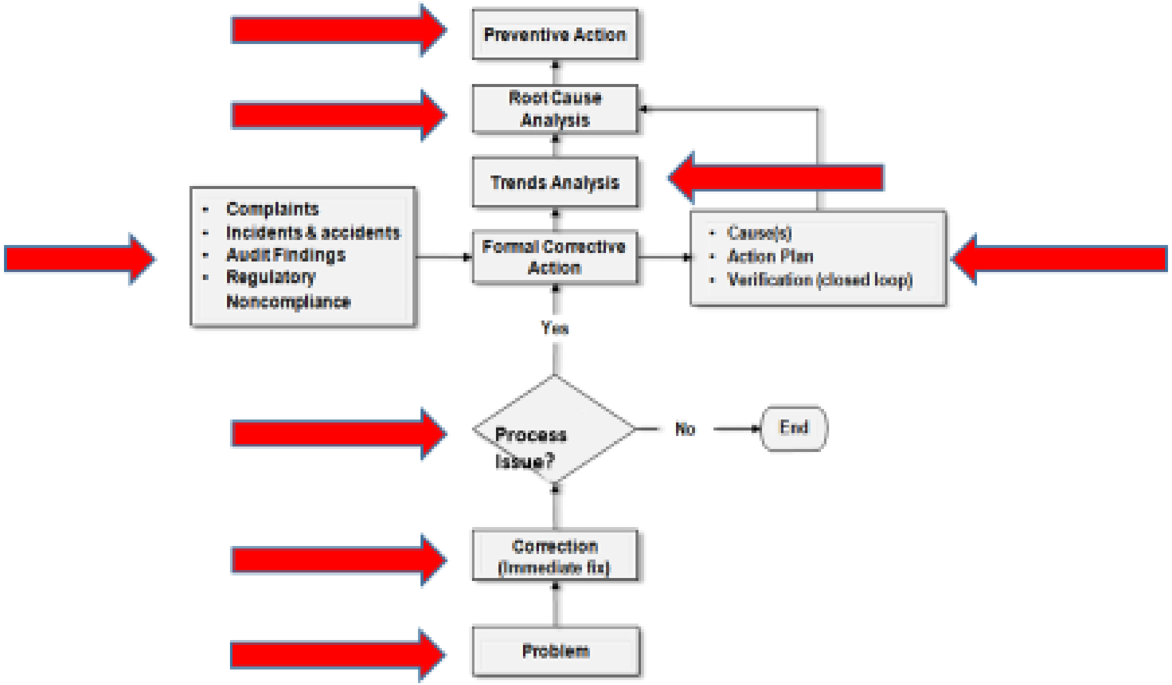
Corrective And Preventative Action



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Management Review

- Status of follow-up from previous reviews
- Progress of objectives and targets
- Developments in legal & other requirements
- KPIs for environmental performance

- Communication (internal & external)
- Audit results & compliance assessments
- CAPA effectiveness
- System effectiveness

Analysis by EMS Team

Received for improvement

Changing Circumstances

Review by Management Team

Improvements
Changes in management system
Objectives & Targets
Policy

Managing the Transition

Dealing with Change

Formidable Challenge

McGregor's Theory

Theory X and Theory Y (Douglas McGregor)

