# Council Workshop Meeting Agenda

## Monday, May 13, 2019
## 7 p.m.

## Council Chambers
## Aurora Town Hall

Public Release
May 6, 2019

# Town of Aurora
# Council Workshop Meeting
# Agenda

Monday, May 13, 2019
7 p.m., Council Chambers

## 1. Approval of the Agenda

**Recommended:**

That the agenda as circulated by Legislative Services be approved.

## 2. Declarations of Pecuniary Interest and General Nature Thereof

## 3. Consideration of Items Requiring Discussion

### 1. Drinking Water Quality Management Standard – Standard of Care

Presentation to be provided by Brigitte Roth, Principal Consultant, Acclaims Environmental.

## 4. Adjournment

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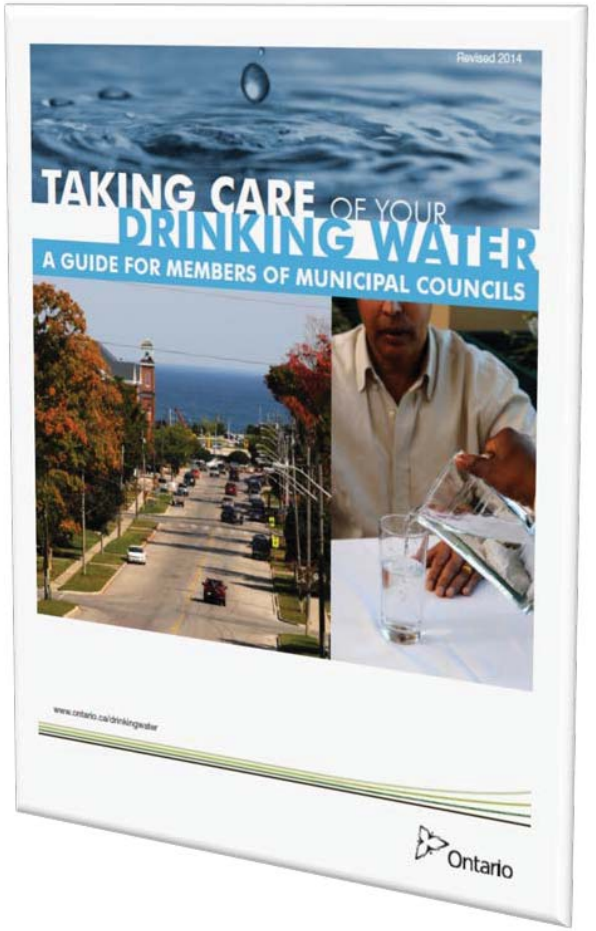
# Taking care of your drinking water

## Training for Members of Municipal Council

Q01

# Why are we here?

- Statutory Standard of Care
- Council, as Owner, needs to:
  - Understand personal duty.
  - Be informed: ask questions, get answers.
  - Be vigilant.
- Provide an overview of Aurora's drinking water system.

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# SDWA s. 19 Statutory Standard of Care – the Owner shall:

- Exercise ***level of care***, ***diligence*** and ***skill***
  - …that a ***reasonably prudent*** person would be ***expected to exercise*** in a similar situation; and
- Act ***honestly***, ***competently***, ***with integrity***
  - …ensuring the ***protection and safety*** of the users of the municipal drinking water system.

…or be guilty of an offence (SDWA s.19(3)).

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# Safe drinking water: a shared responsibility

Q07

1. **The province:**
   - Ministry of the Environment, Conservation and Parks
   - Ministry of Health and Long-Term Care
2. **Public Health:**
   – York Region Public Health
3. **Drinking water system Owner:**
   – Town of Aurora Council
4. **Accredited Operating Authority:**
   – Aurora Operations Services

# Duties – SDWA s.11-18

**OWNER**

- Ensure accredited Operating Authority (OA) operating DWS
- Report to the public on any matter required by regulations
- Agreement with accredited OA: DWS description, Owner vs. OA responsibilities (re: Act, approvals, emergencies, OP's)
- Can delegate responsibilities to OA in agreement (not S.19)
- Can rely on experts in good faith

**OPERATING AUTHORITY (OA)**

- Provide water meeting drinking water quality standards; labs used accredited, eligible to test
- Operate in accordance w/ Act
- Maintain DWS in fit state repair
- Satisfy req'ts for DWS Class
- Ensure DWS is operated by certified, trained persons as req'd; supervised by qualified persons (per reg's, approvals)
- Sampling, testing, monitoring requirements complied with
- Report as required

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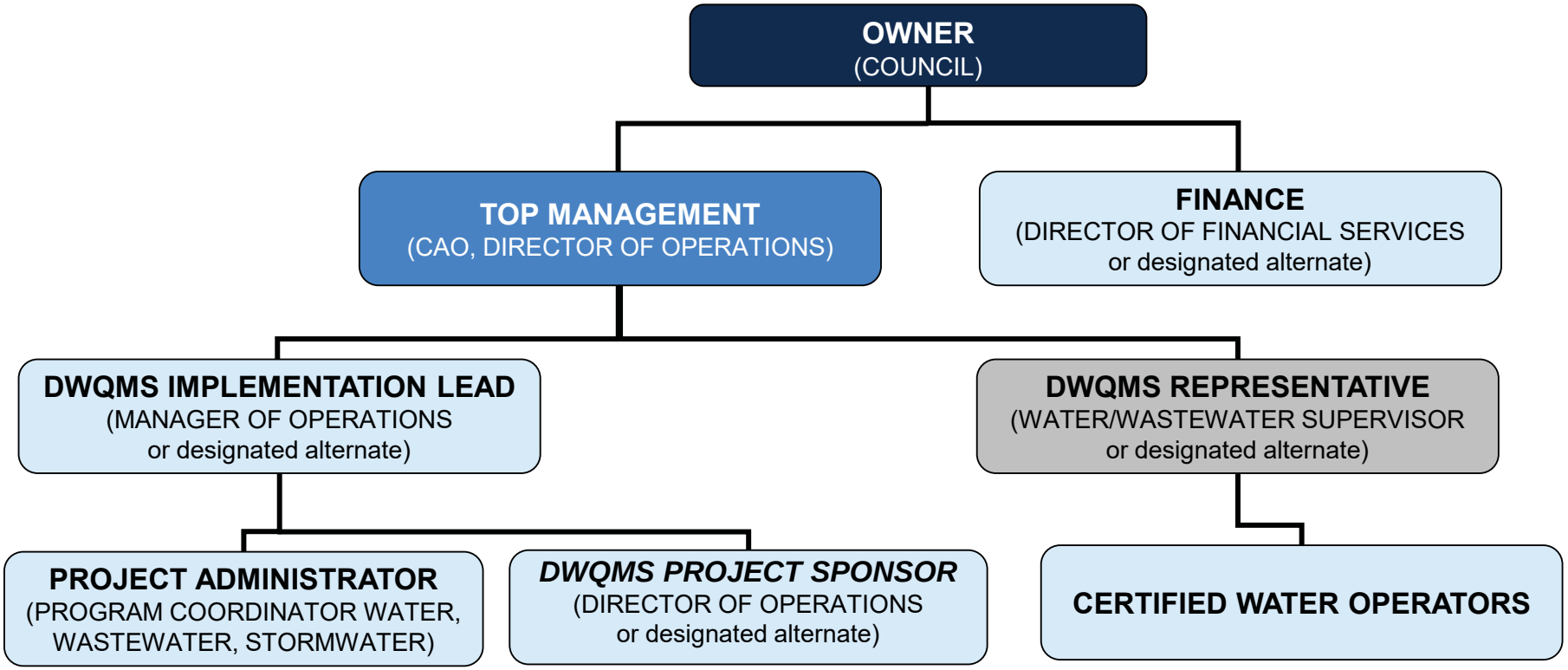
Q09

