

Wuis, Carol
3588 Wallace Point Road
Peterborough, ON K9J 6Y3

July 24, 2026

Wastewater Treatment System (WTS) Performance Evaluation & Capacity Assessment

Project Overview	
Client:	Wuis, Carol
Property address:	3588 Wallace Point Road, Peterborough, ON
Property description:	Commercial
Intent of evaluation:	To determine if the WTS is being operated and maintained in substantial compliance with Section 8.9 of the Ontario Building Code and if the WTS has adequate capacity for the proposed renovation
Date completed:	July 13, 2026

Project Background & Report Outline
▪ ESSE was contracted to evaluate the performance and capacity of the WTS serving the subject property in order to comply with a building permit application with the local municipality; ▪ The proposed building will contain 58m² of office space (2 employees) as well as a concrete forming warehouse with 1 water closet; ▪ Daily design sewage flow calculations of the proposed commercial building were made to determine if the existing WTS has sufficient capacity for the proposed changes to the building; ▪ Best efforts were made to determine the size of the existing septic tank and leaching field; ▪ Component itemization and descriptions of all observed deficiencies are noted with suggested remedial actions described in the Recommendations section; ▪ Appendix A provides a sketch showing component locations; ▪ Appendix B supplies relevant photographs taken during the inspection; ▪ Appendix C contains the result of the collected soil sample

Statement of Understanding & Scope of Work

- The evaluation included efforts to determine the locations or probable locations of the WTS components, and to provide recommendations for appropriate WTS operation, maintenance, upgrades or repairs that will promote the ongoing functionality and performance of the system.
- The evaluation did include hand shovel excavation of a representative test pit exposing the aggregate, pipe material and soil moisture conditions of the leaching field, but did not include comprehensive excavation of all sections of the leaching field for determination of the exact location and construction of all buried components, or complete assessment or verification of all subsurface soil conditions such as 'biomat' development beyond the representative test pit.
- Proper use and maintenance of the system including accessing, inspecting and measuring the accumulated solids in the septic tank at appropriate intervals and respecting the limits of the system for peak loading capacity, will assist in maintaining the functional capabilities of the system. Pump outs of the system should be performed when measurements of the solids in the septic tank determine at least 33% of the volume is occupied by sludge and scum.
- All of the components of the WTS are visually assessed to determine if they are contained within the approximated property boundaries, although a review of a current survey for the property was not completed, and the exact location of leaching field components was not confirmed.
- Due to the impacts of future WTS usage, ESSE cannot assess how long any WTS will function before failing. If in the future the WTS should malfunction for any reason, the owner of the property would be required to repair or replace the system to meet the current requirements of the Ontario Building Code Act.
- This report is for the exclusive use of the client, and their agents, and is neither an endorsement nor condemnation of the subject property. No assurance is made regarding the accuracy of this information. Site research performed herein relies on information and reports supplied by others. No attempt has been made to independently verify the accuracy of any such information, unless specifically noted in our report.
- The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with the level of care and skills normally exercised by qualified professionals currently practicing in this area of environmental assessment and are in accordance with the outline of work required for this project. No other warranty, expressed or implied is made.
- The findings contained in this report are based upon conditions as they were observed at the time of investigation. No assurance is made regarding changes in conditions subsequent to the time of investigation. No assurances can be made about latent defects or deficiencies with system construction or function that was not reasonably identifiable using currently accepted protocols for inspection and investigation.

House Profile



WTS Condition Assessment Quick Reference Chart

Criteria	Status	Notes
Septic Tank Accessibility	Functional	Tank equipped with plastic access risers over the inlet and outlet compartments
Condition of Septic Tank	Functional	Minor concrete corrosion observed
Septic Tank Capacity	Functional	Satisfies the minimum capacity requirements for commercial occupancy
Septic Tank Clearance Distances	Functional	All required horizontal set back distances met
Condition of Inlet Baffle	Functional	Plastic shield inlet baffle intact and functional
Condition of Outlet Baffle	Functional	Effluent filter installed within outlet compartment of tank (removed and cleaned during inspection)
Leaching Field Condition	Functional	Distribution laterals clear of standing water and obstructions
Leaching Field Capacity	Functional	Satisfies the minimum capacity requirements based on proposed design flow
Leaching Field Clearance Distances	Functional	All required horizontal set back distances met
Landscape Setbacks	Functional	All required horizontal set back distances met
Fixture Connections	Functional	Ensure water treatment backwash is directed away from the wastewater treatment system