Theory X

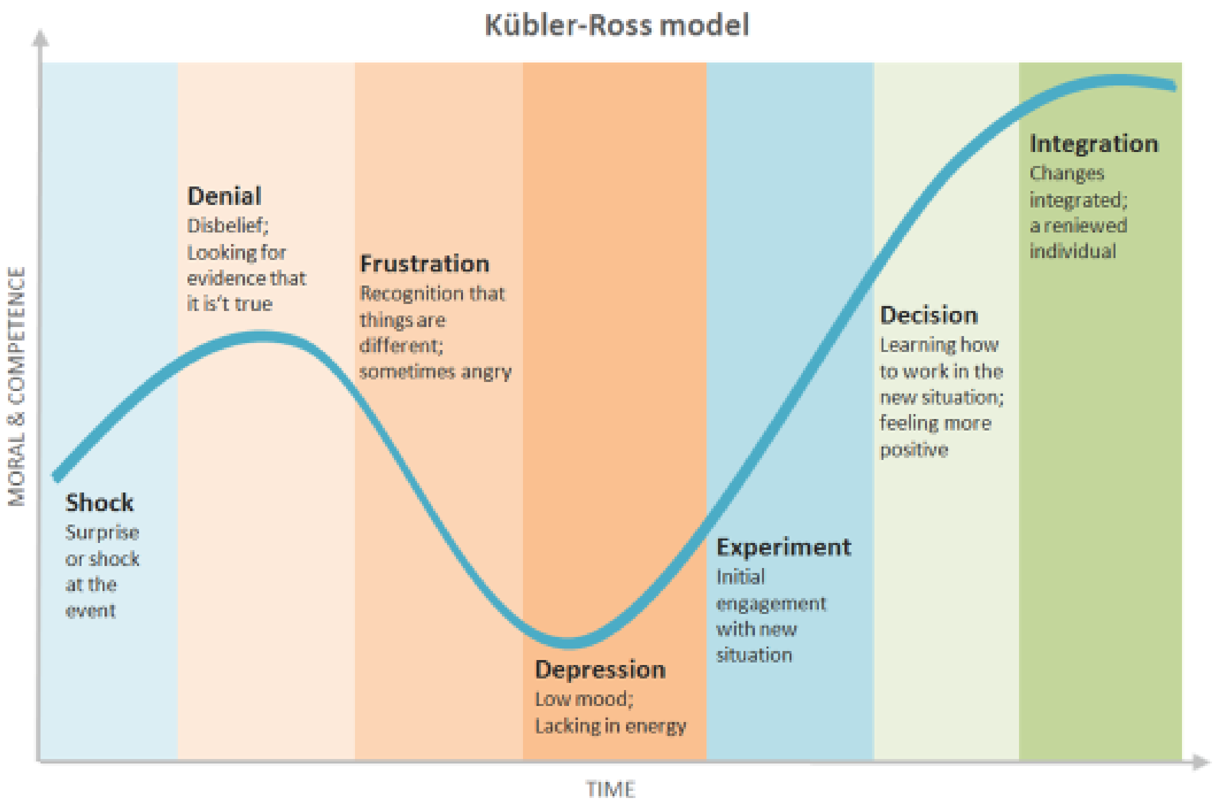
Assumes that employees dislike work, lack ambition, avoid responsibility, and must be directed and coerced to perform.

Theory Y

Assumes that employees like work, seek responsibility, are capable of making decisions, and exercise self-direction and self-control when committed to a goal.

Be the Cheerleader

Grief Model



Kübler-Ross model
MORAL & COMPETENCE
TIME
Shock
Surprise or shock at the event
Denial
Disbelief; Looking for evidence that it is't true
Frustration
Recognition that things are different; sometimes angry
Depression
Low mood; Lacking in energy
Experiment
Initial engagement with new situation
Decision
Learning how to work in the new situation; feeling more positive
Integration
Changes integrated; a renieved individual


Rest In Peace
The Old Ways of Managing
Sewer Maintenance
1913 - 2012

Focus Groups

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Define Your System

The management system you create is yours

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Use Internal Resources

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Process not People

Communication

"To operate and maintain the sanitary sewer collection system in a sustainable manner"

"Keep it in the pipe"

Evolution of Staff

Summary

- Improved pollution prevention and environmental protection
- Continual improvement
- Increased staff awareness
- Focus on process
- Individuals manage change differently
- Standardization
- Capture of functions – Training/Awareness
- Employees take the lead
- Employee growth

