

STORMWATER MANAGEMENT REPORT

2688 Carp Road
Ottawa, Ontario

Report No. 17016

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NOT VALID UNLESS
SIGNED & DATED

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STORMWATER MANAGEMENT REPORT

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Ottawa, Ontario

This Stormwater Management Report addresses the stormwater management requirements of 3.2 hectares of land at 2688 Carp Road in Ottawa. An existing one-storey 108 sq.m. garage building is proposed to be relocated on the subject lands. A proposed two storey office / one storey repair garage has a 599 sq.m. footprint. Approximately 70% of the property consists of a granular surface. A minimal amount of regrading of the existing granular surface is proposed. Huntley Creek flows through the property immediately to the south of the proposed development.

This report forms part of the stormwater management design for the proposed development. Also refer to drawing C-1 to C-4 prepared by D. B. Gray Engineering Inc.

WATER QUALITY:

To meet the Mississippi Valley Conservation Authority (MVCA) requirements the 15 m setback from of the top of the Huntley Creek bank plus at least an additional 6 m (for a total of 21 m or more) will be vegetated.

In addition the MVCA requires quality treatment corresponding to an enhanced level of protection within the Huntley Creek watershed per the Carp River Watershed / Subwatershed Study. As per the Ministry of the Environment (MOE) Stormwater Management Planning and Design Manual (March 2003), an enhanced level of protection requires the removal of 80% total suspended solids (TSS). MVCA also requires measures to maintain infiltration and reduce water temperatures be considered and implement where feasible as per the Carp River Watershed / Subwatershed Study.

Rainfall runoff from most of the site currently sheet drain to ditches to the north and east of the property and to Huntley Creek to the south. Two infiltration trenches, receiving drainage from 16,795 sq.m. of the site, are proposed to be located to the south and southeast of the developed portion of the property. The infiltration trenches have been sized to remove 80% TSS as per the MOE Design Manual. The infiltration trenches will promote groundwater recharge and thermal mitigation. Grassed swales will be used for pre-treatment. The site grading and the location and shape of the infiltration trenches are designed that the runoff drains to the infiltration trenches via 30 m to 140 m of grassed swales. The grassed swales have been designed as per the MOE Design Manual recommendations, namely flatter than 2.5:1 side slopes (3:1), channel slopes of 1% or less, and, in most cases with a bottom width of 0.75 m. It is recommended that the grass should be allowed to grow higher than 75 mm in all grassed swales.

As per the geotechnical report no groundwater was observed in any of the six boreholes (1.8 to 6.1 m depth). The top of infiltration trenches are located about 4m above the water level in the creek. As per the detail on drawing C-3 the bottom of the trench is about 2m below grade, therefore the bottom of the trench is greater than the 1m recommended in the MOE Design Manual.

There are no infiltration trenches within 15m of the proposed septic system and there are no infiltration trenches to the north of the proposed building (an area that includes runoff from the roof of the proposed building which is considered “clean”). In these areas the runoff will drain, via about 175 m of grassed swales, to an existing ditch, located adjacent to the northeast and east end of the property, that drains to Huntley Creek.

An erosion and sediment control plan has been developed to be implemented during construction, (see notes 2.1 to 2.6 on drawing C-3). In summary: to filter out construction sediment a silt fence barrier will be installed adjacent to the north, east and south edge of the developed portion of the property.

WATER QUANTITY:

The stormwater quantity control measures detailed in this report are based on the criteria that the release rate for post-development storm events is equal to or less than the flow produced by the (existing) pre-development.

It is calculated that the pre-development conditions reflect a runoff coefficient of 0.61. The post development runoff coefficient is calculated to be 0.57. Therefore the release rate for post-development storm events will be less than the flow produced by the (existing) pre-development.

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE (MOECC) ENVIRONMENTAL COMPLIANCE APPROVAL (ECA):

Since part of the proposed building is a repair garage it is expected that the MOECC will consider the property “industrial lands and therefore it is expected that a MOECC ECA will be required. A pre-consultation record has been requested from the MOECC.

CONCLUSIONS:

1. Infiltration trenches have been sized to remove 80% TSS as required by MVCA to achieve a quality treatment corresponding to an enhanced level of protection.
2. The infiltration trenches will promote groundwater recharge and thermal mitigation as required by MVCA.
3. An erosion and sediment control plan has been developed to be implemented during construction.
4. The runoff from post-development storm events will be than the flow produced by the (existing) pre-development.
5. It is expected that the MOECC will consider the property “industrial lands” and therefore a MOECC ECA will be required.

2688 Carp Road Ottawa, Ontario

INFILTRATION CALCULATIONS

DRAINAGE AREA I

			C
Roof Area:	367	sq.m.	0.90
Granular:	9178	sq.m.	0.70
Landscape Area:	<u>513</u>	<u>sq.m.</u>	<u>0.20</u>

Total Catchment Area 10058 sq.m. 0.68

Require Storage Volume *: 68% