

# 5360 Bank Street

Site Servicing and Stormwater Management Report



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Greely Sand & Gravel Inc.

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## 1 Introduction

Stantec Consulting Ltd. has been commissioned by Greely Sand & Gravel Inc. to prepare the following Servicing and Stormwater Management Report in support of a Zoning Bylaw Amendment (ZBA) and Site Plan Amendment (SPA) application for the proposed redevelopment works located at 5360 Bank Street in the City of Ottawa.

The site is 4.46 ha in area and is situated along the west side of Bank Street. The site is currently zoned Rural Countryside (RU) and consists of garage, maintenance, and storage buildings. The site is bounded by existing rural development to the north and south, a vacant lot with a mine and the John Boyce Municipal Drain to the west, and Bank Street to the east, as shown in **Figure 1.1** below.



*Figure 1.1: Key Plan of Site*

The proposed works consists of a new water servicing mains along the private driveway and a sanitary septic system servicing the existing garage and maintenance building, and new storm sewer system that conveys drainage from the site to the John Boyce Municipal Drain at the west.

### 1.1 Objective

This site servicing and stormwater management (SWM) report presents a servicing scheme that is free of conflicts, provides on-site servicing in accordance with City of Ottawa Design Guidelines, and uses the



existing municipal infrastructure in accordance with any limitations communicated during consultation with the City of Ottawa staff.

Criteria and constraints provided by the City of Ottawa have been used as a basis for the detailed servicing design of the proposed development. Specific and potential development constraints to be addressed are as follows:

- Potable Water Servicing
  - Estimated water demands to characterize the proposed feed(s) for the site which will be serviced from the existing 400 mm diameter watermain within the Bank Street ROW.
  - Under fire flow (emergency) conditions, the water distribution system is to maintain a minimum pressure greater than 140 kPa (20 psi)
- Wastewater Servicing
  - The site is located outside the City of Ottawa's sanitary servicing area, as such it will require private sanitary septic system for servicing.
- Storm Sewer Servicing
  - Define major and minor conveyance systems in conjunction with the proposed grading plan.
  - Determine the stormwater management storage requirements to meet the allowable release rate for the site.
  - Define and size the proposed storm sewers that will collect discharge from the site to the John Boyce Municipal Drain to the west.
- Prepare a grading plan in accordance with the proposed drainage and existing grades.

**Drawing RSGP-1** illustrate the proposed internal servicing scheme for the site.



## **2 Background**

Documents referenced in preparing of this stormwater and servicing report for 5360 Bank Street include:

- *City of Ottawa Sewer Design Guidelines* (SDG), City of Ottawa, October 2012, including all subsequent technical bulletins
- *City of Ottawa Design Guidelines – Water Distribution*, City of Ottawa, July 2010, including all subsequent technical bulletins
- *Design Guidelines for Drinking Water Systems*, Ministry of the Environment, Conservation, and Parks (MECP), 2008
- *Fire Protection Water Supply Guideline* for Part 3 in the Ontario Building Code, Office of the Fire Marshal (OFM), October 2020
- *Water Supply for Public Fire Protection*, Fire Underwriters Survey (FUS), 2020
- *The Corporation of the Township of Gloucester Engineer's Report – John Boyce Drain (Lots 26 to 30, Concession 4 & 5 (R.F.))*, McCormik, Rankin & Associates Limited, April 1969



## 3 Water Servicing

### 3.1 Background

The site is in Pressure Zone 4C of the City of Ottawa's Water Distribution System. The existing watermain along the boundaries of the site consist of the 400 mm diameter watermains within Bank Street. There are existing fire hydrants on the Bank Street watermain.

### 3.2 Water Demands

#### 3.2.1 Domestic Water Demands

The City of Ottawa Water Distribution Guidelines (July 2010), ISTB 2021-03 Technical Bulletin, and correspondence between Patterson Group and the client (see **Appendix A**) were used to determine water demands based on the number of employees and visitors at the existing industrial area, and in consideration of industrial peaking factors.

A daily rate of 280 L/persons/day has been used to estimate average daily (AVDY) potable water demand for the onsite population at the light industrial site. Maximum day (MXDY) demands were determined by multiplying the AVDY demands by a factor of 1.5 for industrial areas, while peak hourly (PKHR) demands were determined by multiplying the MXDY by a factor of 1.8 for industrial areas. The estimated demand for the existing industrial site is summarized in **Table 3.1** below and detailed in **Appendix B.1**.

*Table 3.1: Estimated Water Demands*

Population	AVDY (L/s)	MXDY (L/s)	PKHR (L/s)
10	0.1	0.2	0.3

#### 3.2.2 Fire Flow Demands

The storage and garage building's fire flow requirement was calculated in accordance with the Office of the Fire Marshal (OFM) methodology as described within the OBC. Through confirmation from the client's code consultant, (see **Appendix A**), the building and the two add-ons have an occupancy classification of F-3 under the Ontario Building Code with one of the add-ons deemed to be combustible construction while the remainder is deemed non-combustible construction.

Based on the construction type, the overall building's required fire flow was determined to be 45 L/s (2,700 L/min). Detailed fire flow calculations per the OFM methodology are provided in **Appendix B2**.



## 3.3 Level of Servicing

### 3.3.1 Boundary Conditions

The estimated water and fire flow demands were used to define the level of servicing required for the maintenance building from the municipal watermain and hydrants within the Bank Street ROW. **Table 3.2** below outlines the boundary conditions for the proposed connections at Bank Street servicing the site provided by the City of Ottawa on February 7<sup>th</sup>, 2025, based on a maximum available flow of 2 L/s (see **Appendix B.3**).

*Table 3.2: Bank Street Boundary Conditions*

	Bank Street
Min. HGL (m)	159.2
Max. HGL (m)	165.2

### 3.3.2 Water Quantity Storage Requirements

The provided boundary conditions indicated that there are limited available flows in the pressure zone, thus additional on-site storage is required to accommodate the fire flow requirements. The building and two add-ons were evaluated separately for fire flow volume requirements, resulting in a total volume of 72,661 L needed for fire flow.

Per Technical Bulletin IWSTB-2024-05, with a required fire flow of 2,700 L/min, the storage tank volume can be reduced by 57,000 L. Given the resulting volume of 15,661 L is less than the minimum permitted storage tank volume of 38,000 L, the final storage tank volume for fire flows demands to service the site is 38,000 L.

## 3.4 Proposed Water Servicing

The development will be serviced from the existing 400 mm diameter watermain on Bank Street via a 50 mm diameter service connection for domestic water demands, and fire flow demands will be provided by an on-site storage tank. The sizing of the service connection is to be confirmed by the mechanical consultant.

The proposed water servicing is shown on **Drawing RSGP-1**. Based on the City of Ottawa Water Design Guidelines, the provided boundary conditions, and OBC guidelines, the proposed servicing will provide sufficient water supply for domestic and fire flow demands.



## **4 Wastewater Servicing**

Paterson Group have completed the sewage system replacement designs for the site, which is summarized in their Sewage System Layout Plan (PH4841-1 and PH4841-2) attached in the permit issued by the Rideau Valley Conservation Authority (RVCA) for the site's proposed septic sewage system under Permit No. 25-015 (see **Appendix C**). The proposed location of the sewage system is identified on Stantec's servicing and grading plans in **Drawing RSGP-1**.

Paterson determined the sewage system design flow for the proposed development is 450 L/day. Paterson states that adequate septic system size and separation distances have been provided from the proposed onsite well, building, and municipal ROW so that the construction of the on-site sewage system adheres to the Ontario Building Code; and will not impact water quality associated with the drilled well. Detailed layout of their proposed sewage system can be found in Paterson Group's Drawings No. PH4841-1 and PH4841-2.

Paterson Group has designed the septic system to have a 3,600 L (min) septic tank followed by an Eljen specified Geotextile Sand Filter (GSF) style of septic field. The septic system has an infiltration-based outlet, with entirely subsurface discharge. Sufficient grades, slopes, and cover have been provided over the septic tank and weep field such that Paterson has designed a gravity-drainage septic system with no requirements for a sump or pump. Paterson has indicated the ultimate outlet will be the base of the topsoil layer at the property line. Further information on the septic design can be found in the Septic Permit.



## **5     Stormwater Management and Servicing**

### **5.1   Objectives**

The following section describes the stormwater management (SWM) design for the 5360 Bank Street site in accordance with the background documents.

### **5.2   Stormwater Management (SWM) Criteria**

The following summarizes the SWM criteria and constraints that will govern the detailed design of the proposed site as per the latest revision of the City of Ottawa Sewer Design Guidelines.

#### **General**

- Use of the dual drainage principle (City of Ottawa SDG)
- Wherever feasible and practical, site-level measures should be used to reduce and control the volume and rate of runoff (City of Ottawa SDG)
- Assess impact of 100-year event outlined in the City of Ottawa Sewer Design Guidelines on the major and minor drainage systems (City of Ottawa SDG)

#### **Storm Sewer & Inlet Controls**

- Post-development peak flows must not exceed the pre-development peak flows under the 2-year and 100-year storm events. (City of Ottawa pre-consultation, **Appendix A**)
- The John Boyce Municipal Drain crosses the site at the west and has been identified as the preferred stormwater outlet for the site, modifications to the drain must follow the procedure set by Municipal Drainage staff (City of Ottawa pre-consultation)
- $T_c$  should be not less than 10 minutes since IDF curves become unrealistic at less than 10 min (City of Ottawa SDG).

#### **Surface Storage & Overland Flow**

- Building openings to be a minimum of 0.15 m above the 100-year water level (City of Ottawa SDG)
- Maximum depth of flow under either static or dynamic conditions shall be less than 0.35 m (City of Ottawa SDG)
- Provide adequate emergency overflow conveyance off-site with a minimum vertical clearance of 15 cm between the spill elevation and the ground elevation at the building envelope in the proximity of the flow route or ponding area (City of Ottawa SDG)



## 5.3 Existing Conditions

Pre-consultation notes with the City of Ottawa identify that the City of Ottawa does not have on record any building permits for the subject site from 2002 onward. As such, existing conditions on-site have been assumed as the works present on-site based on photographic references from that timeframe.

The existing site (6.38 ha) is presently composed of a mixture of paved, gravel, and grassed surfaces with scattered small buildings. The easterly portion of the site (Areas EX-5 and EX-6) sheet drains largely overland to the southeast towards the existing roadside ditch within Bank Street. Surface runoff is also accepted from a substantial offsite area north of the subject property (existing cemetery lands identified as area EXT-1), as well as smaller portions to the northeast and south (EXT-4 and EXT-3). Runoff from remaining lands is directed overland to the John Boyce Municipal Drain via surface swale either via the northerly property line (Area EX-1), across the western property line (Area EX-2), or via a small surface swale to the south (Areas EX-3, EX-4, and off-site contributing area EXT-2).

The Rational Method was employed to assess the peak rate of runoff anticipated from existing catchment areas during design rainfall events. A summary of the existing catchment areas and runoff coefficients is provided in the table below.

*Table 5.1: Summary of Existing Subcatchment Areas*

Catchment Areas	A (ha)	C	Flow Type	Outlet
EX-1	0.36	0.54	Uncontrolled	John Boyce Drain
EX-2	1.07	0.41		John Boyce Drain
EX-3	0.51	0.44		John Boyce Drain
EX-4	0.22	0.20		John Boyce Drain
EX-5	0.26	0.59		Bank St. Ditch
EX-6	2.04	0.33		Bank St. Ditch
EXT-1	1.74	0.27	External Contributing Areas	Bank St. Ditch
EXT-2	0.06	0.20		John Boyce Drain
EXT-3	0.08	0.41		Bank St. Ditch
EXT-4	0.04	0.90		Bank St. Ditch
Total	<b>6.38</b>	0.36	-	-

An estimated time of concentration was developed for easterly regions tributary to their singular outlet to the Bank Street roadside ditch, with calculations included as part of **Appendix D**. Additional time of concentration calculations were provided for the next largest subcatchment area EX-2, but were found to be governed by the minimum time of concentration of 10 minutes which has been applied for all remaining subcatchment areas.

Estimated peak runoff from the 2-year and 100-year design storm events has been summarized in the tables below. Runoff coefficients have been increased for the 100-year event by 25% per the City of Ottawa's Sewer Design Guidelines.



Table 5.2: 2-Year Peak Pre-Development Runoff

Catchment Areas	A (ha)	C	Tc (min)	I (mm/hr)	Q (L/s)
EXT-1, -3, -4, EX-5, -6	4.16	0.33	37.2	34.57	131.9
EXT-2	0.06	0.20	10	76.81	2.6
EX-1	0.36	0.54	10	76.81	41.5
EX-2	1.07	0.41	10	76.81	93.6
EX-3	0.51	0.44	10	76.81	47.9
EX-4	0.22	0.20	10	76.81	9.4
<b>Total</b>	<b>6.38</b>	<b>0.36</b>	-	-	<b>326.9</b>

Table 5.3: 100-Year Peak Pre-Development Runoff

Catchment Areas	A (ha)	C	Tc (min)	I (mm/hr)	Q (L/s)
EXT-1, -3, -4, EX-5, -6	4.16	0.41	37.2	79.12	377.4
EXT-2	0.06	0.25	10	178.56	7.4
EX-1	0.36	0.68	10	178.56	120.5
EX-2	1.07	0.51	10	178.56	272.0
EX-3	0.51	0.55	10	178.56	139.1
EX-4	0.22	0.25	10	178.56	27.3
<b>Total</b>	<b>6.38</b>	<b>0.45</b>	-	-	<b>943.7</b>

## 5.4 Stormwater Management Design

It is proposed to provide on-site storage to retain runoff in excess of that noted from pre-development conditions for the matching 2 and 100-year design storm events.

The Modified Rational Method was employed to assess the rate and volume of runoff anticipated during post-development rainfall runoff events for areas with stormwater management (SWM) volume controls, and the Rational Method for areas to remain without SWM volume controls. The site was subdivided into sub-catchments (subareas) as defined by the proposed grades and the location, nature, or presence/absence of inlet control devices (ICDs). Each sub-catchment was assigned a runoff coefficient based on the proposed finished surface. A summary of subareas and runoff coefficients is provided in **Table 5.4** below. Further details can be found in **Appendix D**, while **Drawing SD-1** illustrates the proposed sub-catchments.

Table 5.4: Summary of Proposed Subcatchment Areas

Catchment Areas	A (ha)	C	Flow Type	Outlet
S-1	0.36	0.54	Uncontrolled	John Boyce Drain
S-2	0.82	0.67	Controlled	SWM Facility
S-3	0.81	0.65	Controlled	SWM Facility
S-4	0.17	0.28	Uncontrolled	John Boyce Drain
S-5	0.26	0.79	Uncontrolled	Bank St. Ditch
S-6	2.04	0.34	Uncontrolled	Bank St. Ditch



EXT-1	1.74	0.27	External Contributing Areas	Bank St. Ditch
EXT-2	0.06	0.20		John Boyce Drain
EXT-3	0.08	0.41		Bank St. Ditch
EXT-4	0.04	0.90		Bank St. Ditch
Total	<b>6.38</b>	0.43	-	-

### 5.4.1 Quantity Control Storage Requirements

A summary of peak runoff from uncontrolled development areas for the 2 and 100-year design storm events is provided in the tables below and using a re-calculated time of concentration estimate for easterly site areas based on proposed site runoff coefficients.

*Table 5.5: 2-Year Peak Post-Development Runoff (Uncontrolled)*

Catchment Areas	A (ha)	C	Tc (min)	I (mm/hr)	Q (L/s)
EXT-1, -3, -4, S-5, -6	4.16	0.35	36.4	34.57	141.9
EXT-2	0.06	0.20	10	76.81	2.6
S-1	0.36	0.54	10	76.81	41.5
S-4	0.17	0.28	10	76.81	10.2
<b>Total</b>	<b>4.75</b>	-	-	-	<b>196.2</b>

*Table 5.6: 100-Year Peak Post-Development Runoff (Uncontrolled)*

Catchment Areas	A (ha)	C	Tc (min)	I (mm/hr)	Q (L/s)
EXT-1, -3, -4, S-5, -6	4.16	0.44	36.4	79.12	406.1
EXT-2	0.06	0.25	10	178.56	7.4
S-1	0.36	0.68	10	178.56	120.5
S-4	0.17	0.35	10	178.56	29.5
<b>Total</b>	<b>4.75</b>	-	-	-	<b>563.5</b>

The site requires quantity control measures to meet the restrictive stormwater release criteria. It is proposed that the discharge from the remaining portions of the site constituting most of the redevelopment between 2002-present (areas S-2 and S-3) be collected and routed to an end-of-pipe sand filter with an additional storage depth above the filter to control peak runoff. The proposed filter measures 3m in width by 13.8m in length.

The sand filter is equipped with a clear stone drainage layer and 100mm perforated drainage pipe to permit captured & filtered runoff to be directed through a singular catch basin outlet structure located within the filter itself. The bottom of the filter drainage layer is to incorporate an impermeable membrane to prevent groundwater contamination. The catch basin is to incorporate an inlet control device (circular orifice plate) to control runoff to the site pre-development release rate less than from uncontrolled areas. The rim of the catch basin has been set to permit additional overflow from larger rainfall events (beyond the 2-year event) to provide additional flow capture for the 100-year storm. Flow capture for the catch basin grate has been



estimated based on design chart 4.19 of the MTO's Drainage Management Manual, included within **Appendix D**.

A spreadsheet using the Modified Rational Method (MRM) was used to size the filter quantity storage, as shown in **Appendix D.2**. Filter quantity storage includes both surface storage as well as that within the filter media, with an assumed media porosity of 0.4. Prior correspondence with South Nation Conservation has identified the 100-year floodplain elevation in proximity to the site's proposed controlled stormwater outlet of 105.66, as such, the filter outlet pipe and filter bottom has also been set with an elevation of 105.66 to avoid impacts to the existing floodplain.

