Appendix “II”

# 2019

## *On-Site Sewage System Re-Inspection Program*

*Prepared for:* The Township of Muskoka Lakes
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## *1. Introduction*

The Ontario Building Code and The *Building Code Act, 1992* regulate the design, construction, and renovation of on-site sewage systems with capacities of 10,000 litres/day or less. The enforcement of the on-site sewage system provisions for the Township of Muskoka Lakes is the responsibility of the municipality. In addition to enforcement of design and construction, The Ontario Building Code has established enforcement for maintenance. The Ministry of Municipal Affairs and Housing, in consultation with the Ministry of the Environment, has developed the outline for the program (MMAH, 2011). On-site sewage system maintenance is an issue of property standards, environmental health, and human health.

Lake health has been a topic of conversation with many of the residents this year. It is truly a complex combination of factors that contribute to nutrient fluxes and water quality changes. The On-site Sewage System Re-inspection Program is a piece of this puzzle. Faulty septic systems can contribute phosphorus to our precious water resources (NBMCA, 2018). In the Township of Muskoka Lakes, we focus on sensitive areas by inspecting properties close to streams, lakes and rivers; where untreated effluent has less opportunity to be filtered through surrounding soils.

In addition to environmental health, a properly functioning system is of importance for human health. “Everything that goes down the drain – every shower drop, toilet flush, kitchen drain - flows to the septic system. There are many contaminants in waste water - bacteria, viruses, parasites - that can affect your health and the environment. If contaminants reach your drinking water supply, they can cause diseases or other health or environmental problems” (NBMCA, 2018).

Groundwater contamination can also be an issue due to failure or poor siting. As a re-inspector, this type of contamination is more difficult to observe and highlights the importance of all systems going through the permit process to have a sewage system that is adequately designed. The Ontario Building Code is not only for enforcement purposes, but to ensure that the installer or homeowner is educated in avoiding such issues.

For the year 2019, the areas selected in the Township of Muskoka Lakes for re-inspections of on-site sewage systems were Minett and Port Sandfield properties on Lake Rosseau, Hesners Lake, and waterfront properties in Milford Bay on Lake Muskoka. A total of 406 inspections were conducted.

## *2. Methodology*

The type of inspection completed is referred to as a Phase I, or a visual maintenance inspection. According to the MMAH 2011, the purpose of this type of inspection is to:

a) Obtain the most recent information on the system, as well as the size of the building and the number of fixtures and bedrooms that it is servicing;
b) Locate the sewage system’s components;
c) Identify any obvious or outward signs of malfunction or failure; and
d) Identify systems that are at risk of malfunction of failure.

Before the inspection, all available records of the sewage system for each property are gathered. This information is useful to determine the age, location, and sizes of systems. In addition, the re-inspector notes any past issues with the system that have been addressed. For example, if there are past issues with deep-rooted vegetation this can be taken into consideration when inspecting the leaching bed. During the inspection, the re-inspector would normally identify:

a) The type of occupancy to determine the source and type of the sanitary sewage;
b) The source of water supply (municipal, well, lake, etc);
c) The approximate volume of sewage generated;
d) The use of special devices such as garbage grinders or water softeners;
e) The general nature of the system (class, components, type, layout, etc);
f) The location of the system’s components with respect to wells, surface water, and other environmental features;

g) The approximate level of ground water: This may be achieved by
    i. reviewing local maps and records of ground water elevation observed on site or nearby properties, including the local assessment report, if available;
    ii. Observing the conditions of the septic tank and the distribution box for indications of ground water infiltration;
    iii. Observing the elevation of nearby water body, or evidence of ground water infiltration in other subsurface structures; or
    iv. The use of hand augering;
h) The size, material and the condition of the septic tank, or the holding tank;
i) The frequency of tank pump-out and the last time the tank was cleaned;
j) Any indication of sewage system failure, including:
    i. Evidence of backup of effluent;
    ii. Signs of hydraulic failure (breakout of sewage, wetting conditions in the leaching bed area);
    iii. Condition of surface vegetation; and
    iv. Odour problems;
k) Documentation of previous effluent sampling test results where required (i.e., under Article 8.9.2.4. of the Building Code). All property owners with treatment units are asked to provide proof of maintenance by sending us their most recent service report. All treatment units are required to have a maintenance contract.