# Operating Authority

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# Town of Aurora is committed to:

1. Ensuring a ***consistent*** supply of ***safe, high quality*** drinking water, through a commitment of system maintenance;

2. ***Maintaining and continually improving*** its quality management system, through a commitment to Aurora's consumers to ***provide safe drinking water***, and;

3. ***Comply*** with applicable regulations and legislation.

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# Top Management competency and years' experience

Q02c
Q08

| Role | Minimum Competency | Competency Achieved | Years' Experience |
|---|---|---|---|
| Mgr of Operations Services | Class II | [Acting role] | 2 |
| Super. of Water & Wastewater | Class II | Class III | 12 |
| Program Coordinator | Class II | OIT, WQA | 8 |
| Certified Operators | OIT | Class I and Class II | 2-15 |

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# A multi-barrier approach

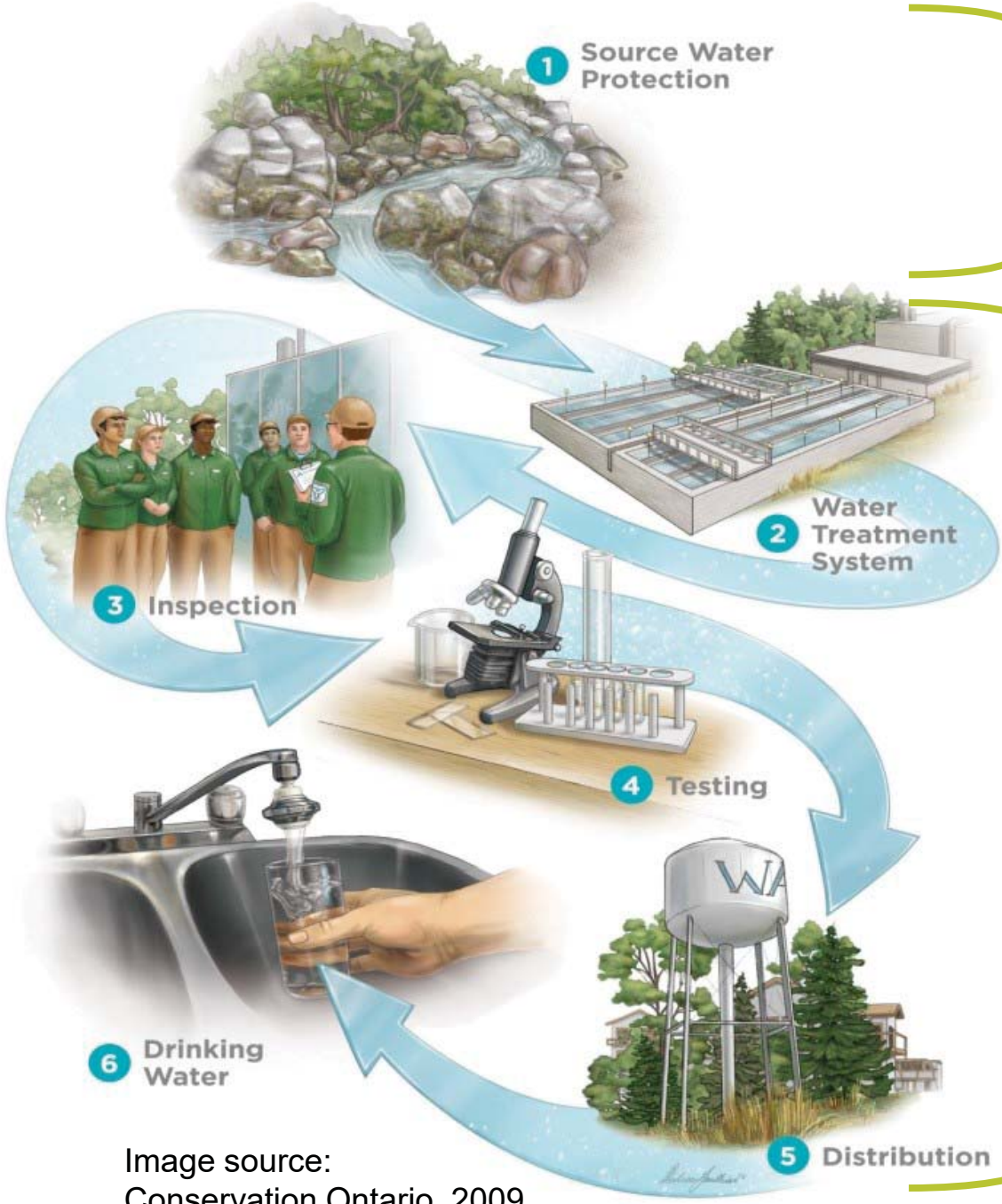


Image source:
Conservation Ontario, 2009

Ontario Water Resources Act, 1990

Clean Water Act, 2006

Safe Drinking Water Act, 2002

Q03

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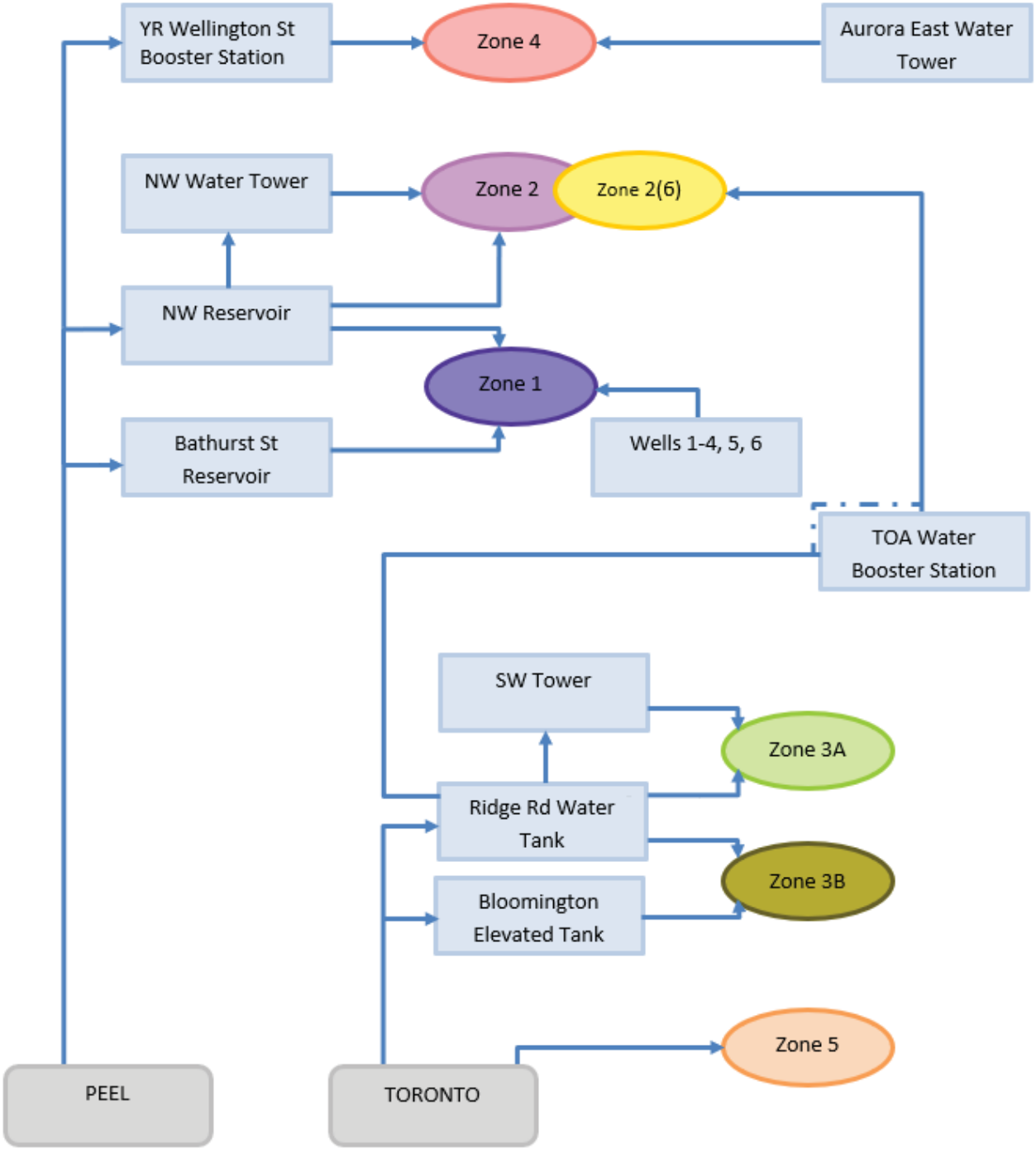
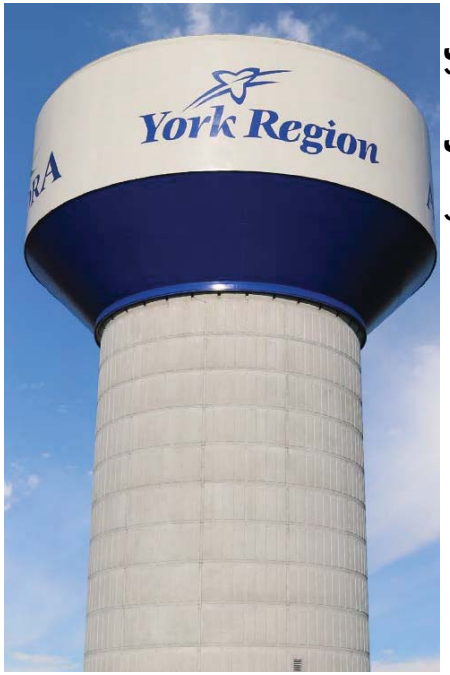
# Drinking water sources




Q02a

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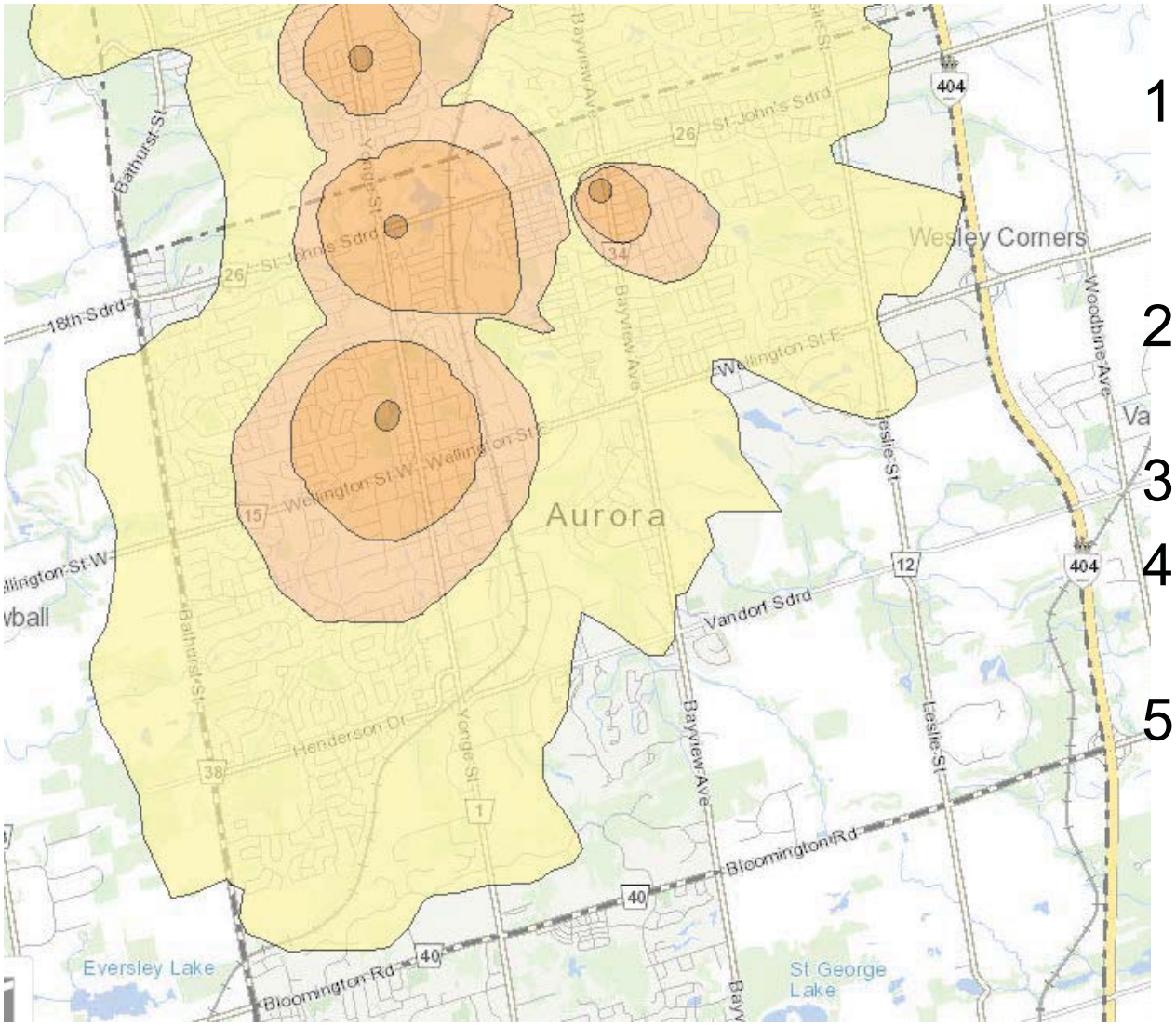
# Source protection planning

