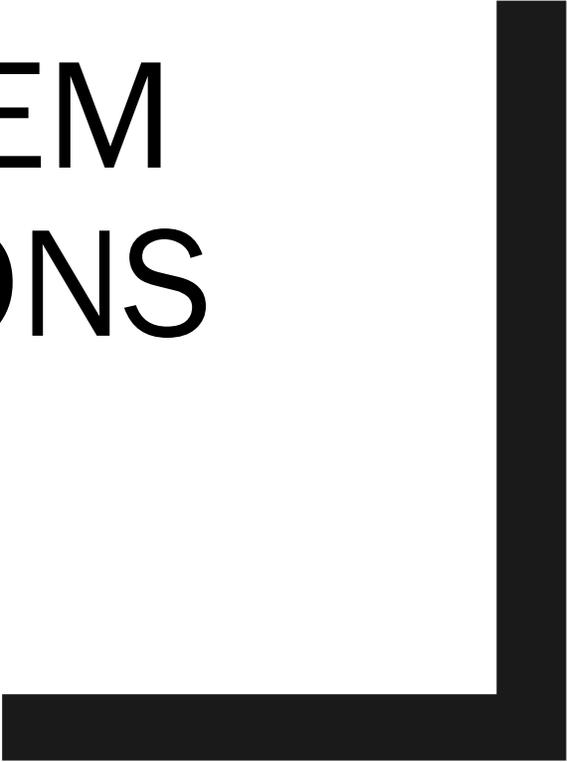




# SEPTIC SYSTEM RE-INSPECTIONS

November 21, 2019  
Township of Douro-Dummer  
Presented by: Brian Fawcett, CBO

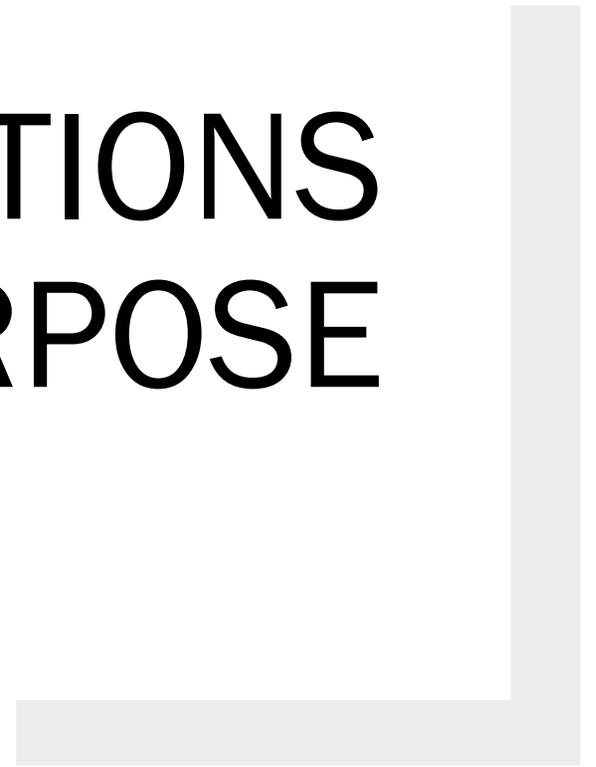




# Overview

- Introductions and Purpose
- Impacts of Poor Water Quality / Day Zero
- Septic System Design and Health
- Before the re-inspection process
- The re-inspection process
- After the re-inspection process
- Data and tracking with GIS
- Conclusion