Performance Evaluation Summary

1. **The WTS is a Class 4 system consisting of a two-compartment septic tank and sand filter bed style leaching field located on the northwest side of the existing building;**
 - The system appears to be >1 year old;
 - The septic tank is buried approximately 0.3 m deep and is equipped with access risers to grade over the tank's inlet and outlet compartments;
 - The concrete, two-compartment septic tank is approximately 4,500 L in volume (2.4m L x 1.52m W x 1.22 m H) and is equipped with a plastic shield inlet baffle and effluent filter within the outlet compartment;
 - The leaching field consists of a sand filter bed style leaching field encompassing an area approximately 3.2m wide and 7.2m long (stone layer). A mantle constructed using imported fill also extends 15m northwest beyond the edge of the distribution pipe. 3 distribution laterals were identified each 6m in length and were buried 0.35m below grade.
2. **The WTS does not appear to be original to the construction of the building;**
 - With regular use and maintenance, the typical effective lifespan of the leaching field soil is 35 to 45 years due to accumulating organic and biological material in the soil matrix.
3. **Based on measurements of accumulated solids in the septic tank ($\pm 25\%$ by volume), a pump out of the tank is not presently required;**
 - A pump out of the septic tank is typically conducted when the solids accumulation inside of the septic tank reaches one third of the working capacity of the tank, or 33% by volume;
 - In the event of a septic tank pump-out, ensure that the system is filled with clean water following the pump-out.
4. **At the time of inspection, the following WTS deficiencies or malfunctions¹ were identified;**
 - Minor concrete corrosion was observed throughout the septic tank, most notably on the outlet wall. Additives are strongly recommended to reduce corrosive gases within the septic tank and extend the functional life of the tank;
 - Overgrown vegetation was observed on top of the leaching field. The area of the leaching field should be top soiled and seeded/sodded. Regular maintenance should occur on the lawn in the leaching field area to encourage evaporation from soils and limit woody vegetative growth.
5. **Based on the age, design, and construction of the existing system components, it is the opinion of ESSE that the system is considered functional for wastewater treatment and dispersal;**
 - When planning for long-term onsite wastewater treatment and disposal it is important to note that full WTS replacement typically costs \$35,000 to \$50,000 for the building (dependent on design flow and native soil type);

¹Typical signs of a wastewater treatment system (WTS) malfunction include ponding or pooling sewage effluent in the distribution laterals or absorption trenches, improper discharge of sewage effluent to the ground surface, sewage effluent leaking or discharging inappropriately from the septic tank, and excessive or abnormal vegetation growth on or around the leaching tile bed components

6. Carrying out the additional items listed in the Recommendations section will help to prolong the performance of the existing system components and the ongoing function of the WTS.

Daily Design Sewage Flow Calculations

Daily Design Sewage Flow: Office Space				
Floor Space (75 L per 9.3m²):				
	Total	57.97m ²	Daily Flow	525 L
Daily Design Sewage Flow: Warehouse (no loading bays)				
Water Closets (950 L):				
	Total	1	Daily Flow	950L
Total Daily Flow (Q)		1,475 L		

Note: The following calculations are made referencing Table 8.2.1.3.B Residential Occupancy of the OBC.