One of the most important aspects of the On-site Sewage System Re-inspection Program is to *educate* property owners/operators of the systems on maintenance protocols and environmental issues related to operation of a sewage system. Proper education can mean the difference between a system functioning properly for over thirty years, or failing and leaching into adjacent waterways twenty years post-installation.

Before the wastewater makes its way back into our natural environment, we want to ensure it is as clean as possible and absent of harmful chemicals, nutrients, viruses, and pathogens. For this to occur, the tank needs a healthy content of bacteria to breakdown the sewage. Any flushed chemicals or anti-bacterial products disrupt the natural breakdown process. This is comparable to the human body ingesting natural and healthy foods versus a high chemical diet of junk food. Excessive flushing of oils and plastics can physically clog the pipes and filtering mediums, slowly causing total system failure.

The main topics that myself, as a re-inspector, talked about with property owners are as follows:

a) Providing an individualized pumping schedule. When a system is not pumped frequently enough, there is a higher risk of sludge and scum making its way into the leaching bed, clogging the system and leading to failure. There is also such thing as over-pumping the system. If pumped out too frequently, the bacteria content of the tank does not have an opportunity to establish. This sterile environment reduces the treatment abilities and quality of the effluent leaving the system.
b) Encouraged habits for system operation include:
    i. general water conservation
    ii. repair leaky toilets and faucets immediately
    iii. spread laundry days over the week
    iv. do not use disinfectant soaps no matter how ‘natural’ they are
a) What not to flush into the system:
    i. large amounts of harsh chemicals, or other anti-septic or anti-bacterial products
    ii. garden pesticides, herbicides, paints, paint cleaners, or pharmaceuticals

iii. bleach pucks, disinfectant soaps, high sudsing detergents or detergents with bleach

iv. inorganic materials such as plastics, cigarette butts, disposable diapers, or sanitary napkins

v. grease, large amounts of oil, or excessive hair gels

Quite often, property owners have questions for the re-inspector. This one-on-one interaction is the best way to convey useful information. The more the operator knows about their system, the better it functions. There are financial benefits as well as an obligation to your neighbors and the environment.

## *3. Results & Analysis*

*3a. Minett - Juddhaven Road, Royal Muskoka Island*

A total of **195** inspections took place on Lake Rosseau waterfront properties along Juddhaven, and connecting roads. The inspection results are as follows (Table 1).

| **Deficiency** | **# of Properties** |
|---|---|
| Within 50 feet of Watercourse | 3 |
| Undetermined Location | 3 |
| Vegetation | 48 |
| Aged/Damaged Septic | 7 |
| Need to be Pumped | 2 |
| Steel Tank | 0 |
| Seepage Issues | 1 |
| Heavy Objects on Bed | 13 |
| Outdoor Shower Issues | 3 |
| No records | 17 |
| No Treatment System Service | 4 |
| **Total Deficiencies** | **101** |

***Table 1.*** Juddhaven property deficiencies

The following diagram depicts the deficiencies found (Diagram 1).