Q11
Q13




1. ID source water and vulnerable areas
2. ID water quality and quantity issues
3. Identify threats
4. Establish the level of risk
5. Develop policies to address significant risks

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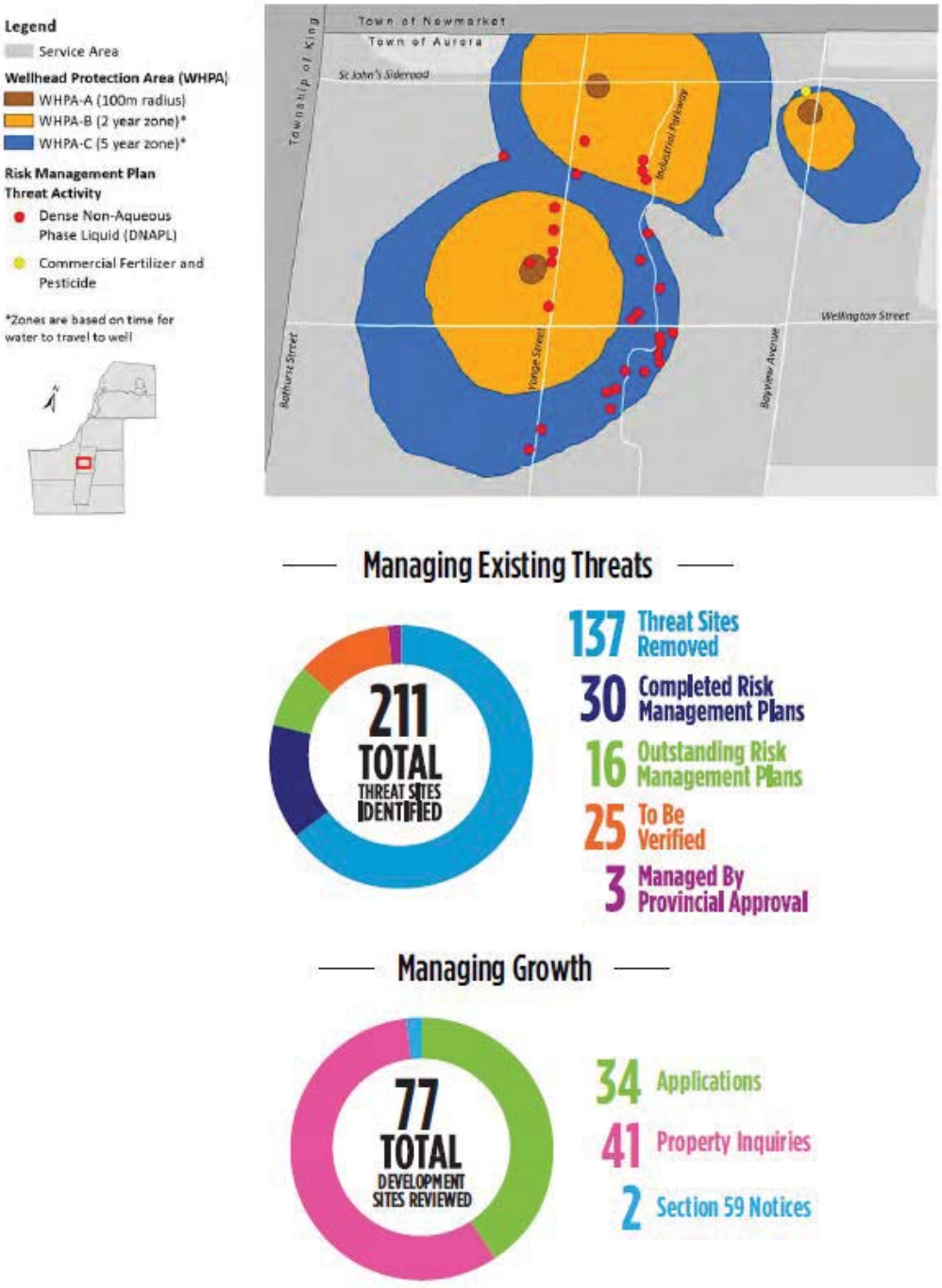
# Source protection activities by York Region




Source: Figure 9 from York Region's Source Water Protection Implementation – 2017 report.

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# Effective treatment

Q04

- Two main source types:
  1. 80% surface water (York: Peel, Toronto)
  2. 20% well water (York: 6 local wells)
- Water quality monitored continuously
  – (Aurora and York Region)
- Well water treatment and chlorination is carried out by York Region.

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# Distribution system goals


- **Effective Design and Build**
  - Maximum daily use for residential and ICI customers
  - Fire fighting demand, and
  - Operational redundancy
- **Effective Operation**
  - Pressure management
  - Chlorine residual
  - Flushing and cleaning
  - Leak detection and condition assessment
- **Effective Maintenance**
  - Timely response to breakdowns
  - Preventive to ensure infrastructure longevity and reliability of service

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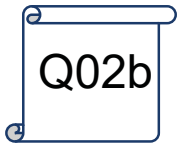
# Infrastructure planning




- Ensure ongoing infrastructure sustainability with 10-year plan (coordinated with other divisions).
- Driven by:
  - Watermain age
  - Failures history
  - Condition assessments
  - Large capital maintenance and replacement projects
- Priority projects confirmed on colour-coded map.
- Annual infrastructure meetings to discuss priorities and changing risks.
- Emergency repairs by contractors.

