



<b>Project Name:</b>	6097 Colonel Talbot	<b>MTE File No.:</b>	49653-100
<b>To:</b>	Scott Allen, MHBC	<b>Date:</b>	November 29, 2023
<b>Cc:</b>	Jarred Flynn, MTE Randy Lucas, MTE	<b>From:</b>	Nick Romero, P. Eng.

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**RE: CONCEPTUAL ON-SITE WASTEWATER TREATMENT SYSTEM DESIGN,  
6097 COLONEL TALBOT**

**1.0 Background**

MTE Consultants Inc. (MTE) was retained by MHBC Planning to complete a conceptual assessment for the on-site wastewater strategy servicing the proposed development at 6097 Colonel Talbot, Ontario (Site).

The Site is approximately 20.2 hectares (ha), located on the west side of Colonel Talbot Road, north of the Colonel Talbot Road and Highway 401 Interchange, legally described as 6097 Colonel Talbot Road, generally described as Part of Lot 58, Concession WTR, London. The Owner is proposing to amend the current zones for the subject lands to support the development of the property for a heavy equipment/agricultural machinery dealership. As such, domestic wastewater from employees is expected to be generated, along with washwater from the washing agricultural equipment and vehicles, as required.

This technical memorandum is a preliminary conceptual brief intended to provide direction for space requirements related to the on-site wastewater treatment system for the domestic wastewater system and holding tank for the washwater generated from washing agricultural equipment and vehicles.

**2.0 Investigations**

**2.1 Geotechnical Investigation**

A geotechnical investigation at the Site was completed in December 2021 by MTE. The geotechnical investigation consisted of nine boreholes advanced at the Site to depths between 3.7 to 8.2 m. Soil conditions encountered at the Site include topsoil overlying native cohesive deposits interlayered with sand and silt deposits. To assist with the conceptual design of the on-site wastewater system (for domestic wastewater only), percolation times (T-times) were estimated based on the borehole results within the Site. As such, based on the native soil conditions of the Site, the T-time is estimated to be greater than 50 min/cm. It is recommended that during the detailed design, additional soil samples be collected to verify the T-time of the native soil.

Groundwater observations were carried out in the open boreholes at the time of drilling. Groundwater was noted within sandy clayey silt soil in borehole BH105-21 at a depth of 0.8 m, which could have been a result of the borehole proximity to the Colonel Talbot Right-of-Way (ROW). The remaining boreholes were dry upon drilling completion on December 15 and 16, 2021.

Groundwater levels were measured in the monitoring wells installed in boreholes MW101-21 to MW104-21 in June 2022, at depths of 1.96 to 2.56 m below ground surface. Since the highest groundwater levels were recorded in June, it is inferred that groundwater levels one meter higher than

observed should be anticipated during the period of seasonally high groundwater levels. For the onsite wastewater conceptual design, peak groundwater elevations at 260.63 m above mean sea level (AMSL) should be anticipated during the period of seasonally high groundwater levels following the spring freshet. As such, considering the potential for groundwater elevations one meter higher than observed, at this conceptual stage, MTE has assumed that the disposal bed will be required to be raised to account for the vertical clearance requirement from the groundwater table.

### 3.0 On-Site Wastewater Conceptual Design

In support of the zoning amendment and proposed development at the Site, MTE completed a conceptual design to establish the area required for the onsite wastewater treatment system for the domestic wastewater, along with area required for a washwater holding tank.

A conceptual design was completed for the Site; however, a specific design has not been completed, and will be required during the later stages of the project.

#### 3.1 Domestic Wastewater

##### Daily Design Flow

An on-site wastewater treatment system under Part 8 of the Ontario Building Code (OBC), with tertiary treatment and sub-surface disposal, is proposed for the domestic wastewater generated by the employees. The proposed Level IV treatment system will discharge treated effluent to a shallow buried trench system located on the northwest corner of the Site.

Based on a non-residential occupancy, the daily design flow for domestic wastewater was calculated using a rate of 75 L/day per employee per 8-hour shift. As such, the design flow for domestic wastewater calculated for 30 employees (maximum) for the proposed development is 2,250 L/day.

##### Level IV Treatment System

Due to the native soil conditions of the Site, it was determined that a conventional absorption trench leaching bed would not be feasible for this development. As such, a Level IV treatment system, conforming with the requirements in **Table 8.6.2.2** of the OBC, complete with a shallow buried trench system is recommended for these soil conditions. The treatment system and disposal bed must be sized to accommodate the domestic daily design flow of 2,250 L/d.

The details of the treatment system will be determined in the later stages of the design, however for conceptual design, a 5 m by 10 m area has been allocated for the Level IV treatment system, as shown on **MTE Figure 1**.