# INTRODUCTIONS AND PURPOSE



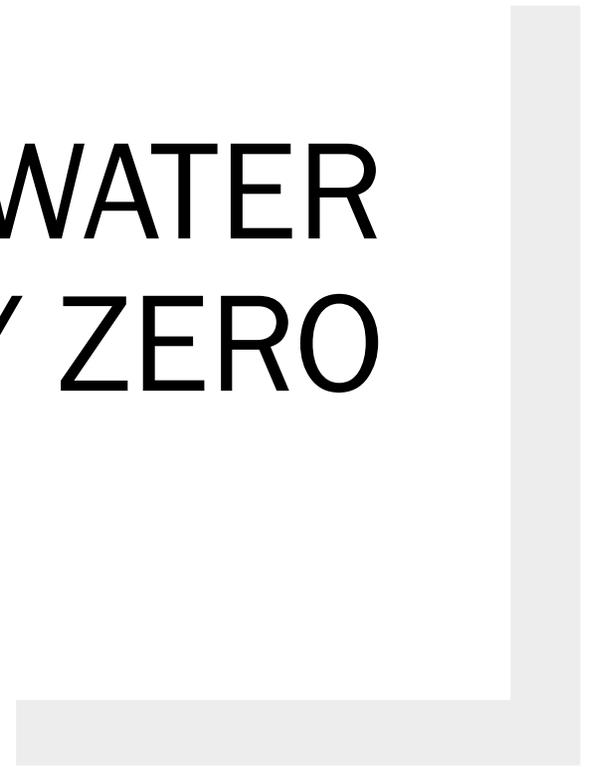
# Introductions

- Building Department staff:
  - *Brian Fawcett, Chief Building Official*
    - 10 years experience in Building Industry – 50/50 Private and Public Sector
  - *Lindsay Burtt, Building Official*
    - 30 years experience designing and installing septic systems
  - *Peggy Reyner, Administrative Assistant*

# Purpose

- Environmental Goal of the Township Strategic Plan
  - *To preserve and enhance the natural heritage features and resources of the Township.*
- The purpose of the Septic System Re-Inspection program is to review existing sewage systems, with an installation date older than 10 years, for the operating condition of the system
  - *Lifespan of a septic is 20-30 years, with some lasting longer and others failing sooner.*
- Systems will be reviewed for compliance and health of the system to determine if they are functioning properly or not.

# IMPACTS OF POOR WATER AND DAY ZERO





# Impacts of Poor Water Quality

- The Township of Douro-Dummer has a large agricultural community and is particularly sensitive to changes in precipitation, water quantity, and water quality.
- This has a trickle down effect to residential and non-residential uses for drinking water, as the less quality water is available, the more the effects of pollutants are felt.
- Water which is contaminated causes extra burden on property owners to treat the water, or buy water from third parties.
- Water contamination below ground is a significant problem that can cause lasting effects

# Day Zero

- Day Zero is the concept from Cape Town, South Africa, where water usage and contamination resulted in municipal officials warning that an imminent water shutoff was pending (dubbed Day Zero)
- Since 2014, many other places in the world have experienced their own Day Zero crisis.
- Canada is exceptionally unique in that our drinking water resources per capita are almost 80,000 L per person, whereas the lowest place with water in the world is less than 10L per person.
- Freshwater and unpolluted water accounts for 0.003% of total water available globally. We owe a duty of care as global citizens to protect the water quality.

# SEPTIC SYSTEM DESIGN AND HEALTH



# Septic System Design

- Majority of Sewage Systems are designated as a Class 4 Sewage System with a Leaching Bed
- There are 5 classes of sewage systems
  - *Class 1 – Toilets and Privies*
  - *Class 2 – Greywater*
  - *Class 3 – Cesspool*
  - *Class 4 – Leaching bed System*
  - *Class 5 – Holding Tank*
- Only Class 1 is exempt from permit requirements, but still needs to comply with OBC



# Class 1 Systems – Toilets and Privies

- Although not required to have a building permit, they are required to conform to the OBC.
- The superstructure and pits are designed to be containment facilities for human waste.
- There are setbacks from water sources and property lines, as well as height above bedrock/ground water table.



# Class 2/3 Systems

## Greywater and Cesspool

- Not traditionally used very often.
- Can be used to offset load from a Class 4 system, or used for non-permanent dwellings (cottages/hunt camps) in addition to a Class 1 system.
- There are setbacks from water sources and property lines, as well as height above bedrock/ground water table.

# Class 4 Systems – Leaching Bed

- The majority of Sewage Systems are these Class 4 Systems, also referred to as Leaching Bed Systems.
- Designed on total load, the septic tank holds the solid and liquid waste.
- The bed takes the excess liquid waste and runs through pipes over a filter medium to treat the liquid waste.
- When solids build up beyond roughly  $\frac{1}{3}$  of the tank volume, the system is pumped out. This can take anywhere from 1-5 years depending on usage and tank size.



