

Breakout Title

**Infrastructure Planning (with focus
on the 'long term plan' required in
the DWQMS)**

Breakout Overview

- As part of DWQMS 2.0, all operating authorities are required to document a long term forecast of major infrastructure maintenance, rehabilitation and renewal activities within their operational plan. In this session questions will be asked that may help you develop the contents of such a plan. Plans will differ between municipalities based on different sizes and types of drinking water system. Best practices will be touched on and discussed.
- Every DWS plan will be different.

Agenda

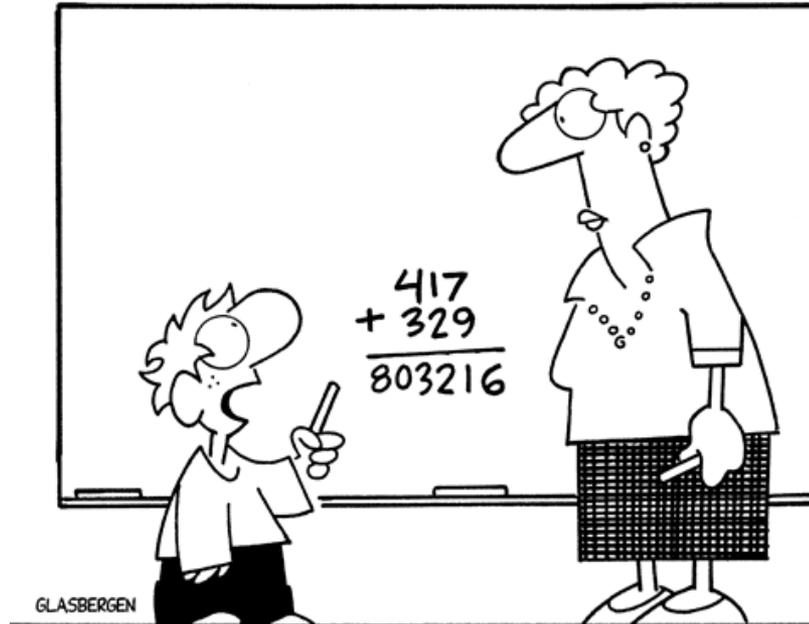
- Explore potential questions that you should ask before starting your review.
- Items to consider during your review.
- Best Management Practices.
- Which DWQMS Elements could be related to infrastructure planning
- Hazardous Events.
- Setting yourself up for success and, measuring the success of your review.

Breakout Learning Objectives

- ✓ Learning Objective 1 – Discuss and determine what is considered long term for your system.
- ✓ Learning Objective 2 – Identify how well you know your drinking water system.
- ✓ Learning Objective 3 – Setting yourself up and measuring the success of your review.

Why do this review

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**“My dad says persistence is the key to success.
So I’m going to keep giving you the same wrong
answer until it becomes the right answer!”**

Infrastructure Review Procedure

- Your Infrastructure Review Procedure ensures periodic evaluation of the condition and capacity of infrastructure components. The results of the evaluation are used to prioritize future resource allocation.

Infrastructure Stability

- Infrastructure Stability is an understanding of the condition of, and costs associated with critical infrastructure assets. Maintains and enhances the condition of all assets over the long-term at the lowest possible life-cycle cost and, acceptable risk consistent with customer, community, and regulator-supported service levels, also that the plan is consistent with anticipated growth, and system reliability goals. Assures asset repair, rehabilitation, and replacement efforts are coordinated within the community to minimize disruptions and other negative consequences.

Success

- How do you set yourself up for success of your infrastructure review.



Set yourself up for success

- Competent staff –Staff involved need to be well trained and supported in the acceptance and adoption of new integrated approaches.
- Staff must be involved and kept “in the loop” .
- Leave yourself enough time to “do it right”.
- Compare past reviews 5 years back.
- Monitor your plan during the previous year.
- Meet to discuss the plan with the same group during the year tweak the plan if needed.

Tracking Your Plan

Recommendation Status Overview 2013 to 2018					
Recommendation	Number of Actions Recommended	Fully Implemented	In process of being implemented	Little or no progress	Will not be implemented
10 Blocks replacement Water Mains	6	4	6		
30 Lead Service replacements		ALL			
Install 4 sampling stations		3	1		
Replace dead end bleeders	12	6	3		3
Insulate shallow water services	10	8	1		1
Chlorine booster stations	2	0	1		1

Some questions you may need to ask before starting your review



Possible Questions

- What is the current state of my infrastructure assets?
- What is my required "sustainable" level of service?
- Which assets are critical to sustained performance?
- Do you need to consider your treatment processes in a infrastructure plan?
- Will changes in your distribution infrastructure change how the treatment plant operates?
- Are the right staff involved in your infrastructure review?

Questions (will they ever end)

- What do you consider 'long-term', and why have you defined it that way?
- What are the inputs into an Infrastructure plan, for example, past maintenance records, new construction.
- What is considered Infrastructure.
- What is working well and what is not.
- Hazardous events related to Climate Change ??????

Things to consider

Determining the best (or optimal) time to rehabilitate/repair/replace aging assets.

Increasing demand for services.

Overcoming resistance to rate increases.

Diminishing resources. (Budget)..

Rising service expectations of increases.

Diminishing resources. (Grant money).

Your Official Plan?

Money is Tight



What About

Rising service expectations of customers.

Increasingly stringent regulatory requirements. Changing or new regulations.

Responding to emergencies as a result of asset failures. Areas where you have had Boil Water Advisories.

Are you looking at the high risk parts of your infrastructure, sometimes, if you solve the high risk issues the lesser risk issues could go away.

What about your Drinking Water System:

- How experienced are the staff involved who are assessing the infrastructure needs.
- How well do you know your system past, present and future.
- Do you consider potential “Shovel Ready Projects” you should be working towards in the case of short grant periods
- Have you tied your Infrastructure Plan into the existing asset management and / or financial plans?