Catchment areas EXT-1, EXT-3, EXT-4, as well as S-5 and S-6 contribute to a proposed cut-off swale located south of the existing access road for the property. At the point where the majority of subcatchment runoff converges (conservatively assumed as mid-way up the access road), the ditch is proposed as a 3:1 sloped triangular section with an overall depth of 0.4m and longitudinal slope of 0.5%. Based on channel capacity calculations included in **Appendix D**, the proposed channel is able to convey the 100-year storm runoff without spillage to the Bank Street roadside ditch per existing conditions.

Summation of the controlled and uncontrolled release rates from the site in comparison to existing pre-development allowable flows is identified in the tables below.

*Table 5.7: Summary of Total 2-Year and 100-Year Event Release Rates*

Drainage areas	2-year Peak Discharge (L/s)	100-Year Peak Discharge (L/s)
Uncontrolled	196.2	563.5
Controlled	128.0	373.1
<b>Target (L/s)</b>	<b>326.9</b>	<b>943.7</b>
<b>Total (L/s)</b>	<b>324.2</b>	<b>936.6</b>

## 5.4.2 Quality Control

Pre-consultation with City of Ottawa staff has identified the requirements for quality control measures to meet Enhanced Level treatment (80% long-term total suspended solids removal). The site is proposed to incorporate a sand filter for quality control of runoff from westerly sections of the site, and a proposed oil/grit separator in tandem with a shallow enhanced grassed swale incorporating rock check dams to permit quality control of easterly site areas.

Using a fine particle size distribution and the Stormceptor Sizing Tool, a Stormceptor model EFO4 has been selected for the proposed manhole at the easterly side areas (area S-5) and will achieve 93 % TSS removal, exceeding the minimum required TSS removal level of 80%. The detailed Stormceptor sizing report is included in **Appendix D**. The OGS unit has been considered as an example only. Other OGS products or treatment systems with equivalent TSS removal capabilities may also be selected based on the input parameters noted within the Stormceptor sizing report. The grassed swale and rock check flow dams



downstream of the proposed OGS unit are anticipated to provide further polishing to further ensure runoff meets enhanced levels of quality control.

The proposed sand filter has been sized to ensure full capture of runoff from the 2-year storm event without inflows reaching the elevation of the overflow CB grate elevation of 107.75m (61m<sup>3</sup> per Modified Rational Method calculation sheet). Per Table 3.2 of the MECP's Stormwater Management Planning & Design Manual, required quality storage to meet enhanced (80%) TSS removal are estimated as 35m<sup>3</sup>/ha (for a conservative level of imperviousness of 70%, which is slightly above that currently proposed) of contributing area for an infiltration type SWMP, or approximately 57m<sup>3</sup> for subcatchment areas S-2 and S-3. As such, sufficient storage exists within the proposed sand filter to meet enhanced levels of quality control for westerly site areas.



## **6 Site Grading**

The proposed site measures approximately 4.46 ha in area and comprises of the garage, maintenance, and storage buildings. The topography across the site generally slopes southward towards the maintenance and storage buildings to the John Boyce Municipal Drain, which runs along the west and southwest perimeter of the site.

The removals, servicing, grading and re-instatement plan (see **Drawing RSGP-1**) has been provided to satisfy the stormwater management requirements as detailed in **Section 5**, and provide for minimum cover requirements for storm sewers where possible. Site grading has been established to provide emergency overland flow routes required for stormwater management.

## **7 Utilities**

Accessible overhead (OH) hydro wires run north-south along the western side of the Bank Street right-of-way. The existing utility poles within the public right of way and along the site private access are to be protected during construction.

As the site is currently serviced via existing buildings to remain, no new off-site utility infrastructure is anticipated for the development. Existing overhead wires and utility plant may need to be temporarily moved/reconfigured to allow sufficient clearance for the movement of heavy machinery required for construction. Any relocation of existing utilities will be coordinated with the individual utility providers upon design circulation.



## **8      Approvals**

The proposed development is industrial in nature, therefore the site will require an Environmental Compliance Approval (ECA) from the Ministry of the Environment, Conservation and Parks (MECP) with respect to stormwater management works on-site. In addition, modifications within 15m of the 100 year floodplain of the adjacent municipal drain will require a permit from SNC.

For ground or surface water volumes being pumped during the construction phase, typically between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). It is possible that groundwater may be encountered during excavation on this site. A minimum of two to four weeks should be allotted for completion of the EASR registration and the preparation of the Water Taking and Discharge Plan by a Qualified Person as stipulated under O.Reg. 63/16. An MECP Permit to Take Water (PTTW), which is required for dewatering volumes exceeding 400,000L/day, is not anticipated for the site.

The South Nation Conservation Authority (SNCA) has issued a permit for the site's proposed septic sewage system – see **Appendix C** for details.



## 9 Erosion and Sediment Control During Construction

To protect downstream water quality and prevent sediment build-up in catch basins and storm sewers, erosion and sediment control measures must be implemented during construction. The following recommendations will be included in the contract documents and communicated to the Contractor.

1. Implement best management practices to provide appropriate protection of the existing and proposed drainage system and the receiving water course(s).
2. Limit the extent of the exposed soils at any given time.
3. Re-vegetate exposed areas as soon as possible.
4. Minimize the area to be cleared and grubbed.
5. Protect exposed slopes with geotextiles, geogrid, or synthetic mulches.
6. Install silt barriers/fencing around the perimeter of the site as indicated in **Drawing ECDS-1** to prevent the migration of sediment offsite.
7. Install track-out control mats (mud mats) at the entrance/egress to prevent migration of sediment into the public ROW.
8. Provide sediment traps and basins during dewatering works.
9. Install sediment traps (such as SiltSack® by Terrafix) between catch basins and frames.
10. Schedule the construction works at times which avoid flooding due to seasonal rains.

The Contractor will also be required to complete inspections and guarantee the proper performance of their erosion and sediment control measures at least after every rainfall. The inspections are to include:

- Verification that water is not flowing under silt barriers.
- Cleaning and changing the sediment traps placed on catch basins.

Refer to **Drawing ECDS-1** for the proposed location of silt fences, sediment traps, and other erosion control measures.



## 10 Geotechnical Investigation

A preliminary aggregate resource study was prepared by Paterson Group on August 21, 2014, to provide an assessment of the viability of the remaining lands adjacent to the existing mining area. The lands subject to the study were considered for a new commercial subdivision development. Five (5) test pits were put down in May and August 2014. Excerpts from the geotechnical investigation report are attached in **Appendix E**.

The subsurface profile encountered at the test pit locations are characterized primarily by topsoil layer overlying a thin layer of sand and gravel deposits containing silt and clay overlying poorly sorted glacial till deposits, in turn underlain by dolomitic bedrock of the Oxford Formation at shallow depth. Groundwater was encountered at depths ranging from 1.7 m to 4.5 m, though groundwater levels are subject to seasonal fluctuations, with higher levels being encountered during prolonged wet periods.

Based on Paterson's recommendations, while there are no quality aggregate remaining in place, and given the existing commercial land use in the surrounding area, it is their opinion that the geotechnical conditions at the site are suitable for commercial subdivision development.

Refer to the full geotechnical report attached as part of the submission package.



## 11 Conclusions

### 11.1 Water Servicing

Based on the supplied boundary conditions and calculated domestic and fire flow demands for the subject site, the adjacent watermain on Bank Street has sufficient capacity to sustain the required domestic demands for the site. The fire flow demands will be provided by an on-site storage tank to supplement the water supply and meet OBC requirements. The building's domestic water supply will be provided by a 50 mm diameter water service connection to the existing 400 mm watermain on Bank Street. Sizing of the water service is to be confirmed by the mechanical consultant.

### 11.2 Wastewater Servicing

A new sewage (septic) system will be established to support the occupancy, and usage demands of the subject site, as designed by Paterson Group. The existing septic system on site will be decommissioned.

### 11.3 Stormwater Servicing and Management

An on-site private storm sewer network with pipe diameters ranging from 300 mm to 450 mm is proposed to convey discharge from the redevelopment area to an end-of-pipe sand filter equipped with a clear stone drainage layer and 100 mm perforated drainage pipe with a catch basin incorporating an inlet control device, as per **Drawing RSGP-1** and **SD-1**. An Oil/Grit separator and in-ditch rock check dams are proposed to provide quality control for uncontrolled runoff from easterly portions of the site.

### 11.4 Grading

Site grading has been designed to provide an adequate emergency overland flow route. The site maintains two drainage paths; south to the adjacent John Boyce Municipal Drain and east to the Bank Street roadside ditches as per existing conditions.

### 11.5 Erosion and Sediment Control During Construction

Erosion and sediment control measures and best management practices outlined in this report and included in the drawing set will be implemented during construction to reduce the impact on adjacent properties, the public ROW, and existing facilities.

### 11.6 Utilities

The site is situated within an established neighbourhood, and as the existing buildings are serviced by existing utility infrastructure, no new utilities are proposed. Overhead wires along all boundaries of the site will need to be accommodated during construction.



## **11.7 Approvals**

The proposed development is industrial in nature; therefore the site will require an Environmental Compliance Approval (ECA) from the Ministry of the Environment, Conservation and Parks (MECP) with respect to stormwater management works on-site. For the expected dewatering needs of 50,000 to 400,000 L/day, the proponent will need to register on the MECP's Environmental Activity and Sector Registry (EASR). A Permit to Take Water, for dewatering needs in excess of 400,000 L/day, is not anticipated for this site.



# Appendices



## Appendix A Background Correspondence



Tracy Zander  
ZanderPlan Inc.  
Via email: tracy@zanderplan.com

**Subject: Phase 2 Pre-Consultation: Meeting Feedback  
Proposed Zoning Amendment and Site Plan Control Applications –  
5360 Bank St**

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on January 17, 2024.

### **Pre-Consultation Preliminary Assessment**

1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input checked="" type="checkbox"/>
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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

### **Next Steps**

1. A review of the materials submitted for the above-noted pre-consultation has been undertaken and staff are satisfied that the information is consistent with previous direction provided and sufficient to move to a Phase 3 pre-consultation.
  - a. Please note that we can only discuss and evaluate the Zoning By-law Amendment as part of the Phase 3 pre-consultation. We cannot host the Phase 3 pre-consultation for the Site Plan Control until the property and proposed development is zoning compliant, meaning the new zone must be in full force.
2. Please note that if your development proposal changes significantly in scope, design, or density between the Phase 2 pre-consultation review and Phase 3 pre-consultation submission, you may be required to repeat the Phase 2 pre-consultation process.
3. In your Phase 3 pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein

### **Supporting Information and Material Requirements**



1. The attached **Study and Plan Identification List** outlines the information and material that has been further identified and/or confirmed, during this phase of pre-consultation, as required (R) or advised (A) as part of a future complete application submission.
  - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on [Ottawa.ca](http://Ottawa.ca). These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
  - b. A separate **Study and Plan Identification List** has been provided for each application.

## **Planning**

### **List of Studies and Plans Reviewed:**

- Pyper Severance Sketch for Lot Addition**, 5360 Bank Street, , prepared by ZanderPlan, dated December 6, 2022.
- Chronological History, 5360 Bank Street, Consent Application/Zoning By-law Amendment, Bredon Developments Inc.**, prepared by Gary McLaren, dated November 22, 2023.
- Response to Pre-application consultation notes from January 10, 2023**, prepared by ZanderPlan, dated January 3, 2024.
- Environmental Impact Statement – Land Severance Application – 5360 Bank Street**, prepared by Gemtech, dated February 2, 2022.
- Preliminary Aggregate Resource Study**, prepared by Paterson Group Inc., revision dated August 21, 2014.
- Phase One Environmental Site Assessment**, prepared by Gemtec Engineers and Scientists Ltd., dated October 2, 2023.

### **Deficiencies:**

1. The plans and reports provided do not adhere to the terms of reference. They must be updated to include all items listed in the terms of reference for both applications.

### **Comments:**

### **File History**

- C1. The subject site was approved for a lot line adjustment on February 10, 2023, to convey the back portion of the property zoned ME to the property abutting the rear lot line to consolidate mineral extraction lands. During review of the Consent Application, staff discovered that several buildings did not have building permits and several land uses were not permitted by the Zoning By-law. As such, a condition of approval was imposed that required the applicant provide evidence that all buildings have permits and the property is zoning compliant. This requires a Zoning By-law Amendment.
- C2. Staff hosted a pre-consultation on January 10, 2023, to discuss the proposed Zoning By-law Amendment. Staff confirmed during the meeting that we do not have any permits on record from 2002 onward, meaning that the addition to the maintenance garage and any structures built since then would require building permits. If structures are temporary, they require temporary building permits and must be removed by a specified date. Staff also confirmed the cumulative size of all buildings trigger Site Plan Control.

### Proposal

- C3. The applicant's intent is to regularize the existing buildings through Site Plan Control and building permits and rezone the property such that all existing uses are permitted. The applicant does not intend to change any buildings and land uses.
- C4. It was noted during the meeting that the applicant may wish to further diversify business operations in the future and potentially introduce new land uses as part of the rezoning application. The applicant did not specify which new land uses may be introduced. It is understood that these potential changes would be reflected in the rezoning application but not Site Plan Control as it is unknown exactly when these changes would occur.
  - i) Please note that if the list or scope of proposed land uses changes from those discussed during the pre-consultation meeting, another Phase 2 pre-consultation meeting might be required for the Zoning By-law amendment.

### Official Plan – Designation

- C5. The subject site is designated Rural Countryside by Official Plan Schedule B9. The intent of this designation is to accommodate a variety of land uses that are appropriate for a rural location, limiting the amount residential development, and support industries that serve local residents and the travelling public.
- C6. As per Official Plan policy 9.2.2(2)(b), small scale light industrial and commercial uses may be permitted through a Zoning By-law amendment where all of the following criteria are met:
  - i) The uses are necessary to serve the local rural community or the travelling public, such as restaurant, gas station, private medical or medical related-clinics, veterinary services, personal service or motel;

- ii) The lands are within 200 metres of an arterial or collector road and can be safely accessed;
- iii) The lands are located beyond 1 kilometre of an Urban or Village boundary, or where located less than 1 kilometre from a Village boundary, it can be demonstrated that there is insufficient opportunity for these types of uses to be established within the Village;
- iv) The lands are not adjacent to lands designated as Agricultural Resource Area;
- v) The development can be supported by services available according to applicable provincial regulations;
- vi) The scale of the development is suitable for a rural context and where the size of each commercial occupancy will not exceed 300 square metres of gross leasable floor area; and
- vii) The proposed development is designed to minimize hazards between the road on which it fronts and its vehicular points of access, mitigate incompatibilities with adjacent residential uses and to
- viii) integrate appropriately with rural character and landscape.

#### Official Plan – Watercourse Policies

C7. John Boyce Municipal Drain runs through the property. This drain is considered a watercourse by the Official Plan and as such, the following policies from Official Plan section 4.9.3 are applicable.

- 1) Where a Council-approved watershed, subwatershed or environmental management plan does not exist, or provides incomplete recommendations, the minimum setback from surface water features shall be the greater of the following:
  - a) Development limits as established by the conservation authority's hazard limit, which includes the regulatory flood line, geotechnical hazard limit and meander belt;
  - b) Development limits as established by the geotechnical hazard limit in keeping with Council-approved Slope Stability Guidelines for Development Applications;
  - c) 30 metres from the top of bank, or the maximum point to which water can rise within the channel before spilling across the adjacent land; and
  - d) 15 metres from the existing stable top of slope, where there is a defined valley slope or ravine.
- 2) Lands within the minimum setback shall remain in a naturally vegetated condition to protect the ecological function of surface water features from adjacent land-use impacts, subject to the exceptions in Policies 6) and 7). Any natural vegetation that is disturbed due to development or site alteration activities shall be restored and enhanced, to the greatest extent possible, with

native species and shall avoid non-native invasive species. Burial or complete encasement of a permanent surface water feature shall not be allowed.

- 7) Exceptions to the setbacks in Policy 2) shall be considered by the City in consultation with the conservation authority in situations where development is proposed on existing lots where, due to the historical development in the area, it is impossible to achieve the minimum setback because of the size or location of the lot, approved or existing use on the lot or other physical constraint, providing the following conditions are met to the City's satisfaction:
  - a) The ecological function of the site is restored and enhanced, to the greatest extent possible, through naturalization with native, non-invasive vegetation and bioengineering techniques to mitigate erosion and stabilize soils; and
  - b) Buildings and structures are located, or relocated, to an area within the existing lot that improves the existing setback, to the greatest extent possible, and does not encroach closer to the surface water feature.

#### Official Plan – Natural Heritage Features

- C8. The watercourse and some of the woodlands are considered natural features by the Official Plan as shown on Schedule C11-C. The following policies from Official Plan section 5.6.4.1 are some of the applicable policies:
  - 3) The City shall protect natural heritage features for their natural character and ecosystem services.
  - 4) Development or site alteration proposed in or adjacent to natural heritage features shall be supported by an environmental impact study prepared in accordance with the City's guidelines.
  - 5) Development and site alteration shall have no negative impact on the Natural Heritage System and Natural Heritage Features. Development and site alteration shall be consistent with the conclusions and recommendations of an approved environmental impact study.

#### Official Plan – Septic System Requirements

- C9. The subject site is currently serviced by private septic system and well. It is anticipated that the site will connect to the municipal water main along Bank Street as part of these applications. The site will continue to use a septic system to treat wastewater.
- C10. Official Plan policy 4.7.2(9) states:
  - 9) Where new development is proposed that relies upon private sewage systems, including areas of partial servicing, a minimum area of 800 square metres of undeveloped area must be maintained for the sewage system.

### Official Plan – 1:100 Year Flood Plain

C11. There is a 1:100 year flood plain on the property surrounding the watercourse.

C12. Official Plan policy 10.1.1(1) states:

- 1) Development and site alteration shall not be permitted in the 1 in 100 year flood plain or in an erosion hazard area.