##### Shallow Buried Trench Leaching Beds

Based on the OBC, for a site with a T-time greater than 50 min/cm, the total length of shallow buried trenching required is determined by the following formula:

$$L = \frac{Q}{30}$$

Where L is the length of distribution piping in meters and Q is the daily design flow in L/day.

Therefore, a minimum of 75 m of shallow buried trenching is required. Applying an appropriate factor of safety due to native soil conditions, 97.5 m of shallow buried trenching is proposed. The bed is proposed to consist of a single cell of six runs of 16.3 m each. Due to the potential for a high groundwater table, a 15-metre mantle has been considered in this conceptual design. Conceptual sizing for the on-site wastewater system and location on the Site is shown in **MTE Figure 1**.

### 3.2 Vehicle Washwater

#### Daily Design Flow

The Owner has indicated that washwater will be generated on Site from agricultural equipment and vehicle washdown. Both the domestic wastewater and washwater are proposed to be piped separately from the facility, with the washwater conveyed to a holding tank that will be hauled as required. Washwater influent quality typically fluctuates, and conventional on-site treatment systems cannot be designed to effectively treat this wastewater stream. As such, a holding tank hauled as required is typically installed for these applications.

Based on discussions with the Owner, the Site will generate approximately 3,800 L/day of washwater based on hauling a 38,000 L (approximately 10,000 Gallon) tank every 10 business days.

#### Holding Tank

A holding tank is proposed to be installed to manage washwater generated by the facility, which is proposed to be installed outside the building on the northwest corner of the Site. The Owner will be required to retain a MECP licensed hauler to pump out the holding tank (as required) through a formal written agreement and dispose the washwater off-site to a municipal wastewater treatment plant.

A 38,000 L (approximately 10,000 Gallon) holding tank is proposed for this Site as show in **MTE Figure 1**.

### 4.0 Setback Requirements

The following setback distances are required for all on-site wastewater systems:

**Table 2: Setback Distance Requirements**

Clearance From	Minimum Distance	
	Septic Tank / Treatment System	Distribution Piping
Building	1.5 m	5 m
Potable Wells	15 m	15 m / 30 m <sup>1</sup>
Water Body/ Stream	15 m	15 m
Property Line	3 m	3 m

Note: <sup>1</sup> 15 m required to any watertight well casing with depth >6m. 30m required to any other well.

All the proposed on-site wastewater works will conform to the required clearance distances.

## 5.0 Applicable Approvals

The summary of the design flows generated at the Site are listed in **Table 3** below.

**Table 3: Summary of Flows**

Wastewater	Design Flow (L/d)
Domestic	2,250
Washwater	3,800
<b>Total</b>	<b>6,050</b>

As the overall total design flow within the property boundary is less than 10,000 L/day, the on-site wastewater component of the Site is governed under the OBC. Should the flow exceed 10,000 L/day, the wastewater component of the Site will be governed by the Ministry of the Environmental Conservation and Parks (MECP) and will require an Environmental Compliance Approval (ECA).

## 6.0 MECP D-5-4 Technical Guideline

The MECP D-5-4 Guidelines applies to a development proposal of more than five units, with individual on-site sewage systems. This Site is only proposed to be one unit with one individual on-site sewage system, and as such, MECP D-5-4 Guideline does not apply. In addition, the Site exceeds 1 ha in size, which fulfils the “Step One” requirement of MECP D-5-4 Guideline and is considered to not be in a hydrogeologically sensitive area.

## 7.0 Conclusion

Based on the information provided, it is concluded that:

- The underlying native soil has been estimated to have a T-time of greater than 50 min/cm.
- A minimum groundwater and bedrock separation of 1.0 m from the disposal bed will be required.
- A Level IV treatment system, complete with shallow buried trench leaching bed system was used for confirming the proposed treatment area for the domestic wastewater.
- Disposal bed can be situated such that the minimum setback requirements to buildings, potable water wells and property lines are met.
- The washwater generated on-site will be directed into a 38,000 L (approximately 10,000 Gallon) holding tank.
- A written agreement with a licensed hauler to pump-out the holding tank is required to be executed by the Owner.
- Based on the assumptions identified in this assessment, the Site have sufficient area allocated to accommodate the proposed on-site wastewater system and holding tank.
- MECP D-5-4 does not apply since the Site does not involve more than five units on on-site sewage systems, exceeds 1 ha in size, and is not in a hydrogeologically sensitive area.

## 8.0 Recommendations

It is therefore recommended that:

- Further geotechnical investigation be completed to confirm T-times, and groundwater elevations near the proposed area of the disposal bed during the detailed design of the project.