Capacity Assessment

Existing WTS Sizing Capacity for the Existing and Proposed Design Flows:

- The proposed design flow of the building was determined as 1,475 L/day as per Table 8.2.1.3.B of the OBC and information provided by the property owner;
- Section 8.2.2.3 (1)(b) of the OBC states that in a commercial occupancy, the minimum working capacity of a septic tank should be at least three times the daily design sewage flow for the building, with a minimum volume of 3,600L to provide appropriate retention time for the settling and separation of solids and liquids;
- **Therefore, the existing 4,500L septic tank achieves the minimum tank sizing requirement;**
 - Tank Volume Required = $3 \times Q \rightarrow 3 \times 1,475 \text{ L/day} = 4,425 \text{ L}$
- Section 8.7.5.2. of the OBC describes that the size of the surface of the filter bed (stone layer) for $Q < 3000 \text{ L/day}$ is determined by the following formula: $A = Q/75$ where A is the total required surface area measured in m^2 and Q is the total daily design flow of the building (L/day). With the proposed design flow of 1,475 L/day, a total of 19.66 m^2 is required. ESSE Canada determined that the surface of the filter bed occupies an area of 23.04 m^2 and satisfies the minimum capacity requirements;
- Section 8.7.5.3.(6) in the OBC describes that the size of the base of the filter bed is determined by the following formula: $A = \frac{QT}{850}$ where A is the total surface area measured in m^2 and T is the percolation rate of the native soil. With the proposed design flow of 1,475 L/day, the surface area required for the base of the filter bed is 52.06 m^2 . The percolation rate of the native soil was determined to be 30 min/cm. The base of the filter bed was estimated to be 55.2 m^2 and therefore satisfies the minimum sizing requirements. The sand filter base was determined to consist of sandy soils with a percolation rate of 10 min/cm, which is consistent with filter sand;
 - $A = \frac{QT}{850} = \frac{(1,475 \frac{\text{L}}{\text{day}})(30 \frac{\text{min}}{\text{cm}})}{850} = 52.06 \text{ m}^2;$
- As the filter bed is inherently a fill-based system, a mantle is required and the loading rate on the native soils cannot exceed those described in Table 8.7.4.1.A of the OBC. With a percolation rate of 30 min/cm, the required mantle size is determined using the following formula: $A = Q/8$ where A is the total required surface area measured in m^2 and Q is the total daily design flow of the building. With the proposed design flow of 1,475 L, the minimum mantle sizing is 184.37 m^2 . ESSE Canada determined that the mantle occupies a total area of 192 m^2 and satisfies the minimum sizing requirements and is composed of sandy soils consistent with the proper construction material;
- **Given this information, the existing sand filter bed is considered adequately sized to provide adequate treatment and dispersal for the proposed design flow.**

Inspected and prepared by:



Tyler vanderStam, BSc
Environmental Technician - Project Management
Certified Sewage Disposal System Inspector/Installer BCIN #121418
Registered Designer BCIN #121418

Reviewed by:



Tyler vanderStam, BSc
Environmental Technician - Project Management
Certified Sewage Disposal System Inspector/Installer BCIN #121418
Registered Designer BCIN #121418

ESSE Canada
Design Firm BCIN # 41552

Appendices:

- A. Existing Components**
- B. Wastewater Treatment System Photos**
- C. Soil Sample Results**