# Class 5 Systems – Holding Tank

- Holding tanks are only permitted on existing lots with existing development where it is impossible to install a regular system.
- Generally in Douro-Dummer, the only holding tanks are on island properties with existing cottages, although they are rare. There are a few water front lots with holding tanks as well.
- Holding tanks have alarms to alert the owner when the tank is nearing capacity, and also must have signed agreements with a pumping contractor for regular waste removal.

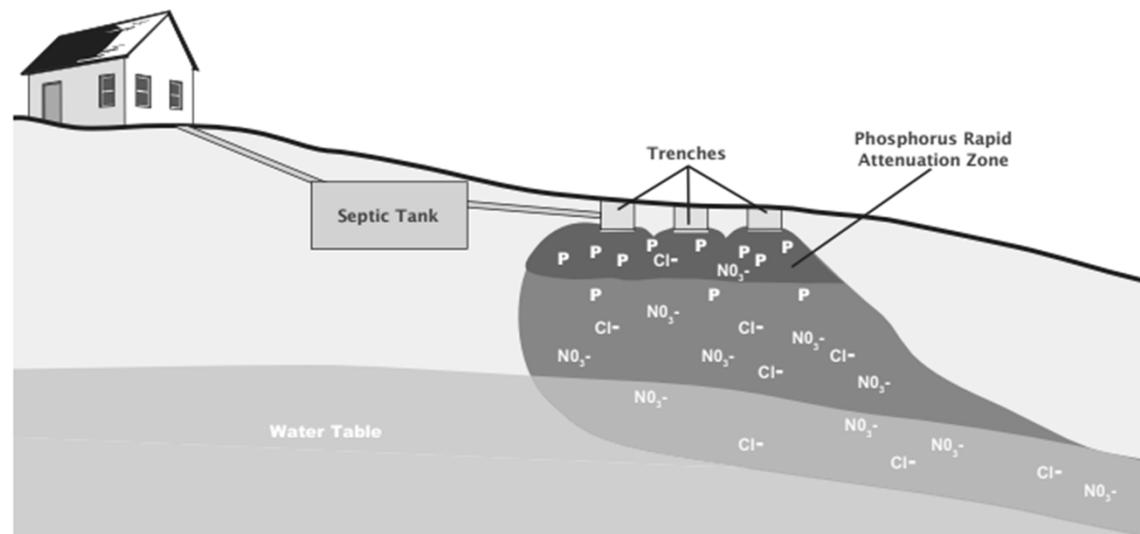


# System Health

- Proper Septic System Health all starts with what gets flushed down the drain.
- The ratio of solids to liquids, the introduction of bad chemicals such as bleach, as well as the design of the system are all important factors.
- For the bacteria in the tank to function properly, the system must be allowed to thrive. The bacteria and the introduction of waste causes generally an exothermic reaction.
- The non use of a system during the winter can cause issues as the bacteria may eventually run out of “food”, and the exothermic reaction will stop, causing the liquid to freeze. Insufficient snow cover can also cause freezing issues.
- The use of anti-freeze products can also be detrimental to good bacteria growth.
- The excessive use of bleach cleaning products will kill the bacteria in the tank as well, causing the solids to build up faster.

# Phosphorus and water contamination

- Phosphorus is a naturally occurring element that can have significant impacts on water flora, such as algae growths, as it acts as a fertilizer.
- Phosphorus reduction through design or additional filters can prevent these issues.