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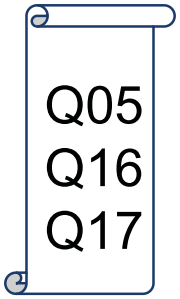
# Effective monitoring & reporting




- Regular sampling and monitoring
  - Regulatory sampling throughout the distribution system
  - Operational chlorine residual program
- Incident response and notifications
  - Adverse water quality incidents (AWQI's)
  - Notifications to: MECP, YRPH, Owner, public
- Reports and communications

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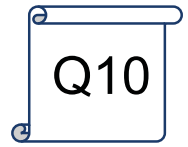
# Ministry of Environment, Conservation & Parks (MECP)




- Annual MECP inspections
- Ranges of scores are between 98-100%
- Summary of other notes included, such as
  - backflow recommendation – what actions are taken in response
  - other opportunities for improvement

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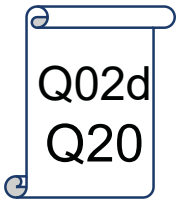
# Municipal Drinking Water Licensing (MDWL) program




- **Municipal Drinking Water Licence (MDWL):**
  - June 2021 expiry (application Dec. 2020)
- **Drinking Water Works Permit (DWWP):**
  - June 2021 expiry (application Dec. 2020)
- **Permits to Take Water (PTTW):** (NA)
- **Operational plan:** updated annually (with ea. external audit) and endorsed by the Owner with each new council. (2018 updated to DWQMS v2)
- **Accreditation maintained:** 2018 internal audit (DWQMS 2.0); 2019 external audit (DWQMS 2.0)
- **Financial Plan, 2015:**
  - Updated plan to be approved by Owner prior to MDWL application deadline in 2020

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Q18

# Annual QMS Activities

- **Emergency Response Training**
  - 2018 backflow event
  - 2017 freezing rain
- **Internal audit**
  - Fall timeline, last conducted September 2018
- **External audits**
  - Spring timeline, next scheduled June 10, 2019
- **MECP Inspections**
  - Unannounced, last conducted November 2018

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Q14

# Annual QMS Activities

- **Annual Reports**
  - targeted February timeframe, posted annually
- **Management Reviews**
  - Management Review meeting March 27, 2019
  - Summary report posted in Spring timeline with deficiencies, decisions, action items
- **Annual Budget process**
  - looking at infrastructure review, asset management, outcomes of risk assessment

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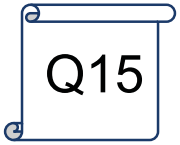
# O. Reg. 170/03 s.11 Annual Reports:




- A description of the drinking water system,
- A list of water treatment chemicals used;
- A summary of most recent water test results;
- A summary of adverse test results or other issues (including corrective actions taken)
- A description of major expenses incurred to install, repair or replace required equipment,
- The locations where this report is available.

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Q11

# Risk Assessment

- **Highest risks**
  - Watermain breaks
  - Backflow events
  - Possible microbiological contamination
- **Plans to address these**
  - Emergency watermain break response and disinfection
  - Backflow prevention program (by-law)
  - 40+ town-owned sample stations

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# Emergency Management

Q12

**Major Emergency (e.g. natural disaster)**
- Municipal Emergency Control Group activated
- Town emergency plan activated
- Operations Services' emergency plan activated

**Significant Emergency (e.g. water advisory)**
- Municipal Emergency Control Group activated
- Operations Services staff fully engaged in response activities
- Both Operations Services and Town emergency plans activated

**Minor Emergency (e.g. severe weather)**
- Operations Services staff fully engaged
- Operations Services emergency plan activated
- Town emergency plan not activated

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# Effective Management: Customer Service

- Water department staff respond to customer calls (8:30 am – 4:30 pm); after-hours answering by on-call staff.
- Operations Services 24/7 staff coverage.
- Same day call response, with most issues resolved over the phone.
- Water efficiency: By-law for peak season demands.
- Water quality complaints mostly discoloured water, reduced pressure (re: plumbing and appurtenances).
- 60,000 customers keep eye on system.
- Potential to expand on community outreach and education events.

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# Key Challenges

- System vulnerability to backflow events.
- Maintaining water quality in new developments (regarding low flows).
- Infrastructure sustainability and asset management (distribution system only).
- Increasing customer expectations.
- Changing regulations.

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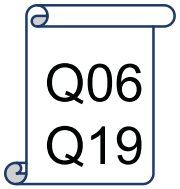
# Conclusions – Policy Direction




- Owner oversight of major policy areas and programs:
  - Financial plans
  - Annual budget process to ensure sustainability of water system
  - 10-year capital plan for infrastructure planning
  - Emergency management
  - Customer service

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# Thank you

For more information, see

aurora.ca/water

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# QMS Fundamentals

*"The purpose of the quality management approach in the context of drinking water is to **protect public health** by achieving **consistent good practice** in managing and operating a water system."*

- Justice Dennis O'Connor, 2002,
Report of the Walkerton Inquiry

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# DWQMS vs QMS vs OP

- **DWQMS** Drinking Water Quality Management Standard
  - This is the management system **standard** that the province created for drinking water systems to meet.
- **QMS** is the quality management system
  - This is the **system** that Aurora has put together to meet the province's standard.
- The Operational Plan **(OP)**
  - **Documents** the QMS

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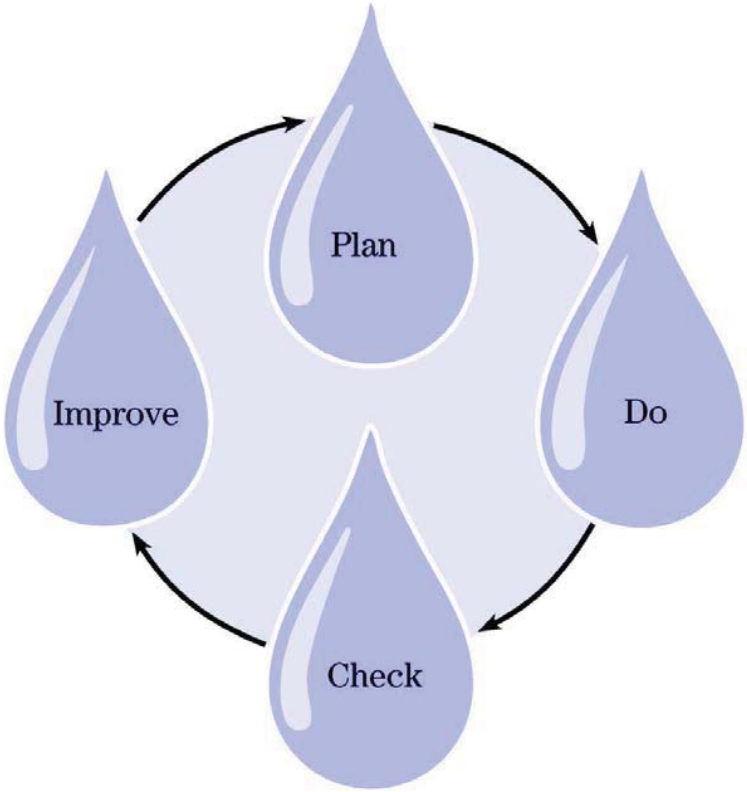
# DWQMS:
## PLAN > DO > CHECK > IMPROVE

- **PLAN*** – Say what you do
- **DO*** – Do what you say
- **CHECK** – Prove it
- **IMPROVE** – Improve it




*And if what you “Do” changes or improves, then you update what you say in “Plan”.