Appendix A: Existing Components

Note: all dimensions and locations approximate



Appendix B: Wastewater Treatment System Photos



1. Septic tank location



2. Septic tank inlet compartment



3. Camera inspection of sewer line



4. Interior of sewer line



5. Inlet sludge measurement – pump out not required at time of inspection



6. Effluent filter installed in outlet compartment of tank – removed and cleaned during inspection

Appendix B: Wastewater Treatment System Photos



7. Camera inspection of discharge line – leading from septic tank to leaching field



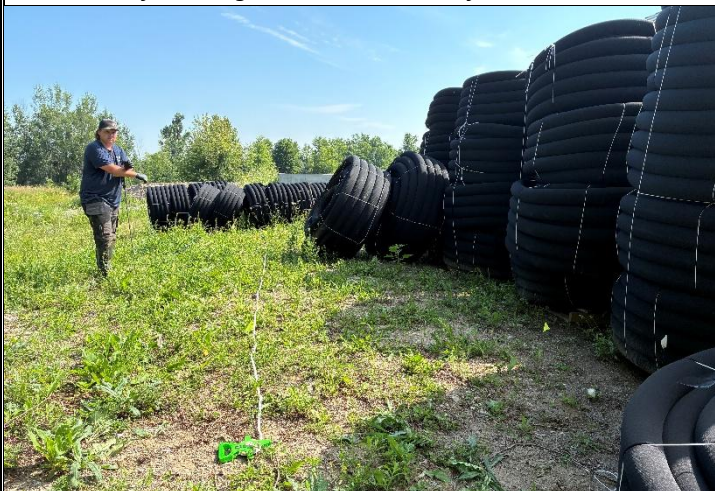
8. Interior of discharge line



9. Interior of discharge line – header manifold visible



10. Interior of perforated distribution lateral



11. Location of sand filter bed surface



12. Extent of sand filter bed

Wastewater Treatment System Photos



13. Extent of sand filter bed



14. Test hole 1 excavated for collection of filter base material



15. Interior of test hole 1. No water observed and geotextile covering washed stone visible



16. Soil collected from sand filter base



17. Test hole 2 excavated for inspection of mantle material and collection of native soil



18. Base of test hole 2. No ground water observed.

Wastewater Treatment System Photos



19. Mantel consists of sandy soil – not submitted for analysis

20. Native soil collected

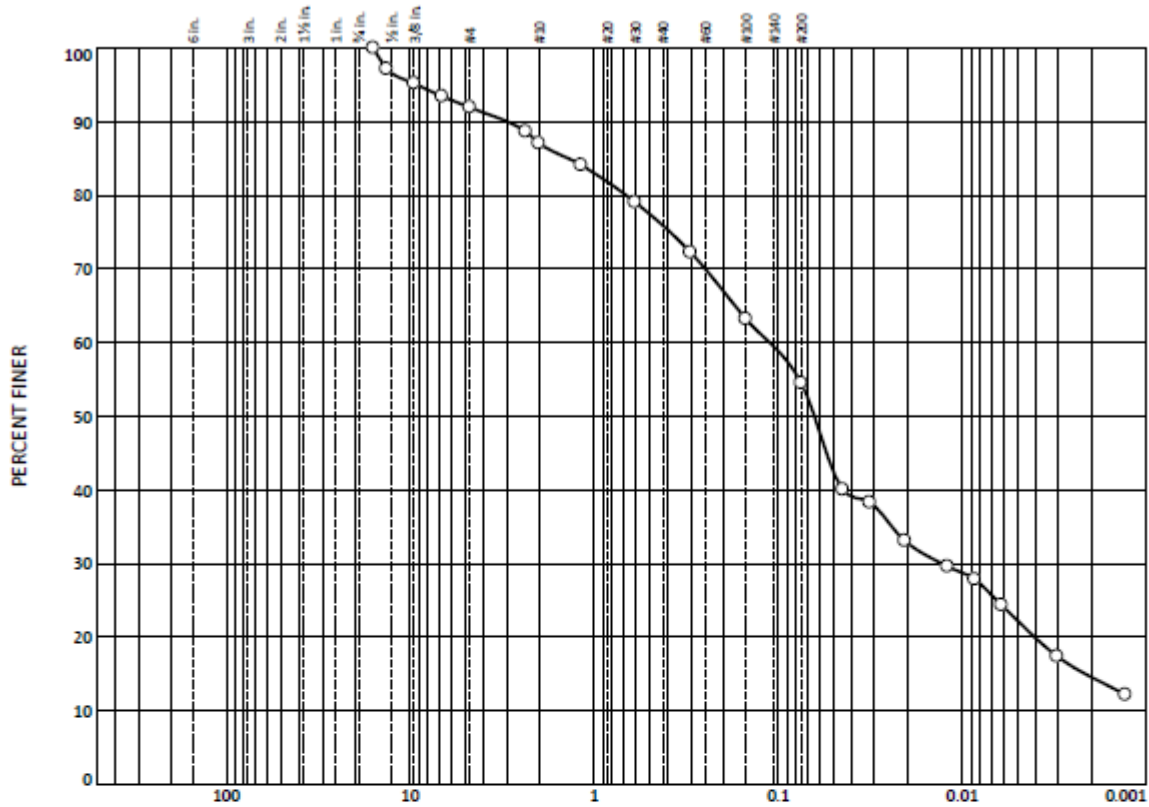


21. Location of test hole 2 located at the end of the sand filter bed mantle

22. Drilled well location

Appendix C: Soil Sample Results

Particle Size Distribution Report



GRAIN SIZE - mm.