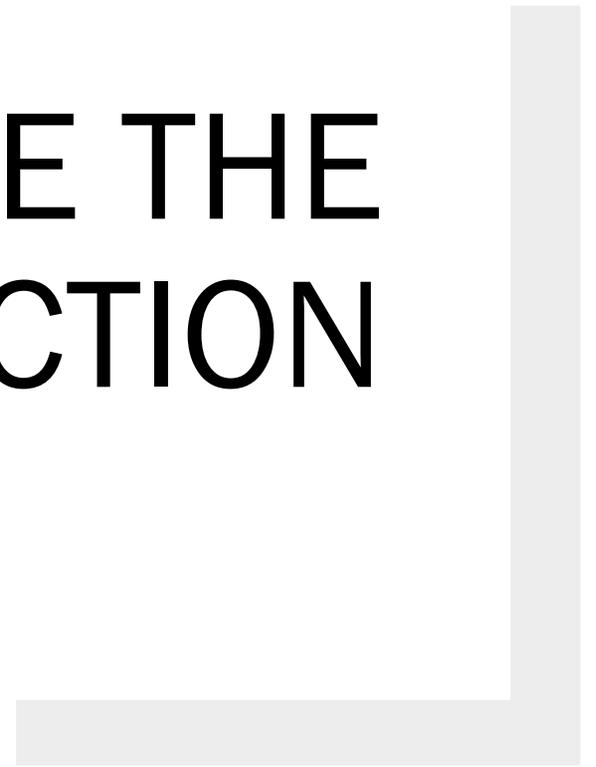




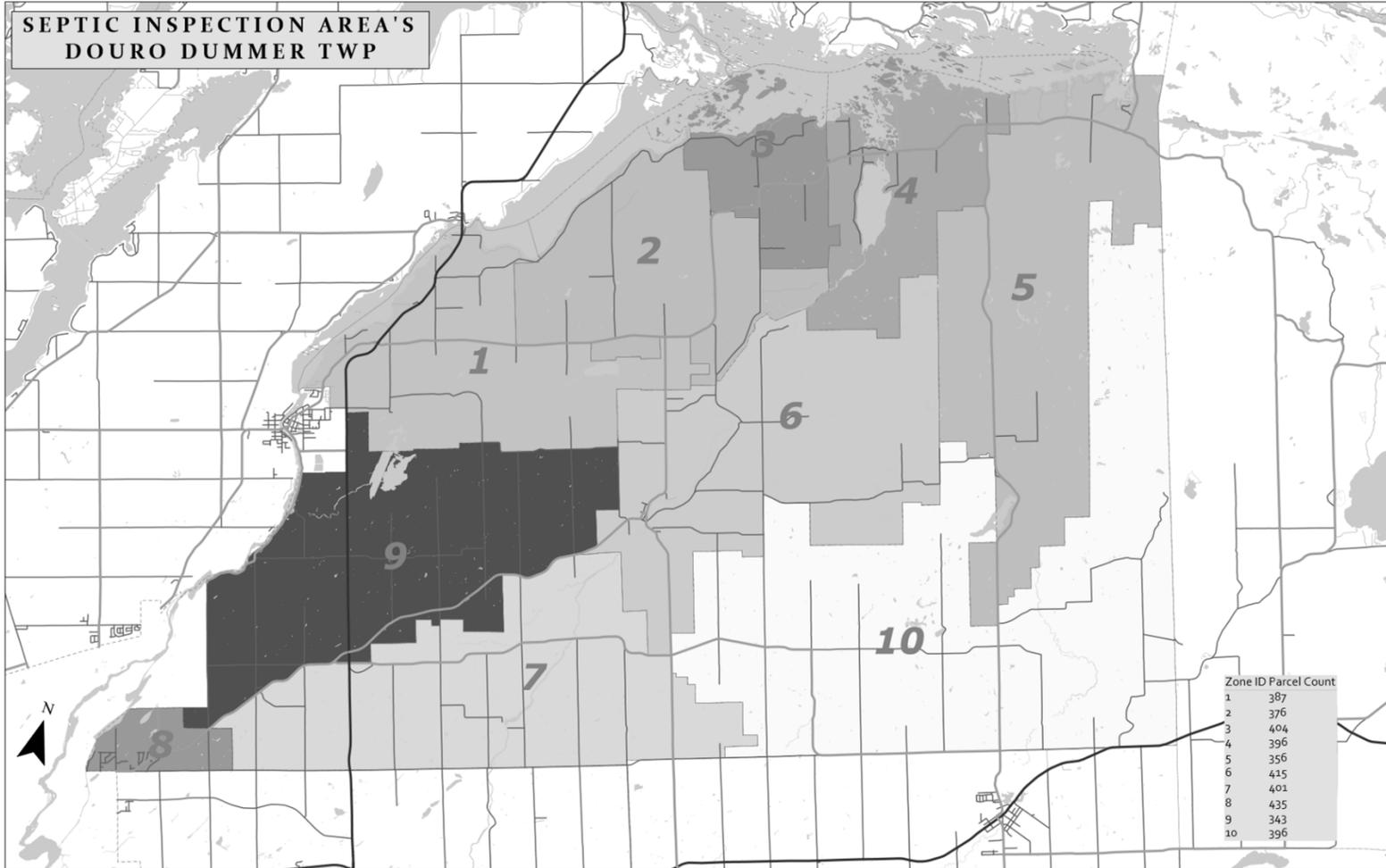
# The Installation Inspection

- During the installation of a new system, the systems are inspected 2-3 times.
- The first is the test holes, which verify the soil type, and the location of the proposed system.
- The second is the installation of tank as well as the leaching bed. Verifying the depth of the material as well as the installation of the septic pipe is complete and proper.
- The third inspection is a final inspection, verifying that the system has adequate and appropriate vegetative growth and in the case of a raised bed, that there is no erosion.

**BEFORE THE  
RE-INSPECTION**



**SEPTIC INSPECTION AREA'S  
DOURO DUMMER TWP**



# The Breakdown

- Year 1 – Zone 1, Year 2 - Zone 2, etc.
- Leftover properties (if any) from the previous year will be inspected or re-inspected in the following year.
- Properties to be inspected would include any property with development both residential and non-residential.
- Property lists and zones were generated using MPAC data of assessed property.
- This breakdown should be around 343-435 properties, but based on Stat Can data we only anticipate an average of 300 properties with Septic Systems.



# Questionnaire

- The process of the re-inspection starts when we mail out questionnaires.
- This mailing is proposed to be done in bulk in mid March.
- The questionnaire will ask a variety of questions such as property information and sewage system design inputs (bedrooms, fixtures, floor area).