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# About the DWQMS…

- The Ministry of Environment, Conservation and Parks (MECP) developed the DWQMS
  - in partnership with Ontario's water sector.
- Approved under SDWA s. 21
- The first version was released in 2007.
- The second version, commonly referred to as ***DWQMS 2.0***, was released in 2017.

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# What is a Quality Management System (QMS)?

A formalized system that helps:

- To facilitate the Operating Authority's ability **to consistently produce and/or deliver** drinking water that meets applicable **legislative, regulatory** and **Owner** requirements, and
- To **enhance Consumer protection** through the effective application and **continual improvement** of the QMS.

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# Questions: "What is a QMS"

- How do we **consistently produce and/or deliver** drinking water (among different employees)?
- What are examples of things utilities do **consistently** across the province (common DWS processes and programs)?
- What are examples of our **legislative and regulatory requirements**?
  - How do we ensure we consistently meet these requirements?

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# Questions: "What is a QMS"

- What types of things might the **Owner** want for their community's water supply and effluent?
  - How do we ensure we consistently meet those requirements?
- What are things we do to **enhance consumer protection**?
- What are the ways in which **we have improved** our drinking water, wastewater systems and/or our QMS since the DWQMS was first released in 2007?

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# Many purposes of the QMS:

- ***Complements*** the SDWA's ***legislative*** framework
- Is a ***proactive*** and ***preventive*** approach to assuring water quality
- Identifies and manages ***risks to public health***
- ***Reduces variation*** through establishment of documentation and consistently meeting requirements of ***processes and programs***
- ***Increases awareness*** and ownership
  - By Owner, Top Management, Operating Authority staff

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# Many purposes of the QMS:

Promotes ***continual improvement***

Ensuring ***long-term sustainability*** of a system, including:

- ***Management processes*** employed;
- ***Maintenance of infrastructure*** used; and
- Identification of potential ***risks and risk mitigation strategies*** for items such as:
  - System security
  - Treatment
  - Impacts of climate change

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# Aurora's Operational Plan…

It describes the QMS and:

- the ***commitments*** we've made,
- the ***people*** we have and their roles, responsibilities, and authorities,
- the ways in which we manage and control ***documents and records***,
- the ***processes*** we have in our systems,
- ***risks*** associated with operations & maintenance,

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# Aurora's Operational Plan…

- how we ensure staff ***competencies*** and staff ***coverage***,
- the ways in which we ***communicate internally*** (among staff and to the Owner) and ***externally*** (to essential suppliers and to the public),
- ***supplies and services*** essential for our operations and maintenance,
- ways in which we annually review the ***adequacy of our infrastructure***, and how we go about getting new or upgraded infrastructure,

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# Aurora's Operational Plan…

- what ***infrastructure maintenance, rehabilitation and renewal programs*** we have (including "regularly scheduled" maintenance, and long-term, major maintenance) that are reviewed for effectiveness,
- how we ***sample, test, and monitor*** for process control and finished water / effluent quality, with what ***calibrated*** equipment, and how we ***share results***,
- how we maintain a state of ***emergency preparedness***,

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# Aurora's Operational Plan…

- how we conduct ***internal audits*** to verify we achieved everything we should
- the content of our ***QMS reports*** to ***top management*** and to ***council***,
- how we track and measure ***continual improvement*** of our DWS and QMS.

| NO. | Audit/ Meeting Type | NCR/OFI/ Meetings outcomes | Date | Element/ Procedure | Description | Action Taken | Status | Closed date | Resposible Person |
|---|---|---|---|---|---|---|---|---|---|
| 5 | IA | OFI | 22-Nov-17 | E 9 - Organizational Structure | The procedure -003 Designation of ORO and OIC is not referenced in the Operational plan. Instead it references Report No. PW06-003 under Element 11 | Element E9 or E9 to be updated to include reference to Pro -003 | Closed | 22-Jan-18 | IV |
| 6 | IA | OFI | 22-Nov-17 | E 10 - Competencies | There is a potential gap in the training matrix. Oct 2016 Emergency table top exercise was completed, however the matrix does not include this | training matrix was updated to include the Emergency Table Top Exercise for 2016 | Closed | 18-Dec-17 | IV |
| 7 | IA | OFI | 22-Nov-17 | E 13 List Suppliers and Contractors | The Essential Supplies and Services list does not include: the supplier of water, the afterhours call services, backflow preventing tester | Updated: Water supplier - Dec 14, 2017; After hours services - Jan 22, 2018. Needs updates on backflow preventers testing | In Progress | | IV |
| 8 | IA | OFI | 22-Nov-17 | E 13 List Suppliers and Contractors | E 13 does not reference the Essential Supplies and Services Pro 023 | Update E13 ; add references to the QMS in the column 'Notes' | Closed | 22-Jan-18 | IV |
| 9 | IA | OFI | 22-Nov-17 | E 21 - Continual Improvement | Consider on having one tracking log for NC and OFI. Document the process in in a Corrective Action procedure E 21 | Tracking form fro NC and OFI was implemented. | Closed | 22-Jan-18 | IV |
| 10 | IA | OFI | 22-Nov-17 | E 21 - Continual Improvement | QMS to be reviewed and updated to reflect MOECC version 2 of the DWQMS (E12, 14, 15, 21) | The QMS will be reviewed and updated before Dec 2018. Preventive and Corrective Action Procedure to be prepared with updates for version 2 of the | Closed | 29-Aug-18 | IV |
| 11 | Management Review | Finding/ Recommendation | 15-Feb-18 | NA | AD requested information on number of adverse results from other municipalities | Iustina to compile information on number of adverse results reported by other Municipalities. | Closed | 2-Mar-18 | IV |
| 12 | Management Review | Finding/ Recommendation | 16-Feb-18 | NA | Director of Operations to be invited to future Emergency Table Top Exercises. | Emergency table top exercise takes place in October. Allan and Jim partici[pated to the tabletop | Closed | 24-Oct-18 | IV |

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# Continual Improvement

Opportunities for Improvement (OFI's) can be sourced from:

- Best management practices
- Suggestions from a number of sources
- Process or program ineffectiveness, inefficiency and ongoing challenges
- Lessons learned from incidents and emergencies
- Availability of new technology, processes or programs

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# Continual Improvement

- Try to turn every disaster into an opportunity. *John D. Rockefeller*
- There's a way to do it better – find it! *Thomas Edison*
- In the middle of difficulty lies opportunity. *Albert Einstein*

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# Non-conformities - actions taken

- …correct the current issue – a *correction*
- …eliminate the cause – a *corrective action* (CA)
  - Requiring root cause analysis.