	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	8.0	4.9	11.2	21.4	39.9	14.6

SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	Client	1		Native - 3588 Wallace Point Road, Peterborough, Ontario	ML
				silt and sand, some clay, trace gravel	
				Estimated Percolation Rate; T = 30 min/cm	
				Sample received in Laboratory July 16, 2026	
				Tested by JM of CMT Engineering Inc. July 17, 2026	

CMT Engineering Inc.

St. Clements, ON

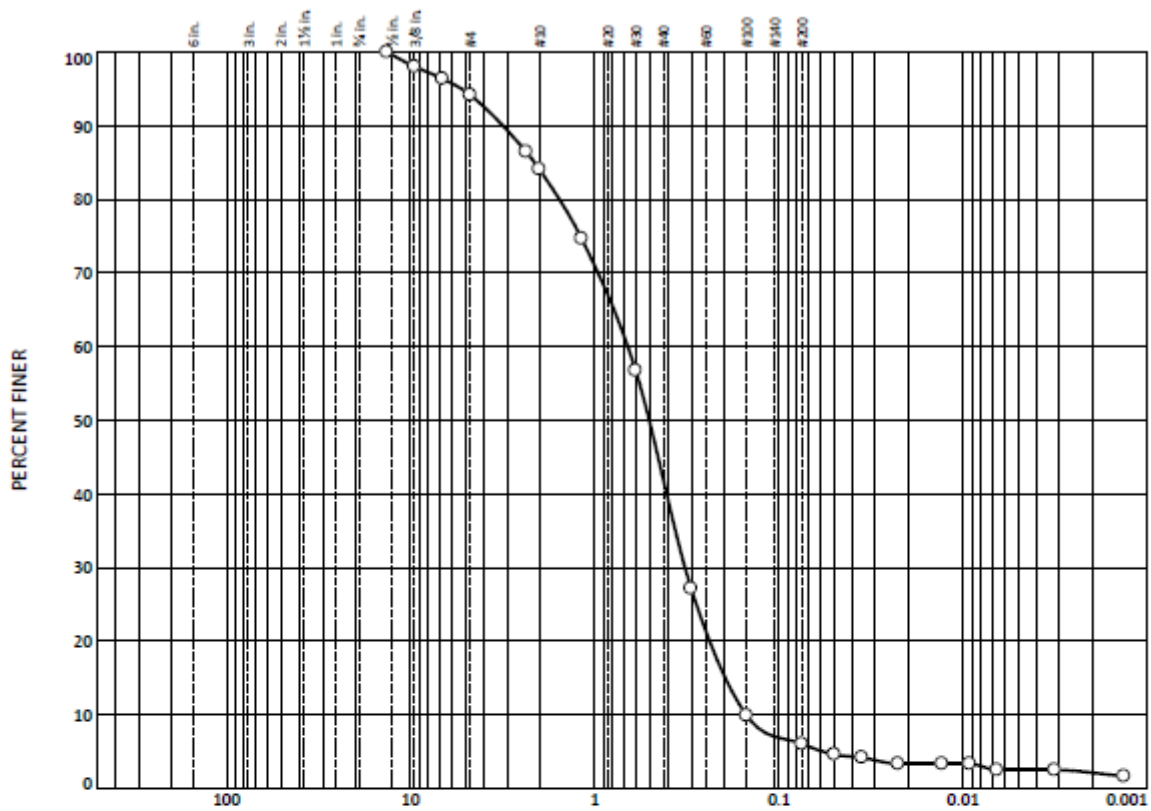
Client: Esse Canada

Project: Miscellaneous Laboratory Testing

Project No.: 21-197

Figure 1

Particle Size Distribution Report

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SOIL DATA					
	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	Client	2		Fill - 3588 Wallace Point Road, Peterborough, Ontario	SP-SM
				sand, trace gravel, silt, and clay	
				Estimated Percolation Rate; T = 10 min/cm	
				Sample received in Laboratory July 16, 2026	
				Tested by JM of CMT Engineering Inc. July 17, 2026	

CMT Engineering Inc.

St. Clements, ON

Client:	Esse Canada
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Figure 2