- The questionnaire will be returnable in a variety of formats, including email, online survey, fax and return mail.
- The deadline for returning the questionnaire will be determined, but likely mid May.
- We don't want to send the questionnaire too early as people will likely forget about it, so 6 weeks is appropriate.
- Follow up will be done with those who have not returned the questionnaire.



# Pumping and locating system

- Included in the questionnaire would be a letter explaining the process.
- We would ask that individuals refrain from pumping their system before we inspect the system, but we also do not want to interfere with an individuals enjoyment of their property.
- We will assist individuals with locating their systems, but it will be the owners responsibility to uncover the lids of the septic tank. In the event that the lids are buried, they will need to uncover them or pay a contractor to do this. We will have a shortlist of contractors and their fees to do this.



# Scheduling

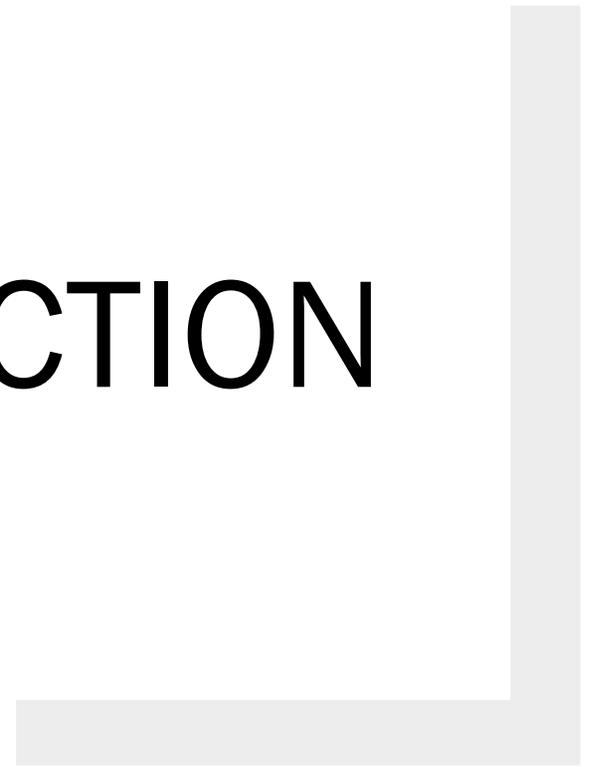
- We will provide an estimated date of inspection to the property owner when we send out the questionnaire and letter.
- This program is anticipated to take 12 weeks of inspections, from June to end of August.
- We will strive to work with owners if they want to be present during the inspection, but we unfortunately can't accommodate specific time requests or rescheduling.
- If the system fails inspection, then we will be in touch with the owners and will have a second scheduled visit then.