All of which is respectfully submitted,

**MTE Consultants Inc.**

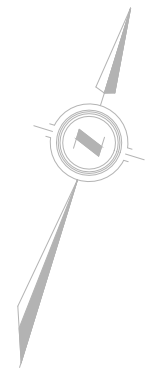
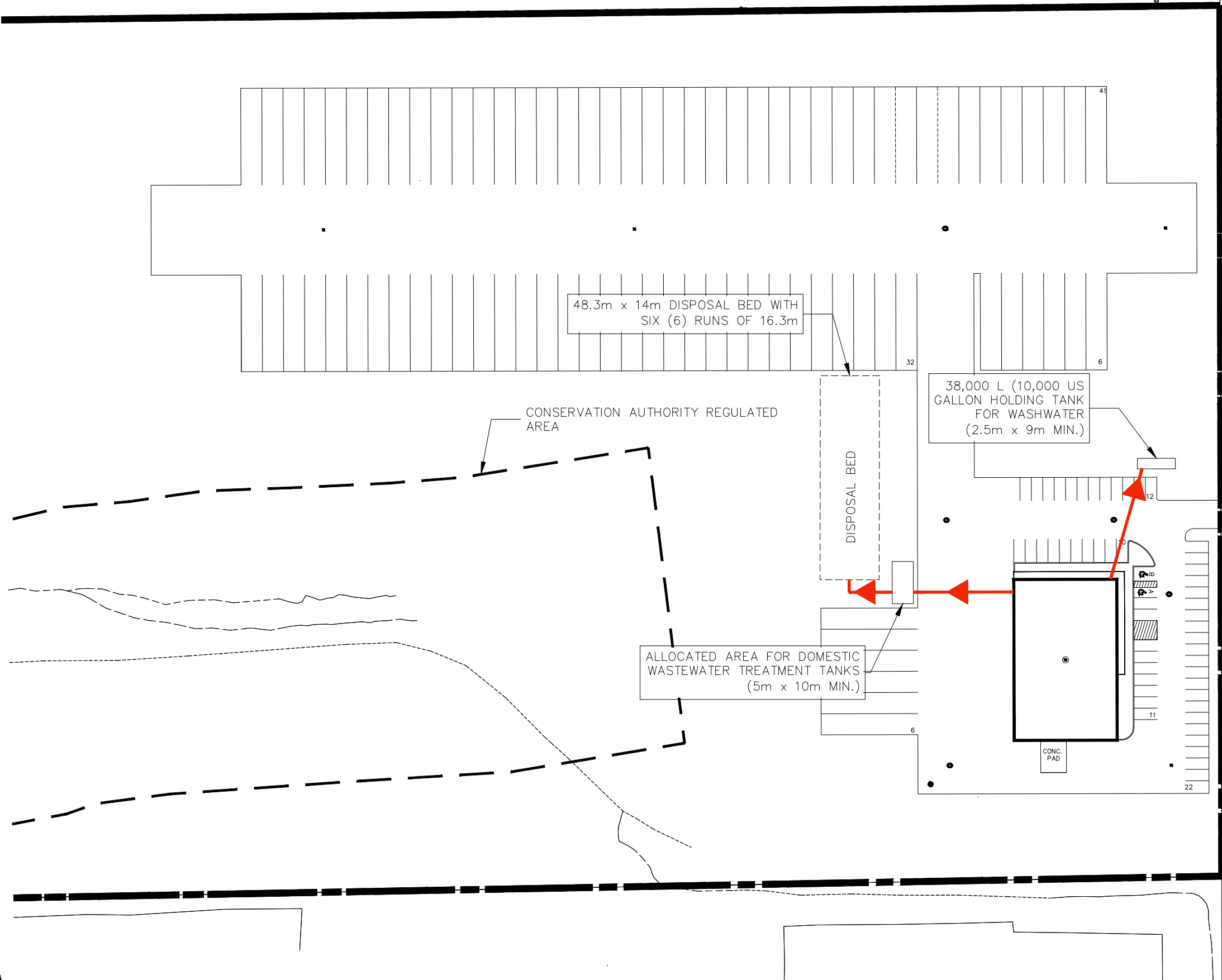


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**LEGEND**

-  PROPERTY LINE
-  PROP. SANITARY SEWER
-  PROP. DISPOSAL BED
-  PROP. HOLDING/ WASTER WATER TREATMENT TANK
-  CONSERVATION AUTHORITY REGULATED AREA

COLONEL TALBOT ROAD

F1.1
Date: NOV.28/2023  
Scale: 1:1000

**CONCEPTUAL  
WASTEWATER LAYOUT**



**MTE**

Engineers, Scientists, Surveyors

Project No.: 49653-100