Resource Recovery Division

- 3 Treatment Plants
- Biosolids/Residuals
- Reclaimed Water
- Plant/Facility Operations & Maintenance
- Off-site pump stations (123)
- Laboratory
- Industrial Pretreatment
- Warehouse

Little Creek RRF

Smith Creek RRF

Neuse River RRF

Improvement Processes

- Objectives and Targets
- Corrective Action
- Management of Change
- Internal Audits
- Management Review

Objectives & Targets

- Items you set for improvement (set and agreed upon by EMS team)
- Example:
  - Objective
    - Reduce energy intensity
  - Target
    - 3% energy intensity reduction at NRRRF for FY21 over FY2020 energy intensity
    - Maintain annual average combined RRF energy intensity at or below 2400 kWh/MG treated
    - Feed-forward DO control implemented by June 30, 2021

Objectives & Targets

- Actions
  - Implement feed-forward DO control program to reduce blower demand at NRRRF
  - Implement feasible energy reduction strategies at all 3 RRFs

- Objectives and targets are reviewed in EMS team meetings every other month to determine if items are on target

Corrective Action

- Document items that don’t go as planned (nonconformances, noncompliances, problems, or potential problems)
- Tool to document deficiencies, determine their root cause and make a plan to correct it so it doesn’t happen again
- Integral component of continual improvement

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Corrective Action Report

Doc ID #: C.5230-610-2023-03	Issue Date: 3/14/2023	Solution Due Date: 4/14/2023	Issued To: Lisa Joseph Division: RR	Closed By: E. Fentress Closing Date: 5/10/2023

Requested By: Emily Fentress	CAR Manager: Lisa Joseph

Problem Statement: Transition of fuel duties from Utilities Specialist to Maintenance staff was not communicated clearly, and on 3/8/2023, land management staff attempted to fuel equipment with off-road diesel and discovered the tank was empty and would not dispense fuel. This was due to responsible party being unaware fuel duties had been transitioned to them and fuel was not ordered.

Correction: (immediate action taken to remedy the problem)

Staff contacted Austin Lundy with VFS to notify him and make a fuel order to be delivered the next day.

Probable cause:

- ☒ Management Error
- ☐ Weather/Natural Causes
- ☐ Design Error
- ☐ Competency/Training/Awareness Problem
- ☐ Maintenance Problem
- ☐ Procedure Problem/Incorrect Procedure
- ☐ Off-site Problem
- ☐ Communication Problem
- ☐ Supplier/Contractor Problem
- ☐ Equipment Problem
- ☐ Other

Contributing Factors: Manager failed to communicate transition of duties to affected parties. Transition of fuel management duties between programs was not effectively communicated due to lack of MOC.

Implemented Solution to correct or prevent CAUSE:

Manager assigned MOC responsibility to the Maintenance program, and Utilities Specialist provided training to appropriate maintenance staff, who are assuming the fuel management duties. A UST Compliance Responsibilities checklist was provided by the Utilities Specialist to maintenance staff.

Results (confirming effectiveness of solution):
MOC was circulated to affected parties; Maintenance staff have been successfully managing duties associated with fuel since it was transitioned to them.

Is MOC required: ☒ Yes ☐ No

MOC# M.5230-604-2023-10

Management of Change

- Documentation tool to record when changes take place in processes or system
- Ensures all affected parties are aware of the change
- Identifies those who need to be made aware of changes and any training that needs to occur
- Sign-off process to make sure affected parties have done what is required with respect to changes made

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MANAGEMENT OF CHANGE (MOC) FORM

CITY OF RALEIGH
PUBLIC UTILITIES | RALEIGH WATER

MOC # M.5230-626-2023-17

RESPONSIBLE PARTY *Person(s) responsible for preparing change.*	
Date: 5/23/2023	Name(s): Kelvin Brown
Division(s): 5230	Title(s): Operations Supervisor