# Type 1 Inspections versus Type 2 Inspections

- Once the owner has completed the questionnaire on time and the lids are exposed for inspection, this qualifies the owner for a **Type 1** Inspection.
- If the owner fails to complete the questionnaire, or if they are unable to locate a copy of the septic permit (and we don't have a copy), or if they don't uncover the lids by the date of our inspection, then it is a **Type 2** Inspection.

# THE RE-INSPECTION





# Process of the Re-Inspection

- The Inspector will set their daily schedule based on the 12 week calendar to ensure that they are completing the re-inspections of the systems as notified.
- Inspections will be done between 9am and 4pm, Monday to Friday, except during heavy rain days.
- The inspector will attend the property in a personal vehicle and will introduce themselves with their identification. The inspector has the authority under the Building Code Act to enter the land for the purposes of the inspection and does not need explicit permission.
- The inspector will review the property file and observe the physical condition of the system.

# Process (con't)

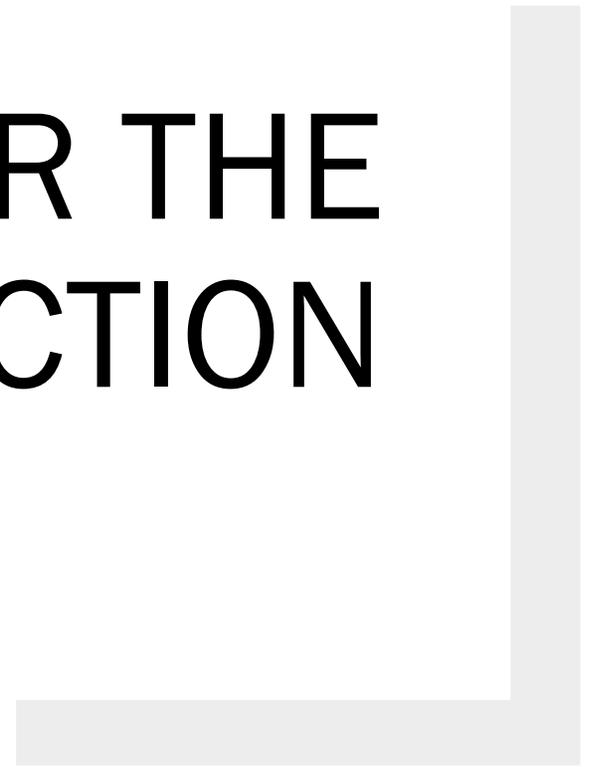
- The inspector may take photographs of the system and will be observing the site for:
  - Poor grading
  - Structures too close to septic tank or bed
  - Improper vegetative growth on bed (trees/bushes/flower gardens)
  - Excessively moist soil, indicative of a bed failure
  - Sewage Odour
- Once the lids have been removed on the system, the Inspector will use a mirror and flashlight to observe the condition of the tank and the concrete/plastic to ensure it is not cracked/corroded or otherwise damaged.
- Ensuring that the baffle is installed on the inlet side, and depending on the installation date of the system that a filter is installed on the outlet side.
- Depth of sludge can also be measured during the re-inspection



# Inspection Slip

- The inspector will leave a carbon copy slip for the owner in a door hanger or other format. This slip will outline the date/time of the inspection, as well as the conditions observed.
- The slip will mostly be a checkbox format, with some space for comments.
- The slip has been designed yet, and we are looking at a few options.