C13. Official Plan policy 10.1.1(3) states:

- 3) Notwithstanding Policy 1) and 2), some minor development and site alterations may be permitted. Minor development and site alterations are defined as the following:
  - a) Facilities which by their nature must locate in the flood plain, such as bridges, flood and/or erosion control works;
  - b) Minor additions and/or renovations to existing structures, which do not affect flood flows, meet appropriate floodproofing requirements and are supported by the appropriate conservation authority;
  - c) The replacement of a dwelling that was in existence at the date of adoption of this Plan, with a new dwelling where:
    - i) The new dwelling is generally the same gross floor area as the existing dwelling;
    - ii) The new dwelling is in a location on the lot that has lower flood risk than the existing dwelling;
    - iii) The new dwelling, in conjunction with any site alteration does not result in a negative effect on flooding; and
    - iv) The new dwelling and any associated site alteration shall meet the appropriate floodproofing requirements and be supported by the appropriate conservation authority.
  - d) Passive open spaces which do not affect flood flows;
  - e) Minor site alterations which do not result in a negative effect on flooding and which are supported by the appropriate conservation authority; and .
  - f) The severance of a lot containing a surplus farm dwelling as permitted by the provisions of Subsection 9.1.3 provided that safe access to the dwelling or the retained parcel is not eliminated during the regulatory flood event.

### Official Plan – 1:350 Year Flood Plain

C14. A small portion of the property is within the 1:350 year flood plain and as such, policy 10.1.3(3) applies:

- 3) Where lands located in a climate change flood vulnerable area are subject to site plan control or plan of subdivision applications, flood risk will be evaluated, and mitigation measures will be applied as part of the planning and design of the site. These measures will be determined through the servicing studies required as part of the development approvals process.

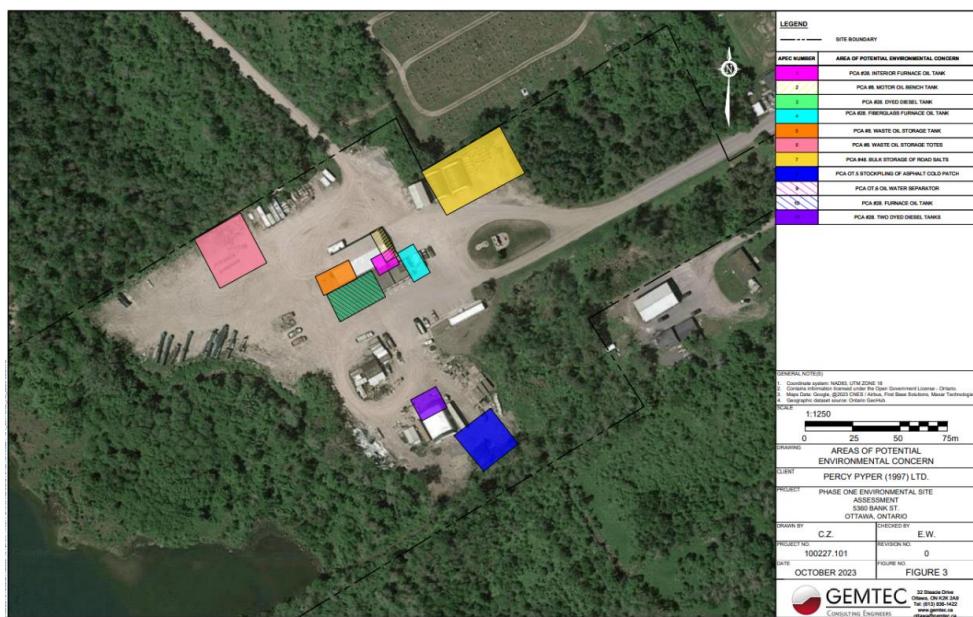
C15. The 1:350 flood plain primarily follows the 1:100 flood plain except for a small area near the south lot line as shown below. This area is identified in the Phase 1

ESA as storage for a potential contaminant. We recommend relocating this storage area to satisfy the 1:350 flood plain policy as well as the watercourse policies above.

GeoOttawa



## Phase 1 ESA



## Official Plan – Aggregate Overlay

C16. The subject site abuts a Sand and Gravel Overlay to the north as shown on Schedule B9 of the Official Plan. Official Plan policies 5.6.3.2(3 and 4) states:

3) New development shall not be approved within 500 metres of lands within the Bedrock Resource Area Overlay, or within 300 metres of lands within the Sand and Gravel Resource Area Overlay, unless it can be demonstrated through a mineral aggregate impact assessment that such development shall not conflict with future mineral aggregate extraction. Conflicting land uses are new sensitive land uses that interfere with mineral aggregate extraction, including but not limited to:

- a. The creation of new lots; except where the intention is to sever a lot for a dwelling existing as of July 9, 1997 and the vacant parcel that remains is rezoned to prohibit the construction of a new dwelling or lodging place;
- b. Rezoning to permit dwellings or lodging places (motels, campgrounds, nursing homes, places of assembly etc.); and
- c. Small-scale business uses where animals, equipment or employees may be adversely affected by pit or quarry activities.

4) New development may be approved within 500 metres of an existing licensed bedrock quarry or within 300 metres of an existing sand and gravel pit if it can be demonstrated that the existing mineral aggregate operation, and potential future expansion of the operation in depth or extent, will not be affected by the development.

#### Zoning By-law

C17. The subject site is currently zoned ME2 – Mineral Extraction Zone, Subzone 2 and RU – Rural Countryside Zone. All structures and land uses contemplated in this pre-consultation are entirely within the RU zone which does not permit the current land uses.

C18. The site was previously zoned ME which permitted a quarry, sand or gravel pit, agriculture, and/or forestry. Repair and maintenance of industrial vehicles was a conditionally permitted use provided there was an active mineral extraction license. If the applicant wants to prove any land use enjoys legal non-conforming status, such as the storage yard, the applicant must provide the previous pit license proving the land uses were permitted by the license.

#### Submission requirements – Zoning By-law Amendment

C19. Staff strongly recommended preparing a written strategy for how building permits will be obtained for each building as some buildings might have to be relocated to satisfy building code requirements. This is particularly important to figure out before the rezoning and site plan control applications to ensure that approved applications will not conflict with building code requirements.

- i) Building Code Services can review the written strategy as part of the Phase 3 pre-con and provide feedback.
- ii) Please note approval of a rezoning and/or site plan control application does not mean approval for a building permit (i.e. just because we approve a site plan does not mean the plan satisfies building code requirements such as fire spacing between buildings).
- iii) Please note that if a Site Plan Control application is approved and it is discovered that building code issues require moving a building, the Site

Plan Control approval might have to be amended through another application.

- C20. A **Planning Rationale** is required for the Zoning By-law Amendment. The Planning Rationale should provide clear justification for each land use and any limitations given the constraints such as woodlands, watercourse, and flood plain. For example, the rationale should include an analysis of the storage yard and whether it should remain in its currently location and proximity to the watercourse given the Official Plan policies mentioned above. The rationale should also demonstrate that the proposed zoning amendment satisfies the other policies listed above as well as the Official Plan in general and Provincial Policy Statement.
- C21. The **Planning Rationale** should clearly define each proposed principal and accessory/ancillary land uses. For example, it appears that there are several principal land uses such as a storage yard, heavy equipment maintenance garage, and warehouse that should be discussed in the Planning Rationale. There are also other uses that may be principal uses such as an office for a construction company and a parking lot for mineral extraction employees who park on this site before heading into the sand and gravel pit.
  - i) The Planning Rationale should identify any provisions that are appropriate for the proposed land uses. For example, if a parking lot is proposed as a principal use, the rationale should state whether any limiting provisions are also proposed, such as limiting the parking lot to employee parking for the adjacent pit.
- C22. The **Planning Rationale** should discuss appropriate setbacks from lot lines. For example, is the current 2.1m setback from the salt dome to the interior lot line appropriate.
- C23. A **Zoning Confirmation Report** is required for the Zoning By-law Amendment and should clearly identify all zoning compliance issues which includes permitted uses and setbacks.
- C24. A **Concept Plan** is required for the Zoning By-law Amendment and should clearly identify each proposed principal and accessory/ancillary use. For example, this plan should distinguish the storage yard from parking spots and illustrate the parking required for each use (i.e. office, maintenance garage, warehouse).
- C25. A **Survey** is required for all applications.

#### Submission Requirements – Site Plan Control

- C26. Several comments above for the Zoning By-law amendment are also applicable to the Site Plan Control application, particularly the need to demonstrate the appropriateness of each land use and building given the site constraints.



- C27. A **Site Plan** is required for the Site Plan Control application. The Site Plan must adhere to the terms of reference.
- C28. A **Landscape Plan** is required. We strongly recommend additional tree plantings wherever possible, particularly along parking spots and any outdoor amenity areas.
- C29. A **Survey** is required for all applications. The survey normally is required to show the required road protection. Road widening was also requested as a condition of approval for the lot line adjustment application.
- C30. **Building Elevations** might be required depending on if buildings will be relocated.
- C31. A **Zoning Confirmation Report** is required and should demonstrate compliance with the new zone. This report should be prepared after the new zone is in full effect.

Feel free to contact Sean Harrigan, File Lead, for follow-up questions.

## **Urban Design**

Comments:

- C32. A Design Brief is not required due to no new structures proposed.
- C33. A Site Plan and Landscape Plan will be required. The Site Plan must show parking stalls, all existing structures and site elements, setbacks from all structures to property lines and meet the City's terms of reference for applicable studies.
- C34. Building Elevations will not be required unless future submissions demonstrate buildings must be relocated or new structures are proposed. For buildings that require relocation, building elevations would only be required for uses that are not currently permitted under the existing zoning.

Feel free to contact Molly Smith, Urban Design, for follow-up questions.

## **Engineering**

List of Studies and Plans Reviewed:

- Preliminary Aggregate Resource Study**, prepared by Paterson Group Inc., revision dated August 21, 2014.

- Phase One Environmental Site Assessment**, prepared by Gemtec Engineers Engineers and Scientists Ltd., dated October 2, 2023.

Deficiencies:

2. The MRIA provided as part of the consent application, *Preliminary Aggregate Resource Study*, prepared by Paterson Group, dated August 2014, does not meet the Terms of Reference for Mineral Aggregate Impact Assessment Studies.
3. The Phase One Environmental Site Assessment prepared by Gemtec identifies that a Phase Two Environmental Site Assessment will be required, but was not submitted at this time.
4. A Site Servicing Study was not submitted for review at this time. This will be required for the Zoning Amendment and Site Plan Control applications.
5. A Septic Impact Assessment was not submitted for review at this time. This will be required for the Zoning Amendment and Site Plan Control applications.

Comments:

- C35. The engineering requirements provided below are applicable to the current proposal, which does not consider any proposed development. Site Plan Control requirements would change if any work is deemed required.
- C36. A **Site Servicing Study** will be required with the Zoning By-law Amendment and the Site Plan Control application. This report should be completed exceeding the minimum requirements laid out in the Site Servicing Study Terms of Reference. The report will serve to address how the design of the site complies with City design guidelines and Official Plan policies, among other evaluation criteria noted in the Terms of Reference. The Official Plan, which receives authority through the Planning Act, identifies in Policy 6, section 2.2.3, that flooding is the costliest type of natural disaster in Canada. The risks of not implementing stormwater management practices could include damage to property, infrastructure, contamination of drinking water sources, and affecting people's safety, finances, physical and mental health. The City looks to lessen these risks by reviewing development to ensure stormwater management practices are being implemented, infrastructure is resilient to future climate conditions, including extreme weather events, and using low impact development where feasible to manage smaller, infrequent events.

- a. In terms of the Stormwater Management for the Site Plan Control application, the quantity criteria will be that the post development peak flow rate must match the pre-development peak flow rate for the 2-year and 100-year design events. The pre-development can be considered the site prior to installation of buildings which were installed without appropriate permits. As part of complete site plan control applications, whether development or redevelopment, must identify and mitigate the impacts of additional runoff resulting from increased imperviousness through measures such as site-specific stormwater management postulated in policy 6, section 4.7.1 of the Official Plan.
- b. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less as described in the Sewer Design Guidelines, Second Edition, document no. SDG002, October 2012, City of Ottawa, including technical bulletins ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, ISTB-2019-02, section 8.3.7.3.
- c. A calculated time of concentration cannot be less than 10 minutes as described in section 5.1.4 of the Sewer Design Guidelines.
- d. The John Boyce Municipal Drain crosses the site and should be contemplated in the Servicing Study. The reporting should discuss and contemplate the appropriate setbacks based on the engineer's report for the drain. Should any modifications to the drain be proposed, they must follow the procedure set out by the Municipal Drainage staff.
- e. The water quality control should be an enhanced level treatment, 80% long term suspended sediment removal. Reporting of TSS removal shall be extensive and if peer reviewed and published papers are relied on for conclusions, the conclusions shall be patently clear and the report shall show overwhelming agreement.
- f. Runoff will need to be conveyed to a legal and sufficient outlet. In the Zoning Amendment stage, the study should identify the proposed outlet(s) for surface

runoff. If it is proposed to discharge storm water to the existing ditches in the ROW, the ditches will need to be shown to provide continuous flow to an outlet. This comment is sourced from the Official Plan which notes in policy 8, section 4.7.1, that proof of legal and sufficient outlet for proposed stormwater management and drainage systems will be required as a condition of Site Plan Control.

- g. Low Impact Development (LID) is to be implemented as per the bulletin from the former MOECC (now MECP) titled Expectations RE: Stormwater Management released in February 2015. In the Zoning By-law, the applicant should identify the treatment train of processes proposed for the development. The Official Plan defines LID as a stormwater management strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff as close to its source as possible. LID comprises a set of site design strategies that minimize runoff through distributed, small scale structural practices that mimic natural or predevelopment hydrology through the processes of infiltration, evapotranspiration, harvesting, filtration and detention of stormwater. These practices can effectively remove nutrients, pathogens and metals from runoff, and they reduce the volume and intensity of stormwater flows. The City has released a document titled 'Low Impact Development Technical Guidance Report – Implementation in Areas with Potential Hydrogeological Constraints' which aids sites which may have constraints such as low permeability or high groundwater.
- h. In the Zoning By-law stage, the reporting should discuss the proposed servicing that contributes to whether the site can support the scope of the development. This would include servicing demands in terms of water supply and fire flow, septic impact, low impact development measures, stormwater management facilities and their outlet, amongst other criteria required to support the application.

- i. In terms of the water supply portion of the study, the water demands will be determined from the proposed zoning and available or allotted servicing capacity in the watermain. For example, the proposed zoning amendment to Rural General Industrial will need to consider the possible water demands and uses available under this proposed zoning and consider the allotted capacity of the watermain. For example, currently the parcel is zoned RU and is only entitled to water demand based on that existing zoning.
  - i. A Boundary Condition Request will need to be prepared and submitted to confirm that the required demands and fire flow can be provided. It is anticipated that there will be limit to the fire flow available.
    1. Boundary Condition Request must include the location of the service(s), and
    2. Location of fire hydrants, and
    3. Type of development and the amount of fire flow required (FUS, 2020), and
    4. Average daily, maximum daily, and maximum hour demands in L/second calculated based on the City of Ottawa – Water Distribution Guidelines, as amended.
  - ii. The Site Servicing Study, in the Zoning By-law Amendment stage, should include a section addressing the provision of a water supply for fire suppression.
  - iii. In regard to fire flow calculations, the FUS methodology, as opposed to the OBC methodology shall be applied for all rural areas. Enhanced review will be invoked should the construction coefficient chosen be less than 1. It is the responsibility of the

owner to ensure that an adequate water supply for firefighting is provided.

- iv. Once the Boundary Condition Request results have been received and a response has been received, the engineering consultant can formalize the Servicing Study for submission.

C37. A Hydrogeological and Terrain Analysis Report will be required with the Zoning Amendment Application. The report will focus on the **Septic Impact Assessment**, which must be prepared as per the City's Terms of Reference, the Hydrogeological and Terrain Analysis Guidelines and MECP Guideline D-5-4. Please refer to the HGTA for the predictive assessment for commercial/industrial developments (not residential developments).

- j. Since the application is for a Zoning Amendment, the calculation must be based on a conventional (Class IV) septic system and advanced treatment cannot be considered for the septic impact calculations.
- k. Note that compact gravel will be considered impermeable in the septic impact assessment unless accompanied by field testing to confirm infiltration rates.
- l. If the existing septic systems will continue to be used, a septic inspection is recommended to confirm the system meets current regulations under the Ontario Building Code. The report should assess whether the existing septic system has sufficient capacity to continue serving the existing uses.

C38. A **Grading and Drainage Plan** will be required with the Zoning By-law Amendment and the Site Plan Control application. The plan serves to identify the existing and proposed drainage patterns and their relationship with the surface runoff control.

- m. As part of a complete Zoning By-law Amendment application, the Grading and Drainage Plan should be scoped, at a minimum, to be able to review the minimum setback from the watercourse feature as per Official Plan under section 4.9.3. The applicant can include the extent of the scope that would be required under the Site Plan Control application.

- n. As part of a complete Site Plan Control application, the Grading and Drainage Plan would identify and implement site, grading, building, and servicing design measures to protect new or existing development from flooding as per policy 6, section 4.7.1 of the Official Plan.
- o. The Plan should have a note that references the horizontal and vertical datums that were used and tied into to complete the project. The drawing should also make reference (on the face of the plan) to a site benchmark that can be used by anyone with a level to carry out checks on the particular project.

C39. A **Phase Two Environmental Site Assessment** (ESA), as deemed applicable by the Phase One ESA, is required for the proposed Zoning Amendment and Site Plan Control application. This mandatory report serves to ensure that development only takes place on sites where the environmental conditions are suitable for the proposed use in accordance with provincial legislation and regulations.

C40. A **Mineral Resource Impact Assessment** will be required with the Zoning Amendment to demonstrate that the existing use or future development based on potential uses available from the proposed zoning amendment, will not conflict with future mineral aggregate extraction and that the existing mineral aggregate operation, and potential future expansion of the operation in depth or extent, will not be affected by the development. (Policy 3 & 4, section 5.6.3.2 of the new Official Plan).

- p. The MRIA provided as part of the consent application, *Preliminary Aggregate Resource Study*, prepared by Paterson Group, dated August 2014, does not meet the Terms of Reference for Mineral Aggregate Impact Assessment Studies.
  - i. Section 4 notes two test pits were conducted in the southern parcel, but the location and ID number were not provided in the Test Pit Location Plan.
    - 1. Assuming TP-4 and 5 are on the southern parcel, there appears to be fine sand that could be extracted. Discussion



should be expanded to discuss what a viable deposit consists of.