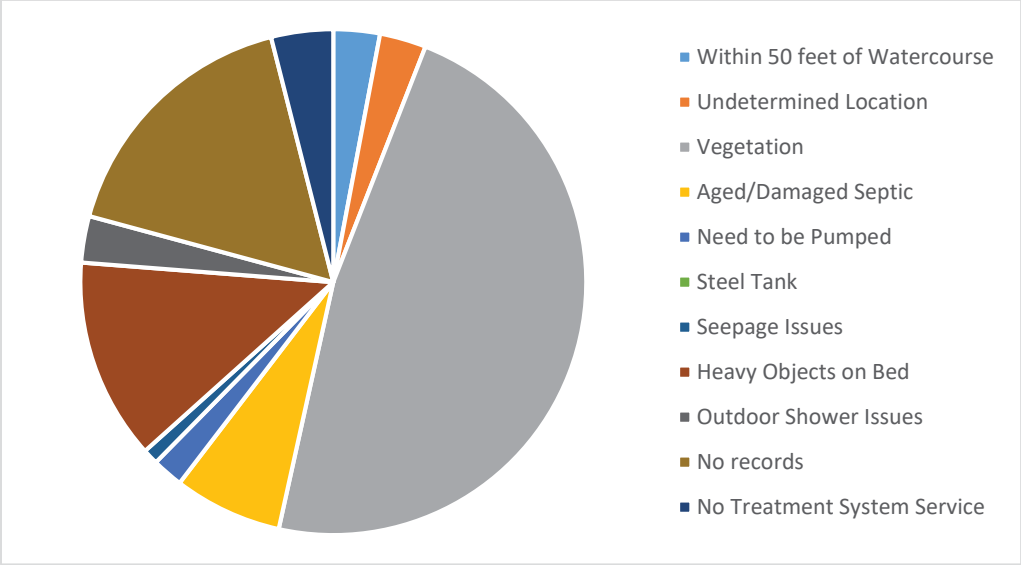


***Diagram 1.*** Juddhaven property deficiencies

Of the inspections completed, there are now six properties that need to be followed up with. Most issues were minor and resolved this summer.

*3b. Minett to Port Sandfield – Peninsula Road*

A total of **161** inspections took place on Lake Rosseau waterfront properties along Peninsula, and connecting roads. The inspection results are as follows (Table 2).

| Deficiencies | # of Properties |
|---|---|
| Within 50 feet of Watercourse | 1 |
| Undetermined Location | 4 |
| Vegetation | 52 |
| Aged/Damaged Septic | 5 |
| Need to be Pumped | 5 |
| Steel Tank | 1 |
| Seepage Issues | 0 |
| Heavy Objects on Bed | 4 |
| Outdoor Shower Issues | 0 |
| No records | 9 |
| No Treatment System Service | 2 |
| **Total Deficiencies** | **83** |

***Table 2.*** Peninsula property deficiencies

The following diagram depicts the deficiencies found (Diagram 2).

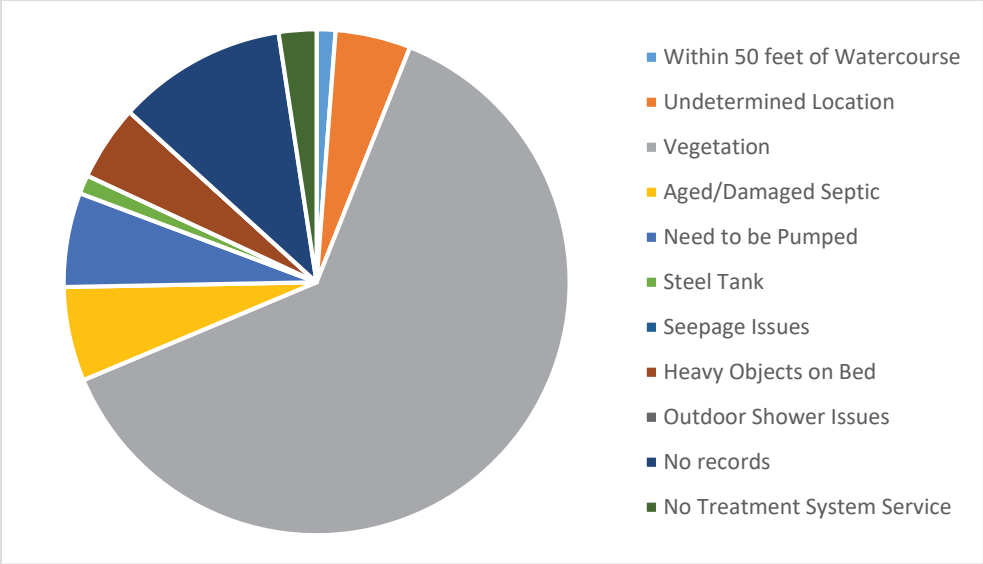


***Diagram 2.*** Peninsula property deficiencies

Of the inspections completed, there are now twenty properties that need to be followed up with. Most issues were minor and resolved this summer.