# AFTER THE RE-INSPECTION





# System Failures

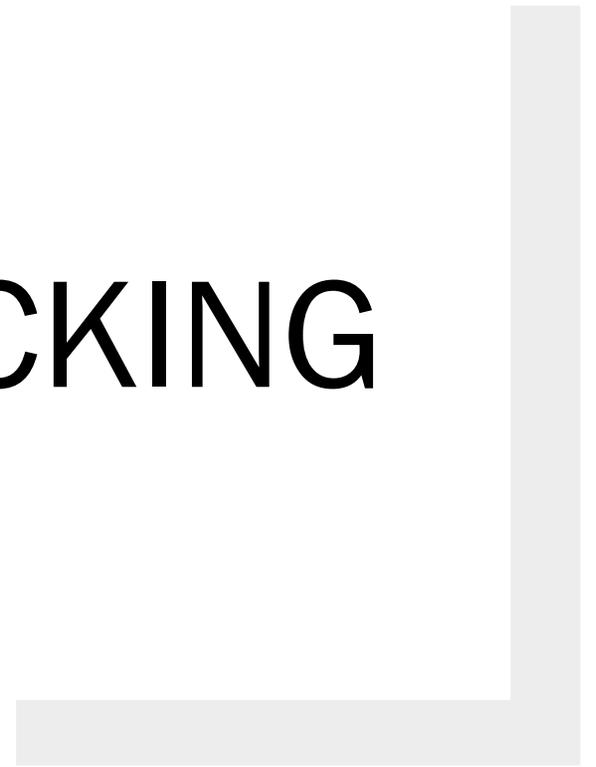
- Based on research from other jurisdictions, it is anticipated that 0.4 – 1.2% of systems will require complete replacement. This is about 12 to 36 systems in the township over the course of 10 years. The cost of the re-inspection will be rolled into the fee for the new system.
- Further, it is anticipated that about 3-10% of all systems will require remediation up to but not including replacement.



# Successful Systems and Payment

- We will indicate the passed systems with the inspection slip and will record the system information for tracking purposes.
- An invoice will be included with the completed inspection report, payable by the end of the year.
- As proposed in the recommendation the cost will be determined based on the Type of Inspection, either \$150 or \$300.
- Unpaid amounts will be added to the tax account for the following year to be collected, in accordance with the Building Code Act.

# DATA AND TRACKING



# Data Collection

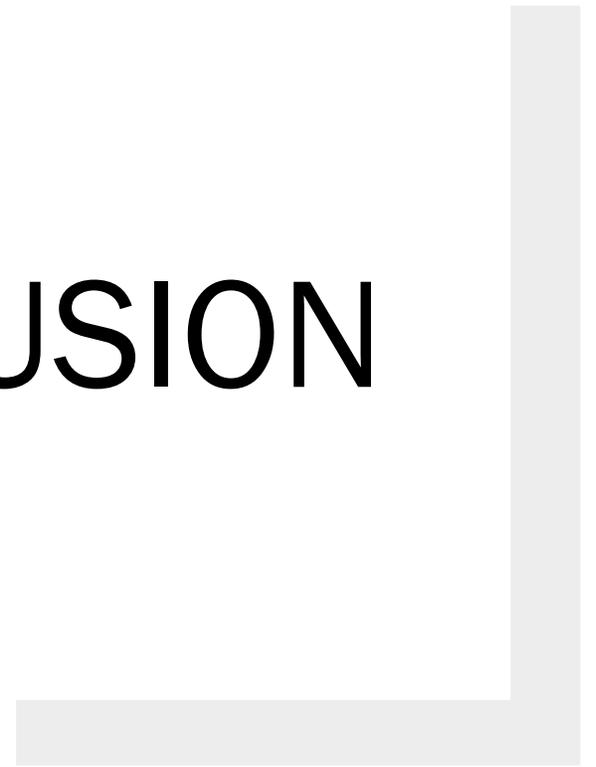
- We will be collecting data on:
  - *Questionnaire response*
  - *Fees collected and costs allocated*
  - *Inspection pass rates*
  - *How many properties utilized a third party to expose the lids*
  - *System Failures*
- All results and data will be available in transparency reports



# Tracking with GIS

- A proposal inquiry has been made with County GIS that may allow us to track the data through the GIS system, which will allow for ease of access to data, as well as the mapping of trends.
- This may not be completed for 2020, but will hopefully be online for 2021 (with the information from 2020 inputted after the fact).

**CONCLUSION**





# Questions?

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