- ii. The reporting must be expanded to discuss the impact of the current/proposed development on the existing operation and vice versa. Are there any noise or vibration impacts from the existing operation that result in setbacks on the current parcel?
- iii. The reporting appears to rely on arguments that are no longer accepted for these types of reports. There appears to be two pieces used in the recommendation that do not meet the Terms of Reference for Mineral Aggregate Impact Assessment Studies.
  - 1. Demand for the type of aggregate (sand). "The quantity of long-term supply of mineral aggregate resources in the city (i.e. the position that the resource is not needed) cannot be accepted as rationale in the assessment." (Terms of Reference)
  - 2. Proximity to other developments as a justification for the current limits of extraction. It does not set out or discuss what specific 'applicable setbacks' apply. "Existing residential or sensitive development will not be accepted as rationale in the assessment for more development." (Terms of Reference)

C41. An MECP Environmental Compliance Approval (ECA) may be required for any existing or proposed stormwater management facilities or sewage works if the exemption requirements of O.Reg. 525/98 are not met. It is anticipated that the site, based on the industrial use and the existing oil grit separator, would require an ECA. Please contact the Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation:

- q. Emily Diamond at (613) 521-3450, ext. 238 or [Emily.Diamond@ontario.ca](mailto:Emily.Diamond@ontario.ca)



- r. Please note that the process for ECAs is undergoing changes and may be different upon time of submission. Currently, once the development application has been submitted, a request can be made to the City to consider a Transfer of Review (ToR) ECA for SWM works (ponds, ditches, culverts, etc.) for private property, instead of a direct submission ECA. This is subject to approval by the City and MECP. Note that the ECA requirements are currently in transition towards the linear ECA process and more details may become available depending on application submission timeline. It is recommended to check with the City when the development application is submitted to confirm the ECA process at that time.

Feel free to contact Travis Smith, Infrastructure Project Manager, for follow-up questions.

## **Transportation**

Comments:

C42. Right-of-way protection for Bank Street.

- a. See [Schedule C16 of the Official Plan](#).
- b. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

## **Environment and Trees**

List of Studies and Plans Reviewed:

- Environmental Impact Statement**, prepared by Gemtec, dated February 2, 2022.
- Phase 1 ESA**, prepared by Gemtec, dated October 2, 2023.

Deficiencies:

6. The provided EIS does not sufficiently address the watercourse feature in order to justify a reduced setback. As such, the required setback from this feature is 30m and all development that is not an existing non-conforming use must be relocated outside of the setback. Additionally, all land within the setback that has been subject to development must be revegetated with native, non-invasive species.

Comments:

C43. If the applicant wishes to apply for a reduced setback under the provisions of section 4.9.3, policy 7 of the Official Plan, then a reviewed EIS must be submitted in support of this. The EIS must undertake a detailed study of the ecological function of the watercourse (through an HDFA) and provide a justification for the setback. Keep in mind that the provisions for this exception are as follows (emphasis mine):

“Exceptions to the setbacks in Policy 2) shall be considered by the City in consultation with the conservation authority in situations where development is proposed on existing lots where, due to the historical development in the area, it **is impossible to achieve the minimum setback** because of the size or location of the lot, approved or existing use on the lot or other physical constraint, providing the following conditions are met to the City’s satisfaction:

- a) The ecological function of the site is restored and enhanced, to the greatest extent possible, through naturalization with native, non-invasive vegetation and bioengineering techniques to mitigate erosion and stabilize soils; and
- b) Buildings and structures are located, **or relocated**, to an area within the existing lot that improves the existing setback, to the greatest extent possible, and does not encroach closer to the surface water feature.”

Additional tree plantings to help the city meet its forest canopy goals, as well as reducing the impacts of climate change and the urban heat island effect, are recommended. Again, these plantings should be of a native and non-invasive species.

As noted by other commenters, development within the flood plain, specifically the storage yard in the southeaster section of the site, should be moved outside of the hazard area.

Feel free to contact Mark Elliott, Environmental Planner, or Insert Name, Forester, for follow-up questions.

## **Parkland**

Comments:

- C44. Parks & Facilities Planning (PFP) will be requesting **cash-in-lieu of conveyance of parkland** for parkland dedication in accordance with the Parkland Dedication By-law NO. 2022-280 based on the Zoning By-law amendment/building permit/Site Plan Control process.
- C45. The amount of parkland dedication required is to be calculated as per the City of Ottawa [Parkland Dedication By-law No. 2022-280](#).
- C46. Please provide the City with a surveyor's area certificate/memo which specifies the exact gross land area of the site being developed/redeveloped. For industrial or commercial redevelopment, this includes the portion of the property that is impacted by the proposed redevelopment, but not including any hazard lands or natural heritage features identified in the official plan, an approved Secondary Plan, or through an environmental impact study accepted by the City.
- C47. Section 11 (1) of the Parkland Dedication By-law states that "The conveyance of parkland or the payment of cash-in-lieu of parkland is not required for development or redevelopment where it is known, or can be demonstrated, that the required parkland conveyance or cash-in-lieu of parkland, or combination thereof, has been previously satisfied in accordance with the Planning Act, unless:
  - a. there is a change in the proposed development or redevelopment that would increase the density providing a net dwelling unit gain;
  - b. the proposed development or redevelopment increases the gross floor area of a non-residential use; or
  - c. land originally proposed for development or redevelopment for commercial or industrial purposes is now proposed for development or redevelopment for other purposes that have a higher conveyance requirement pursuant to the rates described herein."

If parkland dedication for the parcel has been satisfied previously, please provide Parks & Facilities Planning with the supporting documentation.

- C48. Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and any requested supporting documentation. Additionally, if the proposed land use changes, then the parkland dedication requirement will be re-evaluated accordingly.

C49.

Feel free to contact Warren Bedford, Parks Planner, for follow-up questions.

## **Conservation Authority**

Comments:

C50. Watercourse

- i) the John Boyce Municipal Drain flows from north to south across the property. A floodplain analysis was completed for the watercourse in 2014.

C51. 1:100 Year Flood Plain

- i) The 1:100 year floodplain elevations associated with the property range from 107.8 to 105.11 MASL (CGVD28). A map or GIS file showing the location of the transects can be obtained from SNC.
- ii) The floodplain extent must be shown on a grading and drainage plan. Storage of materials and fill placement are not permitted in the floodplain without a permit. To obtain a permit, the applicant may be required to demonstrate that it will not negatively impact flooding.
- iii) If the grading plan identified existing materials or fill within the floodplain, South Nation Conservation will recommend that these be removed, and the site restored to the original grade prior to site plan approval.
- iv) the floodplain analysis for the John Boyce Municipal Drain indicates that the lands west of the municipal drain are an uncontrolled spill area where the extent and depth of the hazard are currently unknown. Further analysis of the hazard is recommended for any development in this area.

C52. O Reg. 170/06

- i) Any development within 15m of the 100 year floodplain elevations will require a permit from SNC and restrictions may apply. In addition, any interference with a watercourse may require a permit and restrictions may apply.

Feel free to contact James Holland, South Nation Conservation Authority, for follow-up questions.

We look forward to further discussing your project with you.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,  
Sean Harrigan

c.c. Travis Smith  
Damien Whittaker



Obai Mohammed  
Cheryl McWilliams  
Mark Elliot  
Laura Cooper  
Molly Smith  
Warren Bedford



Date: January 9, 2025

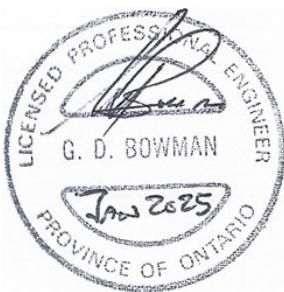
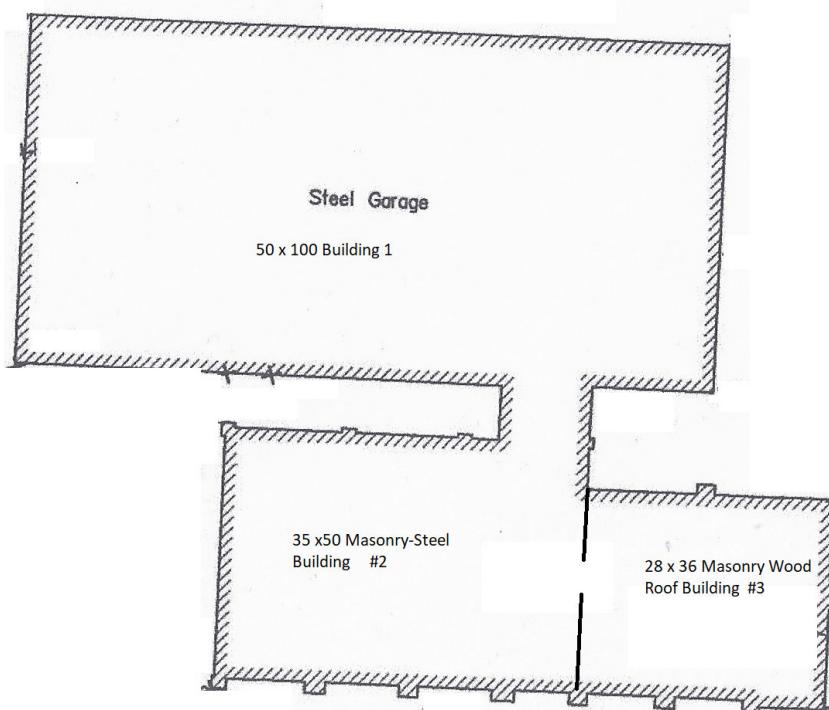
Permit No. 2207206

Greely Sand and Gravel Inc  
1971 Old Prescott Road  
Greely, Ontario  
K4P 1N6

Re: Maintenance Building Layout  
5360 Bank Street, Greely, Ontario

Dear Sir,  
Bowman Steel has reviewed the site above and notes the following Layout

Occupancy Classification is F-3





Date: January 9, 2025

Permit No. 2207206

Greely Sand and Gravel Inc  
1971 Old Prescott Road  
Greely, Ontario  
K4P 1N6

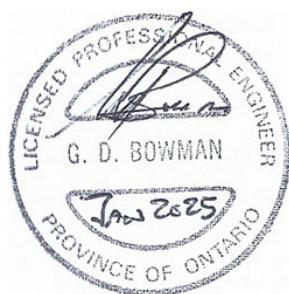
Re: Maintenance Building 1  
5360 Bank Street, Greely, Ontario

Dear Sir,  
Bowman Steel has reviewed the site above and notes the following .

Structure consists of structural steel columns, beams, bracing, girts, purlins metal siding and metal roof.  
Structure is Non Combustible. .

We trust you find the above acceptable.  
Sincerely,

Gord Bowman P. Eng  
BCIN 28306 / 22151





Date: January 9, 2025

Permit No. 2207206

Greely Sand and Gravel Inc  
1971 Old Prescott Road  
Greely, Ontario  
K4P 1N6

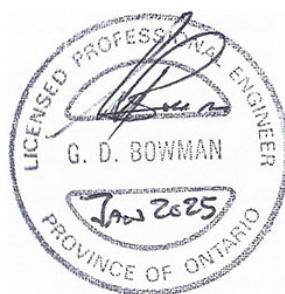
Re: Maintenance Building 2  
5360 Bank Street, Greely, Ontario

Dear Sir,  
Bowman Steel has reviewed the site above and notes the following .

Structure consists of structural Masonry Wall, Steel Roof beams, Steel Joists and metal roof.  
Structure is Non Combustible. .

We trust you find the above acceptable.  
Sincerely,

Gord Bowman P. Eng  
BCIN 28306 / 22151





Date: January 9, 2025

Permit No. 2207206

Greely Sand and Gravel Inc  
1971 Old Prescott Road  
Greely, Ontario  
K4P 1N6

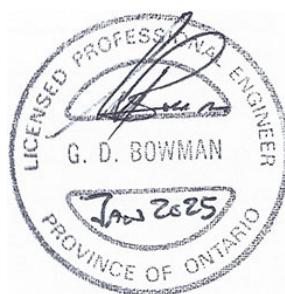
Re: Maintenance Building 3  
5360 Bank Street, Greely, Ontario

Dear Sir,  
Bowman Steel has reviewed the site above and notes the following .

Structure consists of structural Masonry Wall, Wood Beams, Wood Roof Joists, wood roof Planking  
Roof Structure is Combustible. .

We trust you find the above acceptable.  
Sincerely,

Gord Bowman P. Eng  
BCIN 28306 / 22151



## **Wu, Michael**

---

**From:** Moroz, Peter  
**Sent:** January 31, 2025 15:18  
**To:** Wu, Michael  
**Cc:** Thiffault, Dustin  
**Subject:** FW: PH4841 - Greely Sand and Gravel - 5360 Bank Street  
**Attachments:** 24239-24 GreelySand TOPO PofS Con 4 (RF) PtLt 29 Glouc, 5360 Bank St 2024.08.27  
\_Rev 2.pdf; 24239-24 Greely Sand PtLt29 C4 RF O F4\_Client.dwg; 100227.101  
\_RPT\_EIS\_2024-10-01\_Rev0\_reduced.pdf

Michael, please use the below reference staff info to come up with the water demand. This was provided for septic bed design.

thx

Peter

**Peter Moroz P.Eng., MBA**

Business Center Practice Lead - Community Development (Atlantic & Ontario East)  
Stantec  
300 - 1331 Clyde Avenue Ottawa ON K2C 3G4  
Cell: (613) 294-2851

[peter.moroz@stantec.com](mailto:peter.moroz@stantec.com)

---

**From:** Info Greely Sand and Gravel <info@greelysand.com>

**Sent:** Wednesday, December 18, 2024 12:23 PM

**To:** Alex Schopf <aschopf@patersongroup.ca>; Michael Killam <MKillam@patersongroup.ca>; Sharp, Mike <Mike.Sharp@stantec.com>; Moroz, Peter <peter.moroz@stantec.com>; Christine McCuaig <christine@q9planning.com>; Erik Ardley <EARDLEY@patersongroup.ca>

**Cc:** Gladish, Alyssa <Alyssa.Gladish@stantec.com>; Thiffault, Dustin <Dustin.Thiffault@stantec.com>; Hendrik Van de Glind <hvandeglind@patersongroup.ca>

**Subject:** RE: PH4841 - Greely Sand and Gravel - 5360 Bank Street

Hi Alex,

To answer your questions, please see in red below...

Also attached is the topographic information and Gemtec's EIS. I will forward in a separate email the MRIA study.

Thank you,

Tara

**Greely Sand & Gravel Inc.**

1971 Old Prescott Road

Greely, Ontario

K4P 1N6

Office: 613-821-3003

Fax: 613-821-4069

GreelySand.com

---

**From:** Alex Schopf <[aschopf@patersongroup.ca](mailto:aschopf@patersongroup.ca)>

**Sent:** Friday, December 13, 2024 9:02 AM

**To:** Michael Killam <[MKillam@patersongroup.ca](mailto:MKillam@patersongroup.ca)>; Sharp, Mike <[Mike.Sharp@stantec.com](mailto:Mike.Sharp@stantec.com)>; Moroz, Peter <[peter.moroz@stantec.com](mailto:peter.moroz@stantec.com)>; Christine McCuaig <[christine@q9planning.com](mailto:christine@q9planning.com)>; Erik Ardley <[EArdley@patersongroup.ca](mailto:EArdley@patersongroup.ca)>; Info Greely Sand and Gravel <[info@greelysand.com](mailto:info@greelysand.com)>

**Cc:** Gladish, Alyssa <[Alyssa.Gladish@stantec.com](mailto:Alyssa.Gladish@stantec.com)>; Thiffault, Dustin <[Dustin.Thiffault@stantec.com](mailto:Dustin.Thiffault@stantec.com)>; Hendrik Van de Glind <[hvandeglind@patersongroup.ca](mailto:hvandeglind@patersongroup.ca)>

**Subject:** RE: PH4841 - Greely Sand and Gravel - 5360 Bank Street

Hi Brent / Tara,

We would like to ask some clarifying questions so that we can accurately size the septic system and complete the terrain analysis.

- Do you have any floor plans for the existing buildings and Cace Construction trailers?  
**Size of Greely S&G's floor plans: 50x100, 35x50, and 28x36**  
**Size of CACE Construction: 11x59 and 21x38**
- It is understood there are two sewage systems on site. The report will note that both systems will be decommissioned once a new system is installed and if Cace Construction remains at the site, they will use the washroom within the main building. **Understood.**

For the **Greely Sand and Gravel Operation** there appears to be a storage building behind the maintenance garage and we would anticipate some form of a small office in the building. The washroom consists of 1 toilet and 1 sink. There are no kitchen facilities or other water related fixtures.

- How many employees do you have working per day (8 hours) in the maintenance shop? **3 employees**
- Do you have office space? **No**
  - If so, how many employees do you have working in the office per day if they are separate from the workers in the maintenance shop? **N/A**
  - What is the area of the office space? (exclude lunchrooms / hallways/ storage areas). **N/A**
- How many visitors do you have per day? **2 visitors**
  - How long do they typically stay? **They do not stay** Is the washroom considered as public for their usage? **No** If no washroom is available to the public, then we can exclude that item.
- Are the framed shed, steel sided building, and utility building used as storage? **Yes**
- Are there any other uses on site that has employees or visitors arriving on site? **No**

### **Cace Construction Trailer(s)**

- There appears to be two trailers beside each other. Are both of them used for offices? **Yes**
- How many people are there typically in the site trailer(s) per day (8 hours)? **3 employees**
  - Is the site trailer used as an office and if so, what is the total area that would be used as offices? **Yes**  
**Size of CACE Construction: 11x59 and 21x38**
  - Does Cace have visitors and if so, how many per day would they estimate? **Yes, perhaps 2 a day**

### **Septic Systems**

- Is the septic tank for the main system accessible without digging or excavating? **Yes**
- Is there a cleanout for the sewage pipe within the building? **Yes**
  - We would be looking to determine the elevation of the pipe leaving the building to ensure there is appropriate slope leading to the new tank.

