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July 7, 2025 20-225(a).R01

Tacoma Engineers Inc.
155 Frobisher Drive,
Waterloo, Ontario
N2V 1G2

Attention: Brandon Martin

Re: Class IV Sewage Disposal System
Septic System Assessment
260 Waydom Drive,
Ayr, Ontario

As requested, CMT Engineering Inc. (CMT Inc.) has conducted an assessment of the existing septic system at the above-referenced property. It is understood that the existing industrial building was expanded in 2020, and the usage of the building has changed to an industrial horticultural operation. As such, the Township of North Dumfries has requested that the existing septic system be assessed to confirm the size, type and condition of the system, as well as the suitability for the current building usage, as per the 2024 Ontario Building Code (OBC 2024).

Daily Design Sewage Flow Rate

Currently the building is used for industrial horticultural operations. There are office areas, some warehousing and a larger production area. Since the building is mixed use, and used for production, it would be considered suitable that the usage would be similar to that of a "Factory" and the daily design sewage flow rate would be calculated on an employee basis. There is no process water that is used as part of the operations. The septic system is to service employee bathrooms and breakrooms only. Currently the building is used by three (3) employees, however, CMT Inc. considers a minimum of five (5) employees for design purposes.

Based on the OBC 2024, the total daily sewage system design flow for the proposed industrial building is determined as follows:

Average daily flow for a workshop with five (5) employees per 8-hour shift with no showers: (75 litres per employee per 8-hour shift). 375 litres

Total Daily Design Sewage Flow: 375 litres

Field Investigation

An on-site septic assessment was conducted by CMT Inc. on May 29, 2025, to assess the size, type, and condition of the existing septic system. The septic tank was located and the tank lids were excavated and exposed. The leaching bed was located and the portions of the header, footer and distribution pipes were excavated and exposed within the leaching bed (see attached photographs).

Septic Tank

The septic tank lids were uncovered and opened to inspect the septic tank. The septic tank appeared to be in good condition with no spalling or corrosion of the inlet or outlet side of the septic tank. An inlet baffle was installed and an effluent filter was present on the outlet side of the tank. The tank was pumped out prior to inspection and it was reported to be a 3,825 litre (850 gal) septic tank. Based on the OBC 2024, the minimum working capacity of a septic tank must be the greater of 3,600 litres or three times the daily design sanitary sewage flow for non-residential occupancies. Three times the total design flow of 375 litres for the industrial building would provide a minimum working capacity of 1,125 litres. As such, the existing septic tank with a capacity of 3,825 litre (850 gal) is considered satisfactory to service the existing industrial building.

The existing septic tank is installed a minimum of 1.5 m from all structures, 3.0 m away from property lines and 15.0 m from the on-site drilled well.

Leaching Bed

The distribution pipes within the leaching bed were located using ground penetrating radar. There did not appear to be any signs of saturation at the surface and no areas of sewage breakout. Portions of the header were exposed, as well as a portion of the footer. The leaching bed was observed to consist of in-ground absorption trenches, constructed with 75 mm diameter perforated PVC pipe surrounded by clear stone aggregate. There was observed to be approximately 0.8 m of soil cover above the absorption trenches. The leaching bed was observed to have seven (7) runs of absorption trenches. The distribution pipes within the absorption trenches were measured to be 15.24 m (50.0 ft) in length for a total of 106.68 m (350.0 ft) of absorption trenches. The header was surveyed and appeared to be generally level, within a tolerance of 6.4 mm (0.25 inches) over the entire header, which is considered satisfactory. The slope on the distribution pipes was surveyed and appeared to have a slope of 0.3% (4.5 cm over the 15.24 m length of distribution pipe), which is considered satisfactory. A test pit was completed within the leaching bed. The absorption trenches were observed to be in good condition, un-saturated, and very little bio-mat build-up. A sample of the native soil below the leaching bed was obtained and submitted to the CMT Inc. laboratory in St. Clements, Ontario for sieve analysis, soil classification and percolation time determination. The soil sample from a depth of 1.2 m (3.9 ft) in was determined to be sand and gravel, trace silt and clay, and has an estimated percolation rate (T-time) of 4 min/cm.

According to the equation Q = 200L/T, the leaching bed is designed to accept a daily sanitary sewage flow rate of 5,334 litres/day. As such, the leaching bed is considered satisfactory to remain and service the industrial building under the current usage. Overall, the absorption trenches appear to be in good condition and functioning as intended. The absorption trenches did not appear to have geotextile or building paper above the absorption trenches, and some fine material was observed to be infiltrating the clear stone within the absorption trenches. As well, a portion of the leaching bed was covered with an asphalt driveway. CMT Inc. cannot make a determination on the remaining service life of the existing septic system, however, the system is currently working as intended and is considered satisfactory to remain in service. The distribution pipes in the leaching bed maintain the required setback distances of 3.0 m from property lines, 5.0 m to structures, and 15.0 m from drilled wells.

Conclusions

From the above assessment, the existing septic tank and leaching bed is considered satisfactory to service current industrial building and the intended usage.