*3c. Hesners Lake*

A total of **25** inspections took place at waterfront properties on Hesners Lake. The inspection results are as follows (Table 3).

| Deficiencies | # of Properties |
|---|---|
| Within 50 feet of Watercourse | 0 |
| Undetermined Location | 1 |
| Vegetation | 2 |
| Aged/Damaged Septic | 0 |
| Need to be Pumped | 0 |

| | |
|---|---|
| Steel Tank | 1 |
| Seepage Issues | 0 |
| Heavy Objects on Bed | 1 |
| Outdoor Shower Issues | 0 |
| No records | 7 |
| No Treatment System Service | 0 |
| **Total Deficiencies** | **12** |

***Table 3.*** Hesners Lake property deficiencies

The following diagram depicts the deficiencies found (Diagram 3).

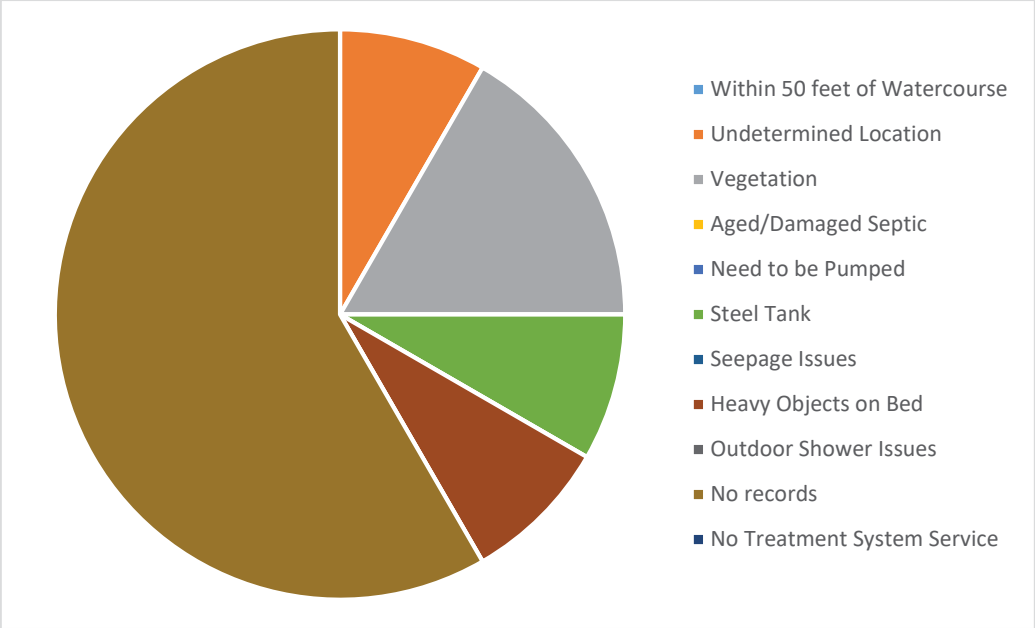


***Diagram 3.*** Hesners Lake property deficiencies

Of the inspections completed, there is now one property that need to be followed up with. The property currently has a building permit in place.

*3d. Milford Bay Waterfront Properties*

A total of **25** inspections took place at waterfront properties in Milford Bay. This was a continuation of outstanding work from 2018. The inspection results are as follows (Table 4).

| **Deficiencies** | **# of Properties** |
|---|---|
| Within 50 feet of Watercourse | 4 |
| Undetermined Location | 0 |
| Vegetation | 2 |
| Aged/Damaged Septic | 2 |
| Need to be Pumped | 2 |
| Steel Tank | 2 |
| Seepage Issues | 1 |
| Heavy Objects on Bed | 0 |
| Outdoor Shower Issues | 0 |
| No records | 6 |
| No Treatment System Service | 0 |
| **Total Deficiencies** | **19** |

***Table 4.*** Milford Bay property deficiencies

The following diagram depicts the deficiencies found (Diagram 4).