We anticipate adding some additional questions as we work through the process to optimize the design and potential costs. We will provide a fee estimate shortly.

Please let us know if you have any questions.

## **Appendix B Water Servicing**

### **B.1 Domestic Water Demands**



**5360 Bank Street, Ottawa, ON - Domestic Water Demand Estimates**

Project No. 160401995

Designed by: MW

Revision: 01

Checked by: DT

Date: 10-Feb-2025

Date Checked: 10-Feb-2025

City File No. PC2023-0388

Demand conversion factors per Table 4.2 of the City of Ottawa Water Design Guidelines and Technical Bulletin ISTB-2021-03:

Population	280	L/persons/day
------------	-----	---------------



Population	Avg Day Demand <sup>1</sup>		Max Day Demand <sup>2</sup>		Peak Hour Demand <sup>2</sup>	
	(L/min)	(L/s)	(L/min)	(L/s)	(L/min)	(L/s)
10	5.8	0.10	8.8	0.15	15.8	0.26

**Notes:**

- 1 Water demand based on 8-hour work day per correspondence between client and Paterson Group for septic system sizing.
- 2 Water demand criteria used to estimate peak demand rates for industrial areas are as follows:
  - maximum daily demand rate = 1.5 x average day demand rate
  - peak hour demand rate = 1.8 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

## **B.2 OBC Fire Flow Demands and Volume**



## Fire Flow Calculations as per Ontario Building Code 2024 (Appendix A)

Job# 160401995 Designed by: MW  
 Date 15-Jan-24 Checked by:  
 Description: Building 1

$$Q = KVS_{\text{tot}}$$

Q = Volume of water required (L)  
 V = Total building volume (m<sup>3</sup>)  
 K = Water supply coefficient from Table 1  
 S<sub>tot</sub> = Total of spatial coefficient values from property line exposures on all sides as obtained from the formula  

$$S_{\text{tot}} = 1.0 + [S_{\text{side1}} + S_{\text{side2}} + S_{\text{side3}} + S_{\text{side4}}]$$

1	Type of construction	Building Classification		Water Supply Coefficient
	Non-Combustible without Fire-Resistance Ratings	A-4, F-3		19
2	Area of one floor (m <sup>2</sup> )	number of floors	height of ceiling (m)	Total Building Volume (m <sup>3</sup> )
	477	1	6	2,865
3	Side	Exposure Distance (m)	Spatial Coefficient	Total Spatial Coefficient
	North	45	0	1
	East	45	0	
	South	45	0	
	West	45	0	
4	Established Fire Safety Plan?	Reduction in Volume (%)		Total Volume Reduction
	no	0%		0%
5	Total Volume 'Q' (L)			54,435

## Fire Flow Calculations as per Ontario Building Code 2024 (Appendix A)

Job# 160401995  
Date 15-Jan-24

Designed by: MW  
Checked by:  
Description: Building 2

$$Q = KV S_{\text{tot}}$$

$Q$  = Volume of water required (L)  
 $V$  = Total building volume (m<sup>3</sup>)  
 $K$  = Water supply coefficient from Table 1  
 $S_{\text{tot}}$  = Total of spatial coefficient values from property line exposures on all sides as obtained from the formula  

$$S_{\text{tot}} = 1.0 + [S_{\text{side1}} + S_{\text{side2}} + S_{\text{side3}} + S_{\text{side4}}]$$

1	Type of construction	Building Classification		Water Supply Coefficient
	Non-Combustible without Fire-Resistance Ratings	A-4, F-3		19
2	Area of one floor (m <sup>2</sup> )	number of floors	height of ceiling (m)	Total Building Volume (m <sup>3</sup> )
	175	1	3	526
3	Side	Exposure Distance (m)	Spatial Coefficient	Total Spatial Coeffiecient
	North	45	0	1
	East	45	0	
	South	45	0	
	West	45	0	
4	Established Fire Safety Plan?	Reduction in Volume (%)		Total Volume Reduction
	no	0%		0%
5	Total Volume 'Q' (L)			9,994

## Fire Flow Calculations as per Ontario Building Code 2024 (Appendix A)

Job# 160401995  
Date 15-Jan-24

Designed by: MW  
Checked by:  
Description: Building 3

$$Q = KV S_{\text{tot}}$$

$Q$  = Volume of water required (L)  
 $V$  = Total building volume (m<sup>3</sup>)  
 $K$  = Water supply coefficient from Table 1  
 $S_{\text{tot}}$  = Total of spatial coefficient values from property line exposures on all sides as obtained from the formula  

$$S_{\text{tot}} = 1.0 + [S_{\text{side1}} + S_{\text{side2}} + S_{\text{side3}} + S_{\text{side4}}]$$

1	Type of construction	Building Classification		Water Supply Coefficient
	combustible without Fire-Resistance Ratings	A-4, F-3		28
2	Area of one floor (m <sup>2</sup> )	number of floors	height of ceiling (m)	Total Building Volume (m <sup>3</sup> )
	98	1	3	294
3	Side	Exposure Distance (m)	Spatial Coefficient	Total Spatial Coeffiecient
	North	45	0	1
	East	45	0	
	South	45	0	
	West	45	0	
4	Established Fire Safety Plan?	Reduction in Volume (%)		Total Volume Reduction
	no	0%		0%
5	Total Volume 'Q' (L)			8,232

## Fire Flow Storage Volume Calculations as per OBC 2024 (Appendix A)

Job#	160401995	Designed by:	MW
Date	10-Feb-24	Checked by:	
		Description:	Full Building

$$Q = KVS_{\text{tot}}$$

Q = Volume of water required (L)

V = Total building volume (m<sup>3</sup>)

K = Water supply coefficient from Table 1

S<sub>tot</sub> = Total of spatial coefficient values from property line exposures on all sides as obtained from the formula

$$S_{\text{tot}} = 1.0 + [S_{\text{side1}} + S_{\text{side2}} + S_{\text{side3}} + S_{\text{side4}}]$$

	Total Volume 'Q' (L)	
	Building 1	54,435
	Building 2	9,994
	Building 3	8,232
	<b>Total Building</b>	
		<b>72,661</b>
	Minimum Required Fire Flow (L/min)	
		<b>2,700</b>
	Storage Evaluation per IWSTB-2024-05	
	Volume Reduction	-57,000
	Revised Volume (L)	15,661
	<b>Final Storage Volume (L)</b>	
		<b>38,000</b>

## **B.3 Boundary Conditions**



## Boundary Conditions 5360 Bank Street

### Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	120	2.00
Maximum Daily Demand	120	2.00
Peak Hour	120	2.00

### Location



## **Results**

### **Existing Condition**

#### **Connection 1 – Bank Street**

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	165.2	84.2
Peak Hour	159.2	75.6

<sup>1</sup> Ground Elevation = 106.0 m

### **Future SUC**

#### **Connection 1 – Bank Street**

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	165.2	84.2
Peak Hour	159.2	75.6

<sup>1</sup> Ground Elevation = 106.0 m

### **Disclaimer**

*The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.*

## **Wu, Michael**

---

**From:** Whittaker, Damien <Damien.Whittaker@ottawa.ca>  
**Sent:** February 7, 2025 13:22  
**To:** Moroz, Peter  
**Cc:** Gladish, Alyssa; Wu, Michael; Thiffault, Dustin  
**Subject:** Re: City File No.: PC2023-0388 - 5360 Bank Street Boundary Conditions Request  
**Attachments:** 5360 Bank BC (4Feb2025).docx

Hello Peter,

Please see the response on the boundary conditions request. Please note the unique response provided—that of demand limited to 2 L/s for 5360 Bank Street with on-site storage being necessary to accommodate peaks and fire protection due to limited flows in the area (pressure zone). There are no immediate plans to increase capacity and to do so is beyond this application (not determined but estimated to be in the seven figure range).

On-site storage will need to be comprehensively demonstrated for the site plan control application regardless of it being "plumbing".

Regards,

Damien Whittaker, P.Eng ([he/him/his](#) il/lui/son)

Senior Engineer - Infrastructure Applications ■ Ingénieur principal - applications d'infrastructure  
Development Review, Rural Services Unit ■ Examen des projets d'eménagement, Unité des services ruraux  
Planning, Development and Building Services Department (PDBS) ■ Direction générale des services de la  
planification, de l'aménagement et du bâtiment (DGSPAB)

**City of Ottawa | ville d'Ottawa**

---

**From:** Moroz, Peter <peter.moroz@stantec.com>

**Sent:** Friday, 7 February 2025 8:48 AM

**To:** Whittaker, Damien <Damien.Whittaker@ottawa.ca>

**Cc:** Gladish, Alyssa <Alyssa.Gladish@stantec.com>; Wu, Michael <Michael.Wu@stantec.com>; Thiffault, Dustin <dustin.thiffault@stantec.com>

**Subject:** RE: City File No.: PC2023-0388 - 5360 Bank Street Boundary Conditions Request

**CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.**

**ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.**

Thank you.

Peter

**Peter Moroz P.Eng., MBA**

Business Center Practice Lead - Community Development (Atlantic & Ontario East)  
Stantec  
300 - 1331 Clyde Avenue Ottawa ON K2C 3G4  
Cell: (613) 294-2851

[peter.moroz@stantec.com](mailto:peter.moroz@stantec.com)

## **Appendix C Wastewater Septic Permit**



# Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority				
Application number: <i>RCMA RECEIVED</i> <i>JAN 16 2025</i>	Permit number (if different): <i>SEPTIC FILE #</i> <i>25-015</i>			
Date received: <i>JAN 16 2025</i>	Roll number: <i>OTTAWA</i>			
Application submitted to: <i>OTTAWA SEPTIC SYSTEM OFFICE</i>	(Name of municipality, upper-tier municipality, board of health or conservation authority)			
A. Project information				
Building number, street name 5360 Bank Street			Unit number	Lot/con.
Municipality Ottawa (Greely)	Postal code K1X 1H1	Plan number/other description		
Project value est. \$		Area of work (m <sup>2</sup> )		
B. Purpose of application				
New construction	Addition to an existing building	Alteration/repair	Demolition	Conditional Permit
Proposed use of building Commercial		Current use of building Commercial		
Description of proposed work Installation a Class 4 Sewage System Class 4 Filter Media Bed				
C. Applicant		Applicant is: <input type="checkbox"/> Owner or <input checked="" type="checkbox"/> Authorized agent of owner		
Last name Van de Glind	First name Hendrik	Corporation or partnership Paterson Group Inc.		
Street address 9 Auriga Drive			Unit number	Lot/con.
Municipality Ottawa (Nepean)	Postal code K2E 7T9	Province Ontario	E-mail hvandeglind@patersongroup.ca	
Telephone number (613) 226-7381	Fax (613) 226-6344		Cell number ( )	
D. Owner (if different from applicant)				
Last name	First name	Corporation or partnership Greely Sand and Gravel		
Street address 1971 Old Prescott Road			Unit number	Lot/con.
Municipality Ottawa (Greely)	Postal code K4P 1N6	Province Ontario	E-mail info@greelysand.com	
Telephone number (613) 821-3003	Fax ( )		Cell number ( )	

Application for a Permit to Construct or Demolish – Effective January 1, 2014

**E. Builder (optional)**

Last name	First name	Corporation or partnership (if applicable)	SEARCH FILE #
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number (      )	Fax (      )	Cell number (      )	

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SEARCH FILE #

20-015

**F. Tarion Warranty Corporation (Ontario New Home Warranty Program)**

i. Is proposed construction for a new home as defined in the <i>Ontario New Home Warranties Plan Act</i> ? If no, go to section G.	Yes	No	<input checked="" type="checkbox"/>
ii. Is registration required under the <i>Ontario New Home Warranties Plan Act</i> ?	Yes	No	<input checked="" type="checkbox"/>

iii. If yes to (ii) provide registration number(s):

**G. Required Schedules**

i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.

ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.

**H. Completeness and compliance with applicable law**

i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the Building Code (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted). Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the <i>Building Code Act, 1992</i> , to be paid when the application is made.	Yes	<input checked="" type="checkbox"/>	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> .	Yes	<input checked="" type="checkbox"/>	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the <i>Building Code Act, 1992</i> which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	Yes	<input checked="" type="checkbox"/>	No
iv) The proposed building, construction or demolition will not contravene any applicable law.	Yes	<input checked="" type="checkbox"/>	No

**I. Declaration of applicant**

I, Hendrik Van de Glind - Paterson Group

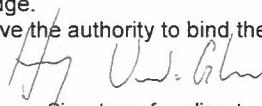
(print name)

declare that:

1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

January 9, 2025

Date



Signature of applicant

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor, Toronto, M5G 2E5 (416) 585-6666.

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Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

SEPTIC FILE #

**A. Project Information**

Building number, street name  
5360 Bank Street

Unit no.

25-015  
Lot/con.

Municipality  
Ottawa (Greely)

Postal code  
K1X 1H1

Plan number/ other description

OTTAWA

**B. Individual who reviews and takes responsibility for design activities**

Name  
Hendrik Van de Glind

Firm  
Paterson Group Inc.

Street address  
9 Auriga Drive

Unit no.

Lot/con.

Municipality  
Ottawa (Nepean)

Postal code  
K2E 7T9

Province  
Ontario

E-mail  
hvandeglind@patersongroup.ca

Telephone number  
(613) 226-7381

Fax number  
(613) 226-6344

Cell number  
( )

**C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]**

House	HVAC – House	Building Structural
Small Buildings	Building Services	Plumbing – House
Large Buildings	Detection, Lighting and Power	Plumbing – All Buildings
Complex Buildings	Fire Protection	✓ On-site Sewage Systems

Description of designer's work

Sewage System Design

**D. Declaration of Designer**

I, Hendrik Van de Glind - Paterson Group declare that (choose one as appropriate):  
(print name)

✓ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 111499

Firm BCIN: 29346

I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code.

Individual BCIN: \_\_\_\_\_

Basis for exemption from registration: \_\_\_\_\_

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: \_\_\_\_\_

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

January 9, 2025

Date

H. Van de Glind  
Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

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SEPTIC FILE #

25-015

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## Schedule 2: Sewage System Installer Information

### A. Project Information

Building number, street name  
5360 Bank Street

Unit number

Lot/con.

Municipality  
Ottawa (Greely)

Postal code  
K1X 1H1

Plan number/ other description

### B. Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

Yes (Continue to Section C)

No (Continue to Section E)



Installer unknown at time of  
application (Continue to Section E)

### C. Registered installer information (where answer to B is "Yes")

Name

BCIN

Street address

Unit number

Lot/con.

Municipality

Postal code

Province

E-mail

Telephone number  
(      )

Fax

(      )

Cell number  
(      )

### D. Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)

Building Code Identification Number (BCIN)

### E. Declaration of Applicant:

Hendrik Van de Glind - Paterson Group

declare that:

(print name)

I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

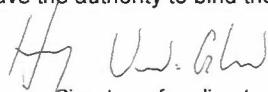
I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

January 9, 2025

Date



Signature of applicant



Ottawa Septic System Office Bureau des systèmes septiques d'Ottawa

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**Schedule 4**  
**Proposed Services**  
Complete Sections 1 thru 7

**SEPTIC FILE #**  
Do Not Complete  
Permit # 25-015  
Revision #  
Date: OTTAWA

**1. Engineered**

Yes  
 No

**3. Type of work proposed**

New Installation  
 Replacement  
 Alteration

**5. Residential Sewage Design Flow Info.**

Bedrooms \_\_\_\_\_  
House (floor area) \_\_\_\_\_ m<sup>2</sup>  
People \_\_\_\_\_  
Total Fixture Units \_\_\_\_\_ (Schedule 8)  
Residential Flow \_\_\_\_\_ L/day

**7. Type of System**

Treatment Unit \_\_\_\_\_  
 Class 2 – Leaching Pit  
 Class 3 – Cesspool  
 Class 4 – Shallow Buried Trench

Class 4 – Trench (Schedule 9)

Fully raised  
Partially raised  
In-ground

Class 4 – Filter Media (Schedule 10)

Fully raised  
 Partially raised  
 In-ground

**2. Water supply**

Proposed  
 Existing

**4. Type of Well**

Dug/bored/Sandpoint well  
 Drilled well  
Municipal  
Other

**6. Sewage Design Flow Other Occupancies**

Design Flow 450 L/day  
Detailed sewage flow calculations:  
Refer to Paterson Group Dwg PH4841-2(rev.1)  
3 employees x 75 L/day = 225 L/day x 2 = 450 L/day

**Class 4 – BMEC Area Bed (Schedule 11)**

Fully raised  
 Partially raised  
 In-ground

**Class 4 – “Type A” Dispersal (Schedule 13)**

Fully raised  
 Partially raised  
In-ground

**Class 4 – “Type B” Dispersal (Schedule 14)**

Fully raised  
 Partially raised  
In-ground

**Class 5 – Holding Tank (9000L min)**

Tank/Treatment Unit/Pump Chamber ONLY  
Effluent Filter/Risers ONLY



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**Schedule 5  
Sewage System Details**

Do Not Complete  
Permit # *25-015*  
Revision # *OTTAWA*  
Date: *OTTAWA*

Type of System	Class 4 - Filter Media	( Schedule 4)
Septic/Holding Tank Size:	3,600L(min.) Litres	Make:
Septic Tank Effluent Filter Make:	OBC Approved	Model: (PL - 250) or equivalent

Treatment Unit – Make & Model \_\_\_\_\_

Number of Units: \_\_\_\_\_ Other: \_\_\_\_\_

Refer to Typical Drawing # **PH4841-1&2(rev.1)** Pump(s) required No \_\_\_\_\_

Mantle Information: Pump Rate \_\_\_\_\_ L/15min

Native or imported =15m in \_\_\_\_\_ direction(s) Note: Alarm required for all pumping systems

Slope subgrade \_\_\_\_\_ % slope  
\_\_\_\_\_ direction(s)