…prevent the occurrence – a *preventive action* (PA)

  - Risk assessment and potential hazardous events / hazards
  - Preventive maintenance (and optimization)

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# Continual Improvement

Through your management system, your main goal is continual improvement.

You're required to **track and measure** continual improvement of your management system by:

- Reviewing and considering applicable best management practices,
- Documenting a process for identification of and
  - management of corrective actions,
  - implementation of preventive actions.

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# Corrective action

Where the corrective action process is required, the following are carried out:

- Define the problem
- Take immediate / containment action
- Investigate the cause(s)
- Document the implemented action(s)
- Review the action(s) and verify that they are implemented and effective.

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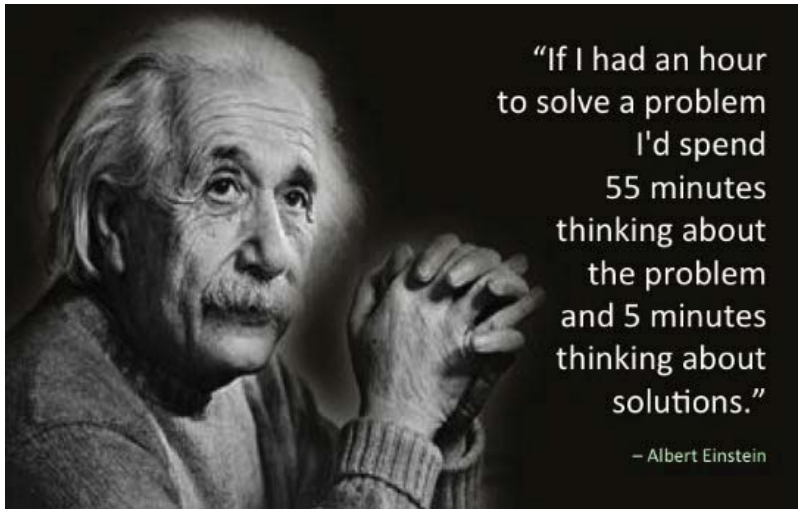
# Define the problem

Careful attention should be given to defining the problem.

- If incorrectly defined, you may be working at solving the wrong problem.




- Clearly define the problem in an active voice, focusing on facts and answering "5W2H":
  - What, Where, When, Who, Why
  - How, How many

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# Define the problem

"5W2H" sample questions

- **What** happens, what are the symptoms?
- **Where** does it happen?
- **When** does it happen?
- **Who** does it affect?
- **Why** does it happen?
- **How** does it happen?
- **How many** (in what quantity)?

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# Investigate Cause(s)

- Effectively brainstorm possible cause(s)
  - Cause-and-effect diagram (aka Ishikawa diagram or fishbone)
    - Manpower, Method, Machine, Material, Measurement, Environment
  - 5 Why's
  - Cross-functional team's individual perspectives first.

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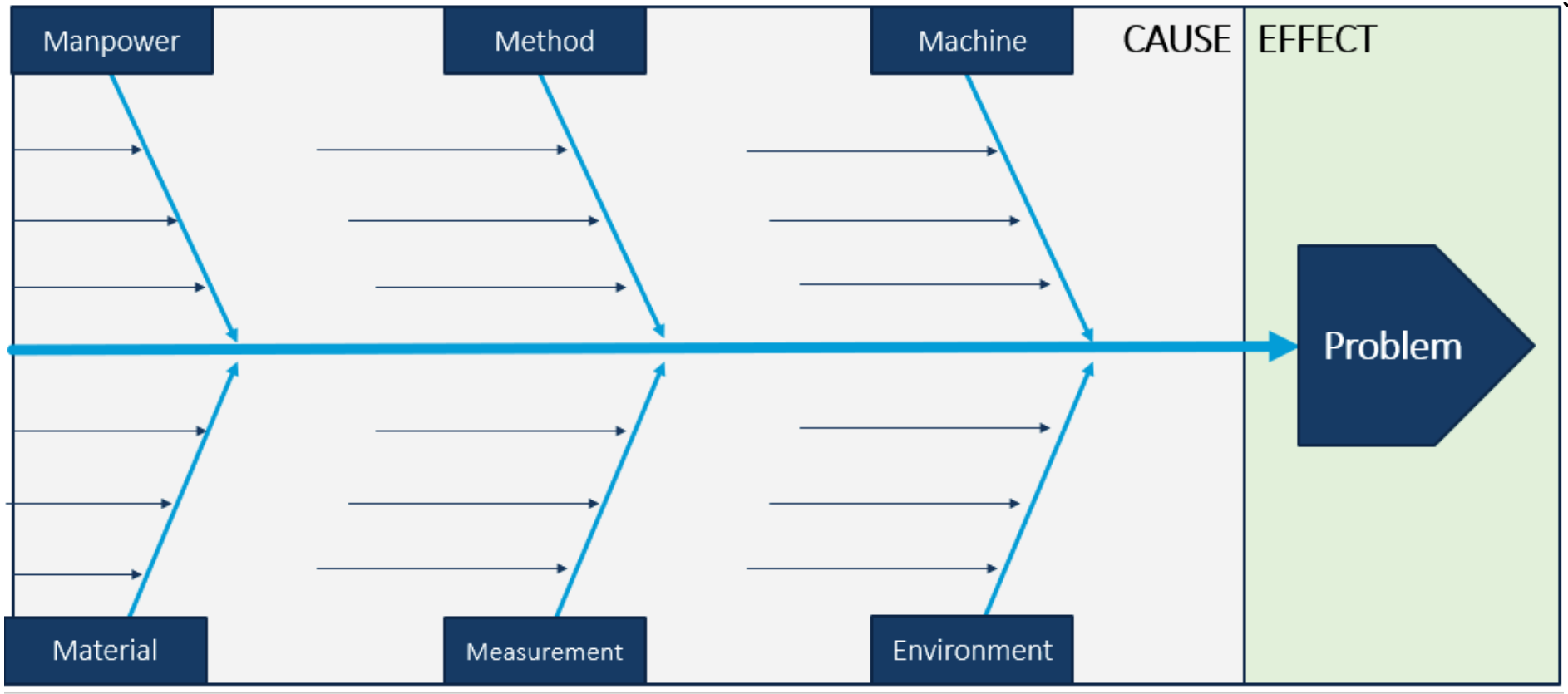
# Ishikawa (Fishbone) Diagram