Documentation that Might be Useful

- Is your data based on sound records, procedures, investigations and analysis, and is it documented in a manner that it will be useful. Did you identify minor shortcomings, before starting the review, for example; is some data old, or is documentation is missing and/or is reliance placed on unconfirmed reports or some extrapolation.
- Accurate and up to date drawings of your distribution system .
- Prepare information sheets for everyone involved such as how many km of water main, how many hydrants age range and sizes of water mains etc.
- Management Review.

What is a Best Management Practice (BMP)

- A best management practice (BMP) is a program, process or procedure which, if implemented, may assist the owner and operating authority of a drinking water system in the delivery of safe, high quality drinking water; provide mechanisms to optimize efficiencies within the drinking water system and/or QMS, and provide information to assist in future planning for the systems.

BMP continued

- BMPs may be identified through formal guidance published by the Ministry of the Environment, Conservation and Parks, opportunities for improvement identified by a third-party auditor, information received at a formal training session or DWQMS workshop, industry-published best practice documents, or formal/informal sharing and discussion of policies and procedures with other drinking water system owners or operating authorities.

Risks Assessments

- Likelihood X Consequences = level of risk.
- Risks should be identified at the earliest stage of planning.
- Once risks have been identified, they must be analysed and evaluated to determine what impact the risk would have.
- A risk management and/or mitigation strategy must be put in place for each identified risk that scores high.
- Risks should also be reviewed and updated as the initiative moves forward.

What DWQMS Elements are Involved?

- Element 7 Risk Assessment
- Element 8 Risk Assessment Outcomes
- Element 13 Essential Suppliers
- Element 14 Review and Provision of Infrastructure
- Element 15 Infrastructure Maintenance Rehabilitation and Renewal
- Element 21 Continual Improvement

Are there others ?

Element 14—Review and Provision of Infrastructure

- The operational plan shall document a procedure for reviewing the adequacy of the infrastructure necessary to operate and maintain the subject system that:
 - Considers the outcomes of the risk assessment documented under Element 8.
 - Ensures that the adequacy of the infrastructure necessary to operate and maintain the subject system is reviewed at least once every Calendar Year.
 - Communicate the findings of the review to the owner.

Element 14—Review and Provision of Infrastructure

- You are required to consider the results of your risk assessment when reviewing the adequacy of your infrastructure. For example: if an infrastructure improvement, repair, or upgrade has been identified as necessary to reduce the likelihood or impact of a hazard or hazardous event, it should be included in the infrastructure review findings.

Element 15—Infrastructure maintenance, rehabilitation and renewal

The operating authority shall:

- Keep the summary of the infrastructure maintenance, rehabilitation and renewal programs current
- Ensure that the long term forecast is reviewed at least once every Calendar Year or as needed.
- Communicate the programs to the owner
- Monitor the effectiveness of the maintenance program

Element 15—Infrastructure maintenance, rehabilitation and renewal

- Element 15 of the DWQMS is about documenting a summary of the maintenance, rehabilitation and renewal programs for your infrastructure. Your operational plan must include a summary of the programs you have in place to maintain, rehabilitate and renew the infrastructure of the drinking water system.

Where does the new Hazardous Events fit into infrastructure planning?

- The document titled “Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment” outlines the potential hazardous events and associated hazards that are, at a minimum, required to be assessed as part of risk assessment that is undertaken to conform to the requirements of Element 7 of the DWQMS.

Hazardous Events

- Long term impact of climate change.
- Water Supply shortfalls.
- Extreme weather events.
- Sustained extreme weather events.
- Chemical spills.
- Terrorist or Vandalism.
- Sustained pressure loss.

Continued

- Backflow.
- Sudden Changes in raw water quality.
- Failure of equipment for primary disinfection.
- Failure of equipment for secondary disinfection.
- Remember when taking these into consideration that: Consequence
X Likelihood = Risk !
- Are these all related to the infrastructure review?

Your Long Term Plan

- Did this type of plan exist for your system prior to DWQMS 2.0? (If not, why?)
- If so, how have you incorporated the existing plan into the QMS? (if they're separate, then why?)
- What do you consider 'long-term', and why have you defined it that way?
- What is long term for one municipality may not be long term for another due to priority issues this is related to resources available.

Your plan

- Does your plan use water modelling, trending or GIS in infrastructure planning and maintenance?
- Does your plan consider changing the type of material used such as plastic pipe vs ductile?
- Do you take into account long term infrastructure planning during new project design?

Fix it First

Fix-it-first” refers to an investment approach that targets resources to support the repair, replacement and upgrade of existing infrastructure and facilitates residential, commercial and industrial development within the existing service footprint of the water sector utility.

O. Regulation 588/17

- **ONTARIO REGULATION 588/17** made under the **INFRASTRUCTURE FOR JOBS AND PROSPERITY ACT, 2015**

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- **ASSET MANAGEMENT PLANNING FOR MUNICIPAL INFRASTRUCTURE**

O. Regulation 588/17

- The municipality's commitment to consider, as part of its asset management planning,
 - i. the actions that may be required to address the vulnerabilities that may be caused by climate change to the municipality's infrastructure assets, in respect of such matters as,
 - A. operations, such as increased maintenance schedules,
 - B. levels of service, and
 - C. lifecycle management,

O. Regulation 588/17

- ii. the anticipated costs that could arise from the vulnerabilities described in subparagraph i,
- iii. adaptation opportunities that may be undertaken to manage the vulnerabilities described in subparagraph i,
- iv. mitigation approaches to climate change, such as greenhouse gas emission reduction goals and targets, and
- v. disaster planning and contingency funding.

Thank you

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