**Site to be Scarified (If clay)** YES / NO

**Clay Seal Required (If bedrock)** YES / NO

**Trench**

Distribution Pipe Length \_\_\_\_\_ m

**Shallow Buried Trench**

Loading Area \_\_\_\_\_ m<sup>2</sup>

Pipe Length \_\_\_\_\_ m

Type of Chamber \_\_\_\_\_

Length of Chamber \_\_\_\_\_ m

**✓ Filter Media Bed**

**BMEC Area Bed**

Stone \_\_\_\_\_ 11.4 m<sup>2</sup>

**Type A**

Extended Base \_\_\_\_\_ 11.4 m<sup>2</sup>

**Type B**

Pipe \_\_\_\_\_ 12.0 m

Stone \_\_\_\_\_ m<sup>2</sup>

Weight of Filter Media \_\_\_\_\_ 13,700 Kg

Sand \_\_\_\_\_ m<sup>2</sup>

Loading Area \_\_\_\_\_ m<sup>2</sup>

Pipe \_\_\_\_\_ m

Linear Loading \_\_\_\_\_ L/m<sup>2</sup>

**Tank/Treatment Unit/Pump Chamber Replacement ONLY**

**Effluent Filter & Riser ONLY**

Construction Notes:



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Permit #

25-015  
SEPTIC FILE #

Revision # 25-015  
Date: OTTAWA

**Schedule 6**  
**Soil and Water Table Information**  
**(Minimum depth of test pit: 2 metres)**

Name of Applicant/Agent: Paterson Group Inc Date: December 19, 2025 Time: Applicant/Agent Signature: <i>H. W. G.</i>			Inspector: _____ Date: _____ Time: _____ Inspector Signature: _____		
EG (.....)      Soil Description      T			EG (.....)      Soil Description		
<b>LEGEND</b> BR = Bedrock GWT = Ground water table			HGWT = High ground water table M = metres		
EG = Existing grade T = percolation rate					



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Permit #

SEPTIC FILE #  
25-015  
Revision #  
Date: OTTAWA

Scale: 1 Block = \_\_\_\_\_

Schedule 7  
Layout Section

N

Refer to Paterson Group Drawing PH4841-1(rev.1)

○ Dug Well • Drilled Well ▲ Neighbouring Homes ♦ Benchmark --- Tile Drainage — Property Line

Elevations (metric only)

B.M. 109.68 m

B.M. Description Top of Manhole cover  
on along North side of Grassed area (See Plan)

Exact Location \_\_\_\_\_

Min. of 5 elevations in proposed system  
area (in X pattern)

X<sub>1</sub> \_\_\_\_\_ X<sub>2</sub> \_\_\_\_\_  
X<sub>3</sub> \_\_\_\_\_ X<sub>4</sub> \_\_\_\_\_  
X<sub>5</sub> \_\_\_\_\_ X<sub>6</sub> (toe) \_\_\_\_\_  
X<sub>7</sub> \_\_\_\_\_ X<sub>8</sub> \_\_\_\_\_



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**Schedule 8**  
**Fixture unit count**

Do Not Complete  
Permit #

Revision #25 - 015  
Date:

SEPTIC FILE #  
OTAWA

Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
<b>Bathroom</b>							
Bathroom group (toilet, sink and tub or shower) installed in the <u>same</u> room		+		X	6	=	
Bathtub with/without overhead shower		+		X	1.5	=	
Shower stall		+		X	1.5	=	
Wash basin (SINK) (1½inch trap)	1	+		X	1.5	=	1.5
Watercloset (TOILET) tank operated	1	+		X	4	=	4.0
Bidet		+		X	1	=	
<b>Kitchen</b>							
Dishwasher		+		X	1	=	
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+		X	1.5	=	
<b>Other</b>							
Domestic washing machine		+		X	1.5	=	
Combination sink and laundry tray single or double (Installed on 1½ trap)		+		X	1.5	=	

\*Total: 5.5

\*Insert the TOTAL in section 5 of Schedule 4 (0.Reg 151/13 Table 7.4.9.3)

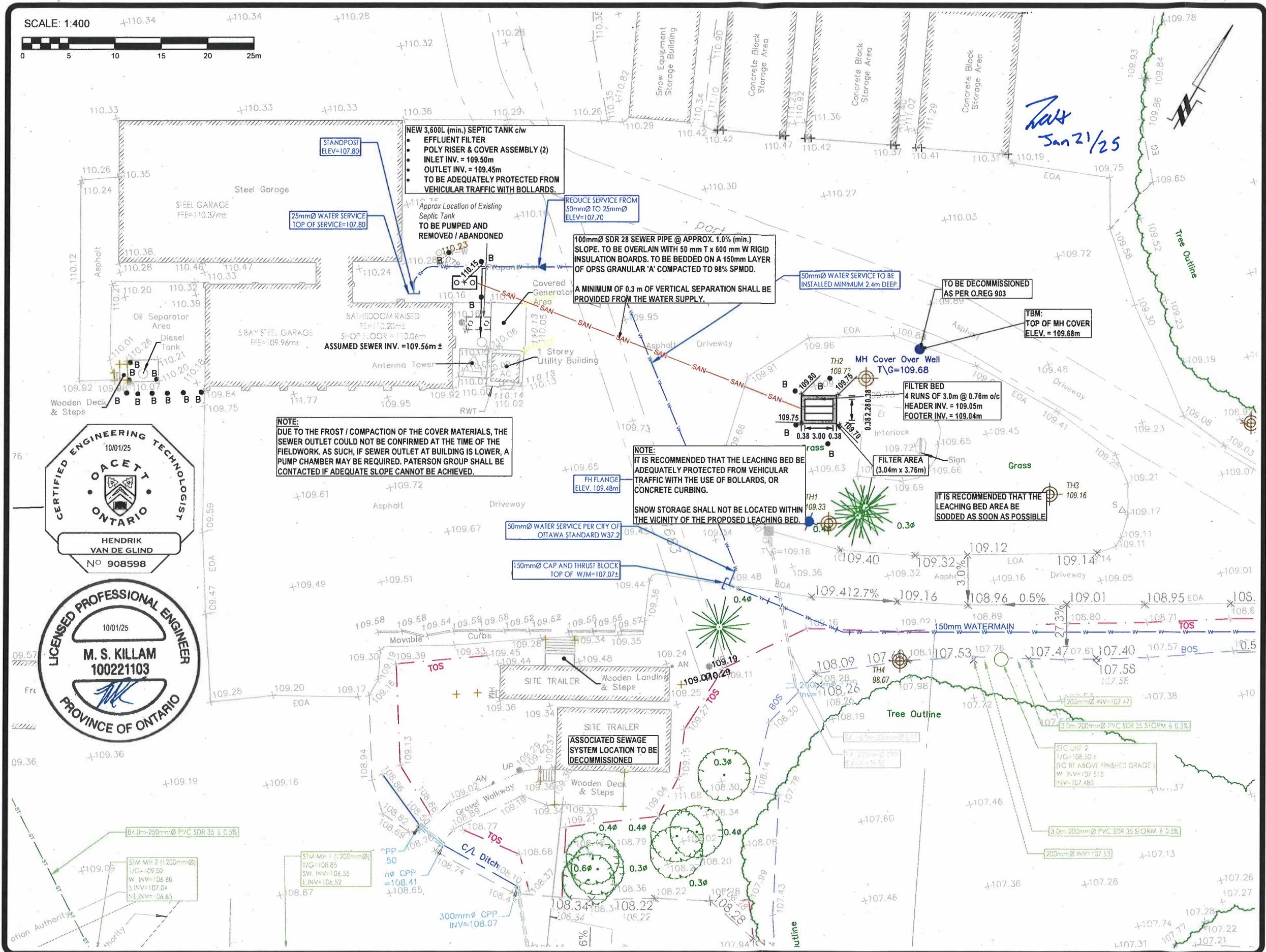
1. **Sump pumps and floor drains are not to be connected to the sewage system.** Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

*H. W. G.*

January 9, 2025

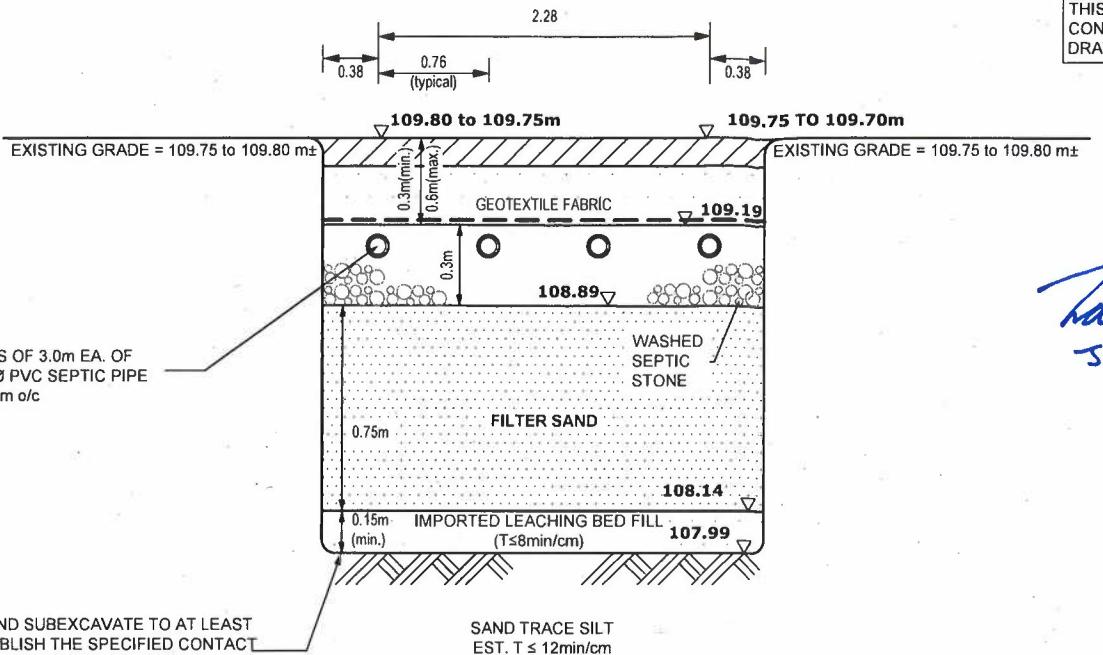
Agent/Owner signature

Date



<b>LEGEND:</b>		
	Test Hole Location	
x 100.99	Existing Ground Surface Elev. (m)	
<b>x 102.30</b>	Proposed Ground Surface Elev. (m)	
FFE	Finished Floor Elevation	
	Existing Structure	
All units are in meters unless otherwise specified.		
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<b>JAN 16 2025 SEPTIC FILE</b>		
<b>25-015</b>		
<b>OTTAWA</b>		
<b>BENCHMARK INFORMATION:</b>		
TBM: Top of Manhole Cover		
Assumed Elevation = 109.68m		
<b>REFERENCE:</b>		
Base Plan and Topographic Information obtained from Topographic plan of Survey of Part of Lot 29, Concession 4 (Rideau Front) geographic township of Gloucester, City of Ottawa, dated August 27, 2024, by Annis O'Sullivan, Vollebekk LTD.		
and		
Proposed servicing information obtained from Removals, Servicing Grading and Re-instatement Plan, dated September 5, 2024 by Stantec Consulting Ltd.		
10/01/25	Issued for Septic Permit	1
08/01/25	Issued for Client Review	0
DD/MM/YY	DESCRIPTION	REV.
consultant:		
 <b>PATERSON GROUP</b> <div style="text-align: right; font-size: small;"> 9 AURIGA DRIVE  OTTAWA, ON  K2E 7S9  TEL: (613) 226-7381 </div>		
client:		
<b>GREELY SAND AND GRAVEL</b>		
project:		
<b>PROPOSED SEWAGE SYSTEM REPLACEMENT</b>		
<b>5360 BANK STREET OTTAWA (GREELY), ONTARIO</b>		
drawing:		
<b>SEWAGE SYSTEM LAYOUT PLAN</b>		
cale:	Drawn by:	
1:400		HV
ate:	Checked by:	
01/2025		MK
drawing No.:		
<b>PH4841-1(rev.1)</b>		
p:\autocad drawings\hydrogeology\ph48xx\ph4841 - greely sand and gravel - 5360 bank street\ph4841-1(rev.1).dwg		

COVER MATERIAL TO CONSIST OF LEACHING BED FILL FOLLOWED BY APPROX. 100mm OF SANDY TOPSOIL. LEACHING BED TO BE VEGETATED AS SOON AS POSSIBLE.

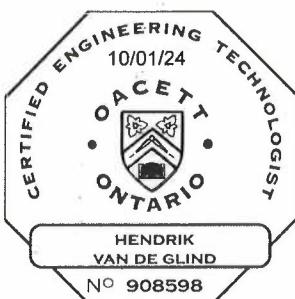


NOTE:  
THIS PLAN IS TO BE READ IN CONJUNCTION WITH DRAWING NO. PH48.41-1(rev.1)

FINAL GRADING SHALL BE SUITABLY SHAPED TO DIRECT SURFACE WATER AWAY FROM THE PROPOSED SEWAGE SYSTEM.

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Jan 21/25  
SEPTIC FILE #  
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## NOTES:

### 1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

THE TOTAL DAILY DESIGN SANITARY SEWAGE FLOW (T.D.D.S.S.F) RATE IS CALCULATED IN ACCORDANCE WITH O.B.C. TABLE 8.2.1.3.B.

- 3 GREELY SAND AND GRAVEL EMPLOYEES @ 8 HOURS PER DAY =  $3 \times 75 \text{ L/DAY} = 225 \text{ L/DAY}$
- 3 CACE CONSTRUCTION EMPLOYEES @ 8 HOURS PER DAY =  $3 \times 75 \text{ L/DAY} = 225 \text{ L/DAY}$

DESIGN SEWAGE FLOW = 450 L/DAY

### 2) SOIL CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON DECEMBER 19, 2024

TH 1, ELEV. 109.33m	TH 2, ELEV. 109.73m	TH 3, ELEV. 109.16m			
0-0.41 0.41-1.30	TOPSOIL WITH ORGANICS SAND TRACE SILT, GRAVEL, AND COBBLES	0-0.25 0.25-1.20	TOPSOIL & ORGANICS SAND TRACE SILT, GRAVEL AND COBBLES	0-0.40 0.40-1.21	TOPSOIL SAND TRACE SILT GRAVEL AND COBBLES
-TH DRY UPON COMPLETION	-TH DRY UPON COMPLETION	-TH DRY UPON COMPLETION	-TH DRY UPON COMPLETION	-TH DRY UPON COMPLETION	-TH DRY UPON COMPLETION

### 3) SEPTIC TANK

- EXISTING SEPTIC TANK SHALL BE PUMPED AND REMOVED / ABANDONED.
- IF THE EXISTING SEWER OUTLET IS LOWER THAN THE ANTICIPATED ELEVATION OF 109.56m, GRAVITY DRAINAGE TO THE LEACHING BED MAY NOT BE ACHIEVABLE, AS SUCH, A PUMP CHAMBER MAY BE REQUIRED.
- MINIMUM WORKING CAPACITY OF PRETREATMENT TANK =  $3Q$  OR  $3,600 \text{ L}(\text{min.}) = 3,600 \text{ L}(\text{min.})$
- IT IS RECOMMENDED THAT A NEW  $3,600 \text{ L}(\text{min.})$  TWO-COMPARTMENT SEPTIC TANK BE INSTALLED.
- AN OBC APPROVED EFFLUENT FILTER (I.E. POLYLOK PL-250 EFFLUENT FILTER, OR EQUIVALENT) SHALL BE INSTALLED ON THE OUTLET PIPE IN THE PRETREATMENT TANK.
- THE ACCESS LIDS TO THE TANK OPENINGS SHALL BE EXTENDED TO THE GROUND SURFACE. INSTALL RISERS AND COVERS TO SUIT.
- THE ACCESS LIDS SHALL INCLUDE SAFETY DEVICES AS PER CSA B66-21.
- THE PVC SDR 28 SEWER PIPE CONNECTED THE SEPTIC TANK TO THE LEACHING BED SHALL BE INSTALLED A 1.0% MINIMUM SLOPE AND SHALL BE OVERLAIN WITH  $50\text{mm T} \times 600\text{mm W}$  RIGID INSULATION BOARDS AND INSTALLED ON A 150 mm LAYER OF OPSS GRANULAR 'A' COMPACTED TO 98% SPMDD.

### 4) FILTER BED SIZE CRITERIA

- FILTER AREA REQUIRED =  $Q/75 = 450/75 = 6\text{m}^2$
- USE 4 RUNS OF 3.0m EACH @ 0.76m o/c
- FILTER AREA PROVIDED =  $3.04\text{m} \times 3.76\text{m} = 11.4\text{m}^2$
- EXPANDED BASE REQUIRED =  $Q(1.0850 = 450/(12)/850 = 6.4\text{m}^2$
- TOTAL BASE AREA PROVIDED =  $3.04\text{m} \times 3.76\text{m} = 11.4\text{m}^2$

### 5) FILTER BED CONSTRUCTION GUIDELINES

- REMOVE ALL TOPSOIL AND SUBEXCAVATE TO AT LEAST ELEVATION 107.99m, WHICHEVER IS GREATER.
- A MINIMUM THICKNESS OF 0.15m OF LEACHING BED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 min/cm, SHALL BE INSTALLED BELOW OVER THE EXPANDED BASE AREA.
- LEACHING BED SAND FILL SHALL CONSIST OF UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2mm SIEVE, LESS THAN 5% PASSING 0.075mm SIEVE AND HAVING A PERCOLATION RATE OF 6 TO 8 min/cm.
- THE FILTER SAND SHALL CONFORM TO THE REQUIREMENTS OF PART 8 OF THE OBC.
- THE DISTRIBUTION PIPES (4 RUNS OF 3.0m EACH) SHALL CONSIST OF 75mmØ PERFORATED PVC SEPTIC PIPE WHICH SHALL BE EMBEDDED IN A CONTINUOUS 300mm THICK LAYER OF WASHED SEPTIC STONE.
- THE INVERT LEVEL OF THE DISTRIBUTION PIPES SHALL BE SET AT ELEVATION 109.05m AT THE HEADER AND ELEVATION 109.04m AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A SOLID PVC FOOTER PIPE.
- THE CLEAR STONE LAYER SHOULD BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC.
- THE SURFACE OF THE BED SHOULD BE COVERED WITH PERMEABLE SAND FOLLOWED BY APPROXIMATELY 0.1m OF SANDY TOPSOIL. THE BED AREA SHOULD BE VEGETATED.
- THE TOTAL THICKNESS OF THE COVER OVER THE CLEAR STONE SHOULD BE WITHIN A RANGE OF 0.3m TO 0.6m.
- THE SIDES OF THE BED SHOULD BE SLOPED IN THE RANGE OF 3H:1V OR SHALLOWER.