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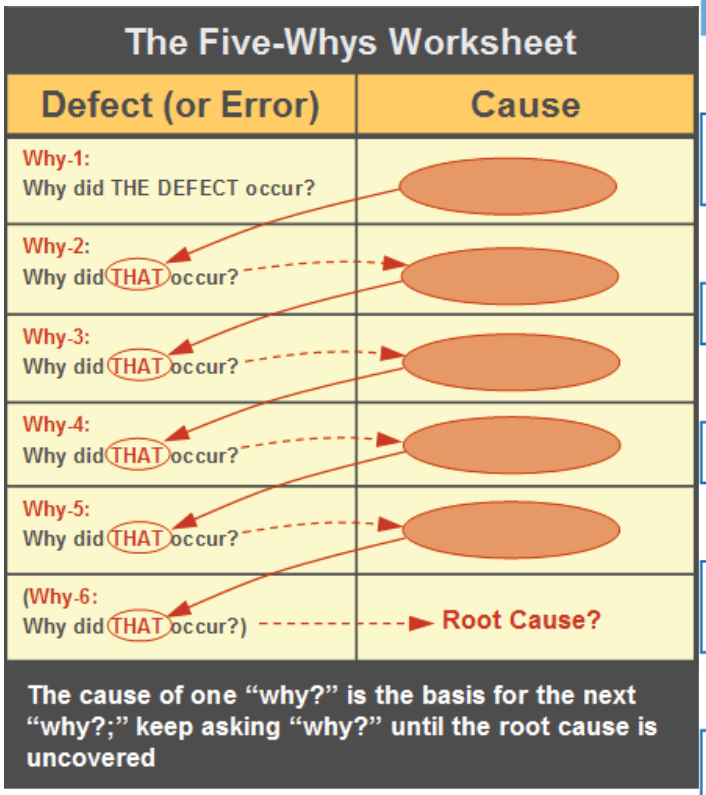
# 5 WHY's





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# Effective Brainstorming – Individually at first

- Identify a cross-functional team representing different perspectives and diverse experiences.
- Everyone is to approach it with an open mind and a spirit of non-judgment.
- **Important** to first have individuals reflect on the problem individually.
  - Or group setting from the onset may "contaminate" one another's perspectives and cause a convergence of ideas too quickly.
- Ask everyone to submit at least 3 different potential causes for the problem.

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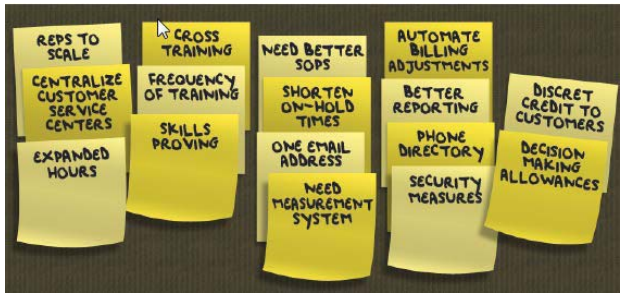
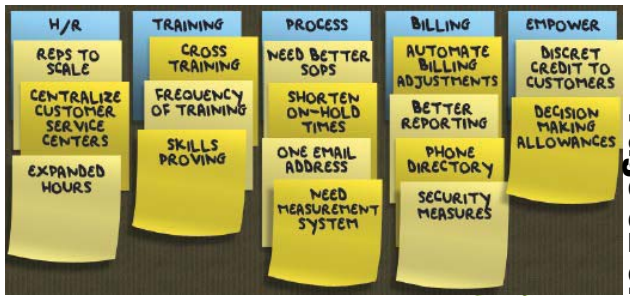
# Organizing Ideas into themes

- Ultimate goal: select a few ideas that are viable to work on.
- Making sense of a large number of ideas and narrowing them down to a viable few can be overwhelming.
  - Use affinity diagrams to organize information and ideas and see how they're connected.
  - Sort the individual ideas into subgroups with common themes or common relationships.

# Final thoughts – QMS and you:

- How does your job impact our ability to achieve the commitments of the QMS Policy?
  - provide safe drinking water,
  - comply with legal requirements,
  - continual improvement
- What are the legal requirements applicable to your job?
  - How do you know you've met them?
- Do you have the resources needed to do your job well?

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# Final thoughts – QMS and you:

- What documents do use in your job?
  - Can you access them when needed?
- What records do you produce?
  - Where do you keep these records?
- Are you familiar with Aurora's Critical Control Points (CCP's)?
  - What about Critical Control Limits (CCL's)?

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# Final thoughts – QMS and you:

- Who have the following roles, responsibilities and authorities?
  - QMS Representative
  - Top Management
  - Owner
- What competencies are required to carry-out your work?
  - How does a new employee gain these competencies?
- Do we normally have adequate staff coverage related to your work?

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# Final thoughts – QMS and you:

- How well do you feel we communicate?
  - Internally?
  - Externally?
- What types of supplies and services do you need as part of your work?
  - Have you ever run out of supplies or didn't have access to services you needed?
- Are there any specific requirements for these (e.g. NSF)?
  - How do you communicate specific requirements to suppliers?

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# Final thoughts – QMS and you:

- How's the condition of infrastructure related to your work?
  - How do you communicate infrastructure deficiencies when you note them?
- Do you conduct any infrastructure maintenance?
  - Is the maintenance program effective?
  - Is there a summary kept up-to-date?

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# Final thoughts – QMS and you:

- What do you sample, test or monitor as part of your work?
  - Do you communicate results to anyone?
- What equipment do you sample, test, and monitor with?
  - Is the equipment calibrated and maintained? How do you know?
- What are potential things that can go wrong related to your work?
  - What do you do in response to these issues?

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# Final thoughts – QMS and you:

- What are potential emergencies?
  - What do you do when you become aware of an emergency?
  - Is there an up-to-date emergency contact list?
  - Do you feel we are sufficiently prepared to respond to an emergency?
  - Have you had any emergency training?
  - Have you participated in emergency test exercises?

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# Final thoughts – QMS and you:

- Do you have any suggestions on how we can improve?
  - As it relates to your position or other areas?
  - If yes, who will you communicate these suggestions to?

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# Concluding thought:

As a water utility employee, keep the following in mind:

*"exercise the **level of care**, **diligence** and **skill** in respect of a drinking water system that a **reasonably prudent** operator (or water quality analyst) would be **expected to exercise** in a similar situation" and*

*"act **honestly, competently** and **with integrity**, with a view to ensuring the **protection and safety** of the users of a drinking water system."*

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# Thank you!

*Q&A session*