CHANGE DESCRIPTION *Summary of proposed changes.*	
General description of change: *Summarize technical basis and proposed change.*	Temporary Change in Reuse Pump Station Operation for LCRRF. The reuse pumps are normally operated by the SCADA System; typically, the reuse water blend of plant effluent and potable water are mixed at a rate of 50% potable to 50% effluent. This is done by adjusting the potable water valve on SCADA; the potable water valve is in the process of being repaired and is not fully functioning, so going forward there will be a proposed change of using plant effluent only until the potable water valve is fully functional.
Description of potential hazards: *Any potential health and safety impacts resulting from proposed change.*	No new impacts expected.
Will change affect environmental impacts outlined in EMS programs? *If applicable, list any potential impacts affected.*	No environmental impact expected.
Proposed date and time for change: *If change is temporary, indicate change start and end dates.*	Start Date:5/17/2023 End Date: To be determined
Programs or Divisions affected by change:	608, 626, 634

*** Please attach any supporting documents for the change if applicable ***

AUTHORIZATION TO PROCEED WITH CHANGE

Changes affecting only one Division must be authorized by a Division Manager. If changes require authorization by multiple Divisions, authorization must be completed by the Assistant Directors of affected Divisions and the Director unless otherwise noted. All MOC's affecting multiple Divisions will be reviewed at Executive Management Team meetings. Use check boxes to indicate the required authorization signatures.

Check if applicable	**Authorized by:**	**Signature:**	**Date:**
☐	Whit Wheeler		
☐	Gregory Jenkins		
☐	Chris Phelps		
☐	John Kiviniemi		
☐	Erika Bailey		
☐	Click or tap to enter text.		
☒	Division Manager *(fill in name)*: Lisa Joseph	Lisa Joseph	6/1/2023

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CHANGE ACKNOWLEGDEMENT

Circulate to Assistant Managers, Program Heads, Program Supervisors or other if only one Division is affected. Circulate to Division Managers if multiple Divisions are affected. Their signatures will indicate acknowledgement, understanding and that the change has been added to the appropriate training curriculum to inform/train applicable staff. If additional signatures are needed, please use MOC Attachment A.

Check if applicable	**Program/Division:**	**Program/Division Representative:**	**Signature:**	**Date:**
☐				
☒	626	Jennifer Holmes	DocuSigned by: Jennifer Holmes	6/6/2023
☒	626	Jacob Holt	DocuSigned by: Jacob Holt	6/1/2023
☒	634	Marla Dalton	DocuSigned by: Marla Dalton	6/1/2023
☒	634	Emily Fentress	DocuSigned by: Emily Fentress	6/5/2023
☒	602	Nathan Howell	DocuSigned by: Nathan Howell	6/1/2023
☒	604	Jeff Bognar	DocuSigned by: Jeff Bognar	6/5/2023
☒	608	Julian Ryan	DocuSigned by: Julian Ryan	6/5/2023
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FOLLOW UP

To be completed by responsible party prior to startup following change.

Program Documentation:	**Answer (Yes/No):**	**If yes, Completion Date:**	**If yes, Document ID:**
Are there emergency plans, operating procedures, or maintenance procedures to be created or updated because of this change?	No		
Are there any safety modifications?	No		

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I have confirmed that this form is complete, and all associated requirements have been met. This management of change can now be closed as it is fully implemented.

Responsible Party Signature: ____________________ Date: 6/6/2023

(Please submit completed form to Environmental Management Coordinator or RUMS Representative)

Internal Audits

- Cannot audit your own program/area
- Designed to help identify areas for improvements or identify actions that need to be taken when processes are not working efficiently/correctly
- Create Corrective Actions to address audit findings

Management Review

- Takes place with upper management (Assistant Director, Division Manager)
- High-level overview of EMS; status of system is discussed
- Management makes suggestions for improvements to system
- Assists with prioritization of improvements and commits resources to make them happen

Questions or Comments?

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