### 6) MINIMUM CLEARANCE DISTANCE FROM LEACHING BED

- 3.0m FROM ANY PROPERTY LINE
- 5.0m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL
- 30.0m FROM ANY DUG OR SANDPOINT WELL
- 5.0m FROM ANY POOL (UNLESS OTHERWISE APPROVED)
- 5.0m FROM ANY TREE (UNLESS OTHERWISE APPROVED)

### 7) MINIMUM CLEARANCE DISTANCE FROM TANK(S)

- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL
- 3.0m FROM ANY PROPERTY LINE

### 8) GENERAL

- SNOW STORAGE SHALL NOT BE LOCATED OVER OR UPGRADIENT OF THE PROPOSED SEWAGE SYSTEM.
- THE SEWAGE SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT TRAFFIC LOADING.
- THE BACKFILLING OF THE SEWAGE SYSTEM SHOULD MINIMIZE THE RISK OF OVER COMPACTION WITH THE USE RUBBER TRACKED EQUIPMENT AND BY AVOIDING THE CREATION OF ANY CONSTRUCTION ROUTES OR PATHWAYS OVER THE SYSTEM.
- ANY EXISTING IRRIGATION / SPRINKLER SYSTEM TO BE RELOCATED AWAY FROM PROPOSED LEACHING BED.
- CONTRACTOR SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES, AND REGULATIONS.
- CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THE CONSULTANT OF ANY ERRORS AND/OR OMISSIONS ON DESIGN DRAWINGS IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
- CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
- THE FIRM OF PATERSON GROUP INC. HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE.
- CONSTRUCTION INSPECTIONS DURING THE INSTALLATION OF THE SEWAGE SYSTEM MAY BE REQUIRED BY THE REGULATING AUTHORITY AND ARE RECOMMENDED BY THIS FIRM. IF THIS FIRM IS TO COMPLETE ANY CONSTRUCTION INSPECTION(S), ADDITIONAL FEES MAY BE APPLIED. CONFIRMATION OF PAYMENT WILL BE REQUIRED PRIOR TO THE INSPECTION.
- THE TEST HOLE INFORMATION PROVIDED IS INTENDED TO BE USED FOR DESIGN PURPOSES ONLY, AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. IF DISCREPANCIES ARE FOUND DURING THE CONSTRUCTION PROCESS, IT IS THE CLIENT'S RESPONSIBILITY TO CONTACT THIS FIRM TO MAKE ANY NECESSARY COMMENTS OR REVISIONS. ADDITIONAL REVISIONS ARE NOT CONSIDERED PART OF THE DESIGN WORKS AND WILL BE CONSIDERED AS AN ADDITIONAL COST.

09/01/25	Issued for Septic Permit	1
08/01/25	Issued for Client Review	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

**PATERSON GROUP**  
5 UNDIA DRIVE  
OTTAWA, ON  
K2E 7S9  
TEL: (613) 226-7381

Client:

**GREELY SAND AND GRAVEL**

Project:

**PROPOSED SEWAGE SYSTEM REPLACEMENT**

5360 BANK STREET  
OTTAWA (GREELY), ONTARIO

Drawing:

**SEWAGE SYSTEM DETAIL & NOTES**

Scale: N.T.S.	Drawn by: HV
Date: 01/2025	Checked by: MK

Drawing No.:

**PH4841-2(rev.1)**

p:\autocad\drawings\hydrogeology\ph48xx\ph4841 - greely sand and gravel - 5360 bank street\ph4841-2(rev.1).dwg



## Permit

### Part 8 – Sewage System Ontario Building Code

Do Not Complete  
Permit No 25-015  
Revision No \_\_\_\_\_  
Date \_\_\_\_\_  
Related Application \_\_\_\_\_

**A copy of this permit must be posted on the property at all time during construction. OBC, Division C — Part 1, Section 1.3.2.1**

This permit verifies that the on-site sewage system was reviewed and approved for construction under the *Ontario Building Code* and *O.Reg. 323/12* as amended by *O.Reg. 151/13*.

Inspected & Recommended by:	Ryan Hiemstra	Owner:	Greely Sand & Gravel	
Inspection Date & Time:		Weather:		
Civic Address:	5360 Bank Street	Legal:		
In the former Township/City of Gloucester				
number of bedrooms:	non-residential	fixture units:		
finished floor area:		Q:	75 L/d/staff x 6 staff = 450	L/day
septic tank	3600 L	weigh bills for Filter Media	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
effluent filter	YES	grain size analysis required	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
pump rate	L/15 MIN	site to be scarified	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
treatment unit		clay seal inspection	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
number of units		mantle required	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
		sub-grade inspection	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no

**ELEVATION**  In Ground  Partially Raised  Fully Raised

**TYPE OF SYSTEM**

Trench  
 Pipe and Stone or  Chambers

Shallow Buried Trench

type of chamber \_\_\_\_\_

pipe length \_\_\_\_\_ m

loading area \_\_\_\_\_ m<sup>2</sup>

orifice spacing \_\_\_\_\_ m

total trench length \_\_\_\_\_ m

Filter Media Bed

trench configuration \_\_\_\_\_

stone \_\_\_\_\_ 11.43 m<sup>2</sup>

Dispersal Bed

extended base \_\_\_\_\_ 11.43 m<sup>2</sup>

BMEC  Type A  Type B

pipe \_\_\_\_\_ 4 runs at 3m; 0.76m o/c

stone \_\_\_\_\_ m<sup>2</sup>

weight of filter media \_\_\_\_\_ 15,870 kg

sand \_\_\_\_\_ m<sup>2</sup>

loading area \_\_\_\_\_ native m<sup>2</sup>

pipe \_\_\_\_\_

Class 5 Holding Tank

weight of sand \_\_\_\_\_ kg

Septic Tank Only

Manager, Septic System Approvals:

Permit Date: January 21, 2025

Comments: \_\_\_\_\_

maintenance/pumping required

ESA permit # required

engineer to verify

Class 5 Holding Tank approval only valid for three years from date of issue

subgrade

squirt height

Manager, Septic System Approvals: \_\_\_\_\_

Revision Date: \_\_\_\_\_

Comments: \_\_\_\_\_

## **Appendix D Stormwater Management**





## PROJECT: 160401995

### 5360 Bank Street Existing Conditions Runoff Coefficient Calculation

Area (ha)	C	Description	A x C
0.26	0.59	EX-5	0.15
2.04	0.33	EX-6	0.67
1.74	0.27	EXT-1	0.47
0.08	0.41	EXT-3	0.03
0.04	0.90	EXT-4	0.04
	4.16		1.37
Composite C-Factor	0.33		

C- factor from MTO Design Chart 1.07: Runoff Coefficients

Time of Concentration

Airport (C<0.40)  
$$t_c = [3.26 \times (1.1 - C) \times L^{0.5}] / S_w^{0.33}$$

L	340	m
$S_w$	2.0%	
C	0.33	
$t_c$	37.2	min

Therefore,  $T_c = 37.2$  min  
0.62 hrs

**PROJECT: 160401995****5360 Bank Street**  
**Post-Development Conditions**  
Runoff Coefficient Calculation

Area (ha)	C	Description	A x C
0.26	0.79	S-5	0.21
2.04	0.34	S-6	0.69
1.74	0.27	EXT-1	0.47
0.08	0.41	EXT-3	0.03
0.04	0.90	EXT-4	0.04
			4.16
			1.44
Composite C-Factor	0.35		

C- factor from MTO Design Chart 1.07: Runoff Coefficients

Time of Concentration

Airport (C<0.40)  
$$t_c = [3.26 \times (1.1 - C) \times L^{0.5}] / S_w^{0.33}$$

L	340	m
$S_w$	2.0%	
C	0.35	
$t_c$	36.4	min

Therefore, $T_c =$	36.4	min
	0.61	hrs

## Stormwater Management Calculations

### Project #160401995, 5360 Bank Street

#### Modified Rational Method Calculations for Storage

2 yr Intensity		$I = a/(t + b)^c$	a =	732.951	t (min)	I (mm/hr)
City of Ottawa			b =	6.199	10	76.81
			c =	0.81	20	52.03
2 YEAR Modified Rational Method for Entire Site						
<b>Subdrainage Area:</b> S-2, S-3 <b>Area (ha):</b> 1.63 <b>C:</b> 0.66						
<b>Controlled - Tributary</b>						
tc (min)	I (5 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m^3)	
10	76.81	229.70	128.00	101.71	<b>61.02</b>	
20	52.03	155.61	128.00	27.62	33.14	
30	40.04	119.76	128.00	0.00	0.00	
40	32.86	98.29	128.00	0.00	0.00	
50	28.04	83.86	128.00	0.00	0.00	
60	24.56	73.44	128.00	0.00	0.00	
70	21.91	65.53	128.00	0.00	0.00	
80	19.83	59.31	128.00	0.00	0.00	
90	18.14	54.26	128.00	0.00	0.00	
100	16.75	50.08	128.00	0.00	0.00	
110	15.57	46.56	128.00	0.00	0.00	
120	14.56	43.55	128.00	0.00	0.00	
Storage: Surface Storage Above Grade + Within Filter Media						
Orifice Equation: $Q = CdA(2gh)^{0.5}$ Where C = 0.61 Orifice Diameter: 230.00 mm Invert Elevation: 105.81 m Media Volume: 33.2 m <sup>3</sup> Max Water Elevation: 107.11 m Porosity: 0.40 Max Ponding Depth 1.30 m Media Storage: 13.3 m <sup>3</sup> Downstream W/L 105.66 m						
Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check	
2-year Water Level	107.11	1.30	128.0	61.0	61.4	OK
<b>SUMMARY TO OUTLET</b>						
Total Area	1.630 ha	Vrequired	Vavailable			
Total 2yr Flow	128.0 L/s					
Target	130.7 L/s	61	61 m <sup>3</sup>	Ok		

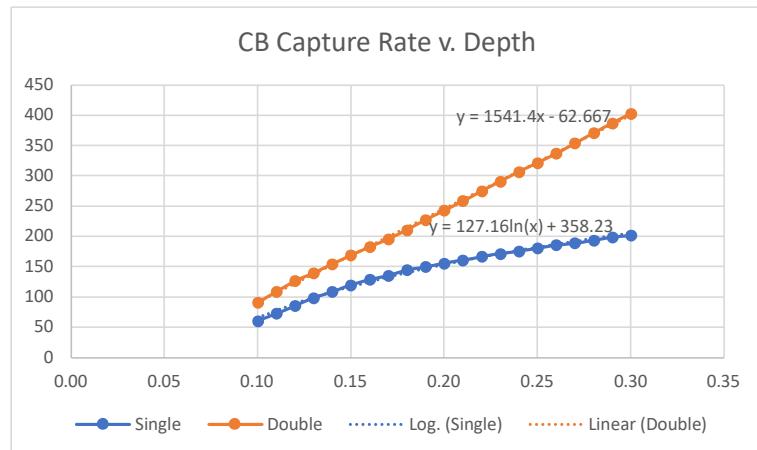
### Project #160401995, 5360 Bank Street

#### Modified Rational Method Calculations for Storage

100 yr Intensity		$I = a/(t + b)^c$	a =	1735.688	t (min)	I (mm/hr)
City of Ottawa			b =	6.014	10	178.56
			c =	0.820	20	119.95
100 YEAR Modified Rational Method for Entire Site						
<b>Subdrainage Area:</b> S-2, S-3 <b>Area (ha):</b> 1.63 <b>C:</b> 0.83						
<b>Controlled - Tributary</b>						
tc (min)	I (100 yr) (mm/hr)	Qactual (L/s)	Qrelease (L/s)	Qstored (L/s)	Vstored (m <sup>3</sup> )	
10	178.56	667.53	373.15	294.38	<b>176.63</b>	
20	119.95	448.42	373.15	75.28	90.33	
30	91.87	343.44	373.15	0.00	0.00	
40	75.15	280.92	373.15	0.00	0.00	
50	63.95	239.09	373.15	0.00	0.00	
60	55.89	208.96	373.15	0.00	0.00	
70	49.79	186.13	373.15	0.00	0.00	
80	44.99	168.19	373.15	0.00	0.00	
90	41.11	153.69	373.15	0.00	0.00	
100	37.90	141.70	373.15	0.00	0.00	
110	35.20	131.60	373.15	0.00	0.00	
120	32.89	122.97	373.15	0.00	0.00	
Storage: Surface Storage Above Grade + Within Filter Media						
Orifice Equation: $Q = CdA(2gh)^{0.5}$ Where C = 0.61 Orifice Diameter: 230.00 mm Invert Elevation: 105.81 m CB Rim Elevation: 107.75 m Max Water Elevation: 108.05 m CB Capture Rate: 205.1 L/s Max Ponding Depth 2.24 m Max Ponding Depth 0.30 m Downstream W/L 105.66 m Downstream W/L 105.66 m						
Stage	Head (m)	Discharge (L/s)	Vreq (cu. m)	Vavail (cu. m)	Volume Check	
100-year Water Level	108.05	2.24	373.1	176.6	275.3	OK
<b>SUMMARY TO OUTLET</b>						
Total Area	1.630 ha	Vrequired	Vavailable			
Total 100yr Flow	373.1 L/s					
Target	380.2 L/s	177	275 m <sup>3</sup>	Ok		

**Catch Basin Inlet Capacity (L/s) at Road Sag - per MTO Drainage Manual Chart 4.19 for OPSD 400.01, 400.0:**

Depth	Single	Double
0.00	0	0
0.01	1	1
0.02	2	3
0.03	4	5
0.04	7	9
0.05	11	16
0.06	16	27
0.07	20	36
0.08	36	54
0.09	48	71
0.10	61	91
0.11	73	109
0.12	86	127
0.13	99	140
0.14	109	155
0.15	120	169
0.16	129	183
0.17	136	196
0.18	145	211
0.19	150	228
0.20	156	243
0.21	161	259
0.22	167	275
0.23	172	291
0.24	176	307
0.25	181	322
0.26	186	337
0.27	189	354
0.28	194	371
0.29	199	387
0.30	202	403



**Imbrium® Systems****ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION**

02/10/2025

Province:	Ontario
City:	Ottawa
Nearest Rainfall Station:	OTTAWA CDA RCS
Climate Station Id:	6105978
Years of Rainfall Data:	20
Site Name:	S-5
Drainage Area (ha):	0.26
Runoff Coefficient 'c':	0.79

Project Name:	5360 Bank Street
Project Number:	160401995
Designer Name:	Michael Wu
Designer Company:	Stantec
Designer Email:	Michael.Wu@stantec.com
Designer Phone:	613-738-6033
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	6.63
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	No
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	200
Estimated Average Annual Sediment Load (kg/yr):	269
Estimated Average Annual Sediment Volume (L/yr):	218

**Net Annual Sediment  
(TSS) Load Reduction  
Sizing Summary**

Stormceptor Model	TSS Removal Provided (%)
EFO4	93
EFO5	96
EFO6	98
EFO8	99
EFO10	100
EFO12	100

Recommended Stormceptor EFO Model: **EFO4**Estimated Net Annual Sediment (TSS) Load Reduction (%): **93**Water Quality Runoff Volume Capture (%): **> 90**