We trust that this information meets your present requirements, and we thank you for this opportunity to have been of service. Should you have any questions, please do not hesitate to contact our office.

Yours truly,

Marc Favaro, B.Sc. Nathan Chortos, P.Eng.

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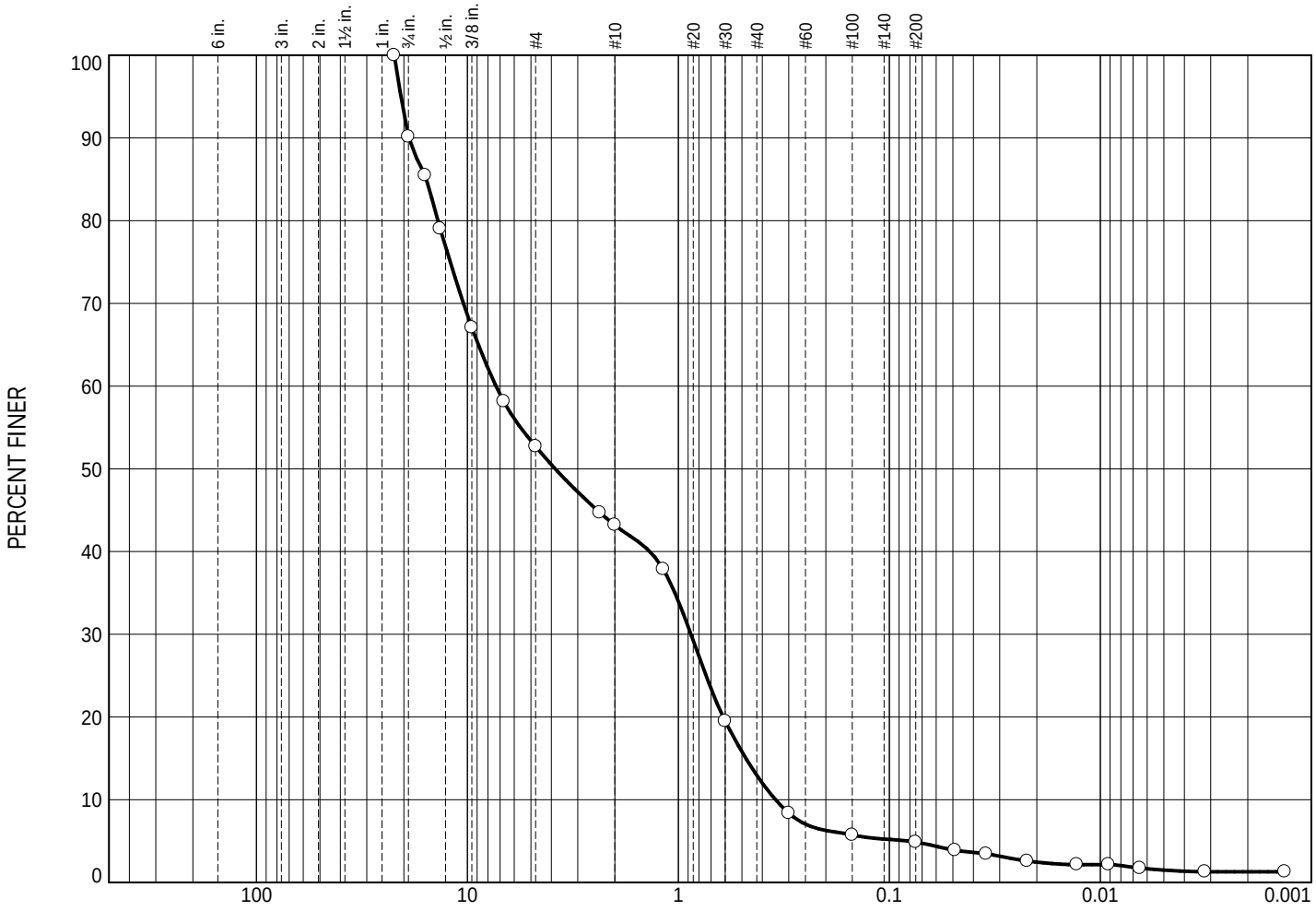
Enclosed: Leaching Bed Photographs
Grain Size Analysis

1 - Surface of leaching bed showing test pit excavation areas.

2 – Septic distribution pipe and native sand and gravel soil.

3 – Septic tank outlet side with effluent filter.

Particle Size Distribution Report



	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	9.8	37.5	9.5	30.2	8.1	3.6	1.3

SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	TP1	1	1.2m	sand and gravel, trace silt and clay	SP
				Estimated Percolation Rate; T = 4 min/cm	
				Sampled by MF of CMT Engineering Inc. May 29, 2025	
				Tested by JM of CMT Engineering Inc. June 3, 2025	

CMT Engineering Inc.

St. Clements, ON

Client: Tacoma Engineers Inc.

Project: Monitoring Well Installation and Septic Assessment
260 Waydom Drive

Project No.: 20-225(a)

Figure 1