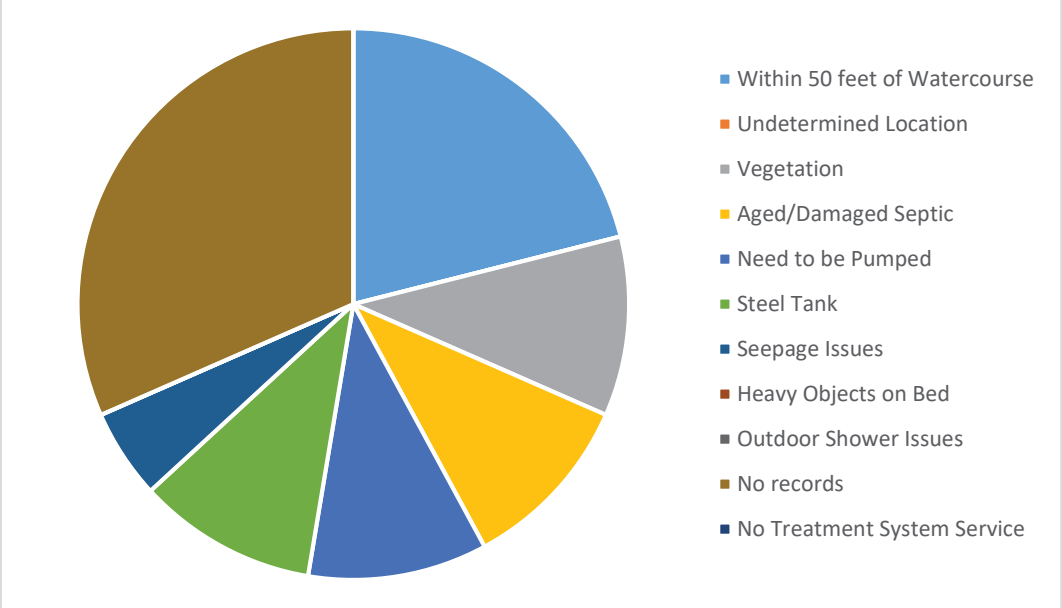


***Diagram 4.*** Milford Bay property deficiencies

Of the inspections completed, there are now two properties that need to be followed up with.

In addition to the area inspected above, many properties were re-visited and followed up with from past year's inspections.

I think that it is worth noting that a major issue I have noticed in the Port Sandfield and Minett areas are the encroachment of invasive Japanese Knotweed on leaching beds. There were a total of ten systems with this plant growing on them. The plant has severely deep roots and can ruin the system. The plants grow and spread at an extremely fast rate. Disposal of this type of vegetation is also very particular and I found it difficult to convey this to the property owners with this issue. I believe that over the years this will become an even larger issue for septic systems in Muskoka Lakes.

## *4. Conclusion*

The 2019 sewage system re-inspections were a success. Of course the numbers reflect this, but so does the experience I had. Overall, the main lesson taken from this year's inspections is that proper maintenance and education go hand-in-hand. Informational booklets were distributed to every resident, and we were more than happy to answer any questions anyone may have had about how to properly maintain their system. In building relationships with people, complaints were addressed, many issues were fixed promptly, and a lot of interesting conversations were had that built my knowledge of the areas I was working in.

Ideas for future years include:

- Handouts ready for properties where Japanese Knotweed is present
- Make a list of properties with no records of a septic system and put them on a watchlist, and conduct re-inspections
- Keep a record to flag properties with known large volume rental dwellings, and create a re-inspection schedule around this
- Continue to make note of properties with treatment systems and ensure they have a maintenance agreement

## *References*

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