## THIRD-PARTY TESTING AND VERIFICATION

► **Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

## PERFORMANCE

► **Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

## PARTICLE SIZE DISTRIBUTION (PSD)

► The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

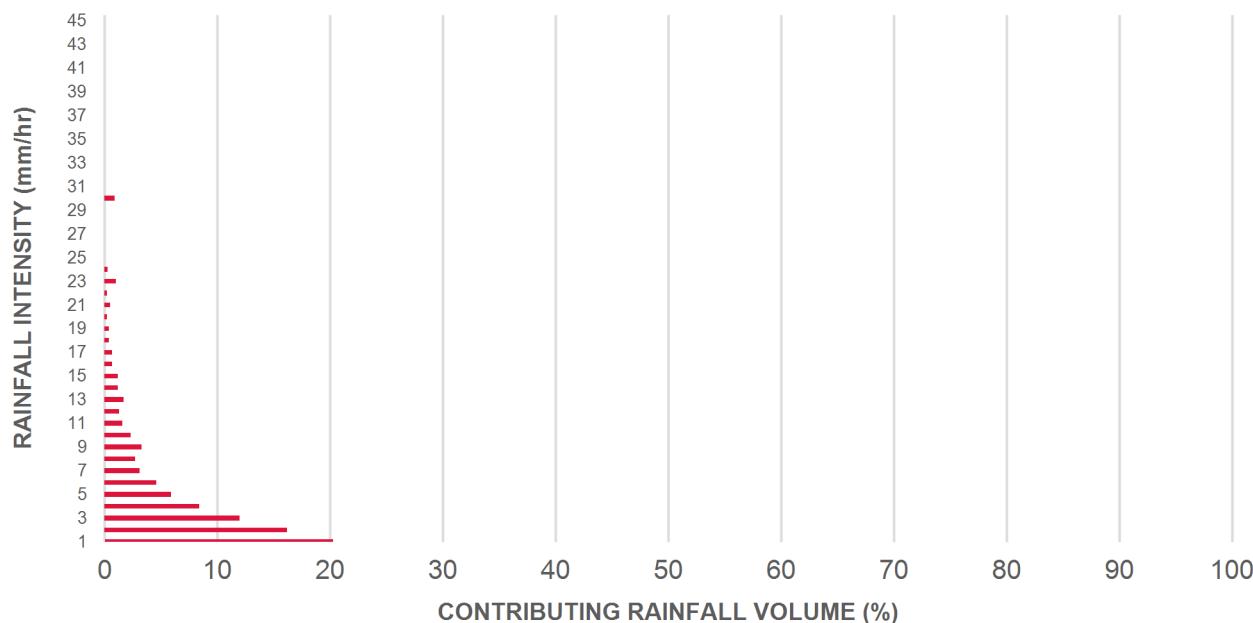
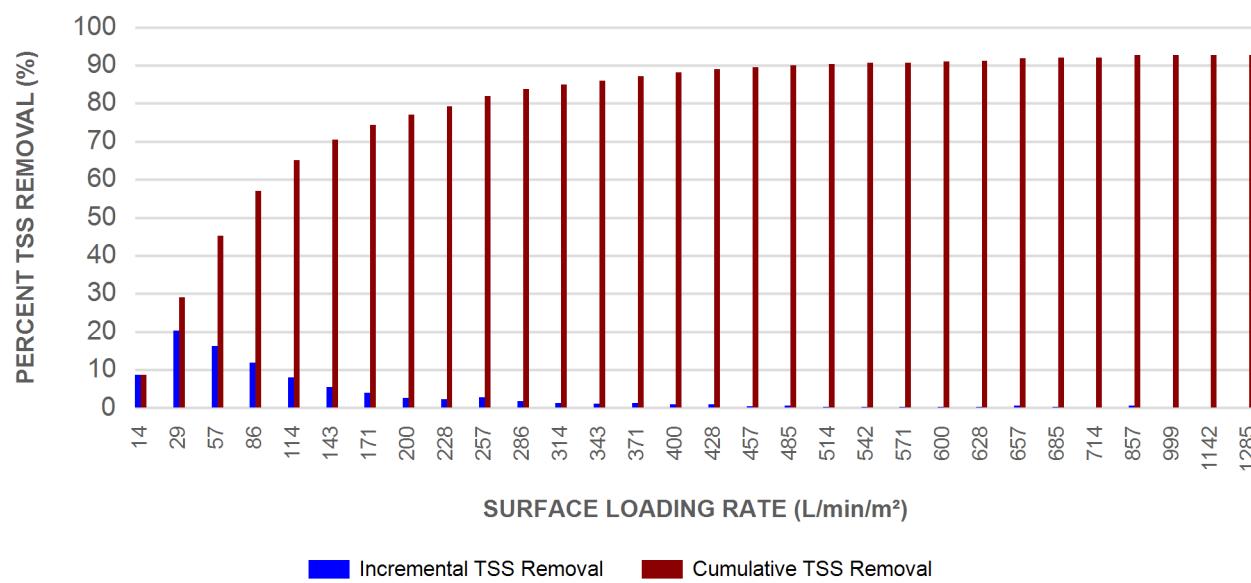
Particle Size (μm)	Percent Less Than	Particle Size Fraction (μm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

## Stormceptor® EF Sizing Report

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.6	8.6	0.29	17.0	14.0	100	8.6	8.6
1.00	20.3	29.0	0.57	34.0	29.0	100	20.3	29.0
2.00	16.2	45.2	1.14	69.0	57.0	100	16.2	45.2
3.00	12.0	57.2	1.71	103.0	86.0	98	11.8	57.0
4.00	8.4	65.6	2.28	137.0	114.0	95	8.0	65.0
5.00	5.9	71.6	2.86	171.0	143.0	91	5.4	70.4
6.00	4.6	76.2	3.43	206.0	171.0	87	4.0	74.4
7.00	3.1	79.3	4.00	240.0	200.0	83	2.5	77.0
8.00	2.7	82.0	4.57	274.0	228.0	82	2.3	79.2
9.00	3.3	85.3	5.14	308.0	257.0	81	2.7	81.9
10.00	2.3	87.6	5.71	343.0	286.0	79	1.8	83.7
11.00	1.6	89.2	6.28	377.0	314.0	78	1.2	84.9
12.00	1.3	90.5	6.85	411.0	343.0	77	1.0	85.9
13.00	1.7	92.2	7.42	445.0	371.0	75	1.3	87.2
14.00	1.2	93.5	7.99	480.0	400.0	74	0.9	88.1
15.00	1.2	94.6	8.57	514.0	428.0	73	0.8	89.0
16.00	0.7	95.3	9.14	548.0	457.0	72	0.5	89.5
17.00	0.7	96.1	9.71	582.0	485.0	70	0.5	90.0
18.00	0.4	96.5	10.28	617.0	514.0	69	0.3	90.3
19.00	0.4	96.9	10.85	651.0	542.0	67	0.3	90.6
20.00	0.2	97.1	11.42	685.0	571.0	66	0.1	90.7
21.00	0.5	97.5	11.99	719.0	600.0	65	0.3	91.0
22.00	0.2	97.8	12.56	754.0	628.0	64	0.2	91.2
23.00	1.0	98.8	13.13	788.0	657.0	64	0.6	91.8
24.00	0.3	99.1	13.70	822.0	685.0	64	0.2	92.0
25.00	0.0	99.1	14.28	857.0	714.0	64	0.0	92.0
30.00	0.9	100.0	17.13	1028.0	857.0	63	0.6	92.6
35.00	0.0	100.0	19.99	1199.0	999.0	62	0.0	92.6
40.00	0.0	100.0	22.84	1370.0	1142.0	58	0.0	92.6
45.00	0.0	100.0	25.70	1542.0	1285.0	55	0.0	92.6
<b>Estimated Net Annual Sediment (TSS) Load Reduction =</b>								<b>93 %</b>

Climate Station ID: 6105978 Years of Rainfall Data: 20

## RAINFALL DATA FROM OTTAWA CDA RCS RAINFALL STATION

INCREMENTAL AND CUMULATIVE TSS REMOVAL  
FOR THE RECOMMENDED STORMCEPTOR® MODEL

## Stormceptor® EF Sizing Report

## Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

## SCOUR PREVENTION AND ONLINE CONFIGURATION

► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

## DESIGN FLEXIBILITY

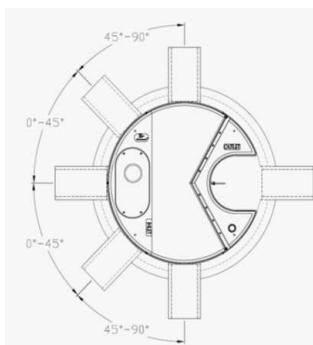
► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

## OIL CAPTURE AND RETENTION

► While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, Stormceptor® EFO has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV Procedure for Laboratory Testing of Oil-Grit Separators. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.



## Stormceptor® EF Sizing Report

**INLET-TO-OUTLET DROP**

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

**HEAD LOSS**

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

**Pollutant Capacity**

Stormceptor EF / EFO	Model Diameter	Depth (Outlet Pipe Invert to Sump Floor)	Oil Volume	Recommended Sediment Maintenance Depth *	Maximum Sediment Volume *	Maximum Sediment Mass **
	(m) (ft)	(m) (ft)	(L) (Gal)	(mm) (in)	(L) (ft³)	(kg) (lb)
EF4 / EFO4	1.2 4	1.52 5.0	265 70	203 8	1190 42	1904 5250
EF5 / EFO5	1.5 5	1.62 5.3	420 111	305 10	2124 75	2612 5758
EF6 / EFO6	1.8 6	1.93 6.3	610 160	305 12	3470 123	5552 15375
EF8 / EFO8	2.4 8	2.59 8.5	1070 280	610 24	8780 310	14048 38750
EF10 / EFO10	3.0 10	3.25 10.7	1670 440	610 24	17790 628	28464 78500
EF12 / EFO12	3.6 12	3.89 12.8	2475 655	610 24	31220 1103	49952 137875

\*Increased sump depth may be added to increase sediment storage capacity

\*\* Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³ )

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

**STANDARD STORMCEPTOR EF/EFO DRAWINGS**

For standard details, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

**STANDARD STORMCEPTOR EF/EFO SPECIFICATION**

For specifications, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

## **STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE**

### **PART 1 – GENERAL**

#### **1.1 WORK INCLUDED**

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

#### **1.2 REFERENCE STANDARDS & PROCEDURES**

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program’s **Procedure for Laboratory Testing of Oil-Grit Separators**

#### **1.3 SUBMITTALS**

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

### **PART 2 – PRODUCTS**

#### **2.1 OGS POLLUTANT STORAGE**

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m <sup>3</sup> sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m <sup>3</sup> sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m <sup>3</sup> sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m <sup>3</sup> sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m <sup>3</sup> sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m <sup>3</sup> sediment / 2,476 L oil

### **PART 3 – PERFORMANCE & DESIGN**

### 3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

### 3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m<sup>2</sup> to 1400 L/min/m<sup>2</sup>, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m<sup>2</sup> and 1400 L/min/m<sup>2</sup> shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m<sup>2</sup> shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m<sup>2</sup>. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m<sup>2</sup>.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m<sup>2</sup> shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m<sup>2</sup>, and shall be calculated using a simple proportioning formula, with 1400 L/min/m<sup>2</sup> in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m<sup>2</sup>.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

### 3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m<sup>2</sup>.

### 3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid



**Stormceptor® EF Sizing Report**

Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m<sup>2</sup> to 2600 L/min/m<sup>2</sup>) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

## **Appendix E External Report Excerpts**



## **1.0 INTRODUCTION**

At the request of Mr. Brent Pyper of Greely Sand and Gravel, this firm was retained to conduct a preliminary assessment of the viability of the remaining lands adjacent to the current extraction area, and currently zoned as a Mineral Resource designation (ME2 Zone) in the City of Ottawa Official Plan. In particular, the lands under consideration consist of two parcels of land fronting near to Bank Street and having a municipal identification of 5310 Bank Street (north parcel) and 5362 Bank Street (south parcel), Ottawa, Ontario. The future development of these lands are currently being considered for a commercial subdivision.

This report has been prepared specifically and solely for the above noted project which is described herein. It contains all of our findings and results of the preliminary investigation at this site.

## **2.0 SITE INFORMATION**

The subject lands consists of two properties located on the west side of Bank Street in the City of Ottawa. The properties abut each other and are located immediately east of the existing Greely Sand and Gravel Aggregate Extraction area, as shown on Figure 1. The northern parcel, which is known as the Moffatt Lands, is located on Part of Lot 28, Concession IV in the former Township of Gloucester and has a municipal address of 5310 Bank Street. The southern parcel, known as the Pyper Lands, consists of Part of Lot 27, Concession IV in the former Township of Gloucester and has a municipal address of 5362 Bank Street. The total study area is approximately 20.4 hectares in size with the north and south parcels being approximately 15.58 and 4.83 hectares in size, respectively.

The northern parcel currently has a ME2 zoning and the southern parcel has a RU zoning designation. The properties are sandwiched by an existing church and graveyard located at 5338 Bank Street (R15 Zoning). A large commercial property (Grandor Lumber) is located immediately north of the study area at 5224 Bank Street (RG1 Zoning). There is currently a licenced bedrock quarry, owned and operated by R.W. Tomlinson Limited on the east of Bank Street approximately 250 m east of the eastern limits of the study area. There is also a cellular telephone tower located near the centre of the study area.

Presently, the northern parcel is mostly heavily tree covered with the exception of a gravel access road and a cell tower located near the centre of this parcel. A number of buildings and a large gravel parking/storage area are located in the northwest quadrant of the south parcel. The south parcel is mostly tree covered to the east half of the property. Reference should be made to the appended Site Location Plan for an aerial view of the surrounding lands.

It should be noted that the south parcel, identified as 5362 Bank Street did have a prior Mineral Resource Designation that was subsequently changed to the RU Zoning.

### **3.0 SCOPE OF WORK**

The scope of work for this Preliminary Aggregate Resource Study was as follows:

- Determine the suitability of the overburden aggregates (based on gradation) of the various materials recovered from the test pits.
- Provide an assessment of the viability of the suggested aggregate reserve within the ME2 Zone, for future extraction in the overburden materials.

### **4.0 METHODOLOGY**

On May 27, 2014, a site meeting was held with Chris Bierman of the Ministry of Natural Resources and the current landowners. A walkabout of the site was conducted, and three (3) test pits were put down, on the north parcel, to provide verification of the aggregate quality. On August 5, 2014, two (2) additional test pits were put down on the south parcel. The approximate locations of the test holes are shown on Drawing No. PH2552-FIG.2, Test Pit Location Plan, included in Appendix 3.

The test pits were completed using a track mounted mechanical shovel supplied by the client. The test pit procedure consisted of excavating to the required depths at the selected locations and logging and sampling the overburden. The test pits were loosely backfilled upon completion.

#### **Sampling and Identification**

All soil samples were classified on site, placed in sealed plastic bags and transported to our laboratory. The depths at which the test pit samples were recovered from the test holes are shown as G samples on the Soil Profile and Test Data sheets in Appendix 1.

The subsurface conditions observed in the test holes were recorded in detail in the field. The soil profiles are presented on the Soil Profile and Test Data sheets in Appendix 1 of this report.

## **Groundwater**

At the time of the fieldwork program, groundwater was encountered at depths ranging from 1.7 m in TP 1 to 4.5 m in TP 4 and TP 5. Seasonal variations in the groundwater table are to be expected, with higher levels being encountered during prolonged wet periods (i.e. spring thaw).

## **Laboratory Testing**

Soil samples were recovered from the subject site and visually examined in our laboratory to review the results of the field logging. Samples of the various stratigraphic units were selected for grain size distribution analyses. The results are presented in Appendix 2.

## **5.0 OBSERVATIONS**

### **5.1 Regional Geology**

The dominant stratigraphic unit in the extraction area west of the subject property comprises fluvioglacial deposits that have resulted in the formation of an esker, that is quite extensive in the Greely area. This formation has been successfully mined in recent years, and has been known to produce good quality sand and gravel material. On the edges of the esker deposit, as is the case for the subject lands, poorly sorted glacial till materials exist. Regional mapping, which is duplicated on Drawing No. PH2552-FIG.3 in Appendix 3 provides confirmation of the in situ observations at the test pit locations.

### **5.2 Subsurface Profile**

The soil profile underlying the north parcel (TP 1 to TP 3 inclusive) consists primarily of a topsoil layer overlying a thin layer of sand and gravel deposits containing silt and clay overlying poorly sorted glacial till deposits. The glacial till is underlain by dolomitic bedrock of the Oxford Formation at shallow depth. In the eastern face of the existing pit to the west, the glacial till unit was visible in the pit face, and basically defines the limit of usable quality aggregate in the current extraction area.

The soil profile underlying the south parcel, as encountered in TP 4 and TP 5, generally consists of fill materials (1.5 m to 2.3 m thick), underlain by a fine sand deposit (approximately 1.8 m thick), which in turn, is underlain by fine sand to sandy silt. Groundwater was encountered at approximately 4.5 m depth.

Reference should be made to the Soil Profile and Test Data sheets in Appendix 1 for the details of the soil profiles encountered at each test hole location.

Any information pertaining to soils and all test hole logs are furnished as a matter of general information only, and test pit descriptions or logs are not to be interpreted as descriptive of conditions at locations other than those described by the test pits themselves.

### 5.3 Laboratory Testing

Five samples representing the stratigraphic units in the test pits were submitted for grain size distribution analysis. The results are summarized in Table 1. The detailed results are presented on the Grain Size Distribution sheets in Appendix 2 of this report.

**Table 1 - Result Summary of Grain Size Distribution Tests on Sand and Silty Sand / Sandy Silt Samples**

Sample	Depth (m)	Gravel (%)	Sand (%)	Silt and Clay Fines (%)
TP1-G1	0.5	15	60	25
TP1-G2	1.6	36	52	12
TP2-G3	2	8	68	24
TP2-G4	3.5	12	77	11
TP3-G5	0.6	48	35	17
TP4-G6	3.6	1	95	4
TP4-G7	4.3	0	90	10
TP5-G8	3.8	0	23	77

Based on the results of the eight (8) grain size distributions, none of the samples meet the Ontario Provincial Standard Specifications (OPSS) for a Granular B Type I material.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 Viability of Future Extraction**

Based on the results of this study, in conjunction with regional investigations and mapping, the primary extraction areas are in the esker deposit to the west of the subject lands, which is currently owned and operated by Greely Sand and Gravel.

Based on regional mapping, in conjunction with site specific observations, the eastern extremity of the current pit operations have reached the point where no quality aggregate remains in place, thus limiting the value of the remaining lands as an aggregate resource. The further complicating factor is that the remaining lands are landlocked on three sides, with existing commercial or institutional development on the north and south sides, and Bank Street to the east. The application of applicable setbacks would result in minimal lands being available for further mining operations, and from a strictly planning perspective, would not be considered to be viable, even if there were quality aggregates on the site.

In addition, the depth of overburden is quite limited, and none of the sand samples meet specifications OPSS Granular B Type 1 material, or for other select materials such as concrete sand, mortar sand, filter sand, playground sand and/or bedding sand.

### **6.2 Proposed Commercial Development**

Based on the results of this investigation, it is our opinion that the geotechnical conditions underlying the site are suitable for commercial subdivision development. Although this study is not intended to be used in support of a subdivision development application, it is evident that this property would be well suited for commercial type development, given the current land uses on the surrounding lands.

## 7.0 SUMMARY

A geological assessment was conducted on the subject properties to determine the suitability of these lands for future aggregate extraction operations. Based on the results of this assessment, it is evident that the current operations to the west have reached their eastern limit of quality aggregate. Based on the results of the test pitting and laboratory testing, the material contained within the ME2 Zone does not meet specifications for select granular material, and as such, has no economic value in this regard. The existing lands to the north and south along Bank Street have been previously de-designated and developed, which would result in significant reductions in aggregate extraction, due the applicable setbacks that would be required for a mineral resource extraction operation. As such, it is our opinion that the de-designation of these lands complies with the intent of the Provincial Policy statements based on economic viability and potential environmental impacts.

Yours truly,

**Paterson Group Inc.**



Stephen J. Walker, P. Eng.

**Report Distribution:**

- Greely Sand and Gravel (3 copies)
- Paterson Group (1 copy)



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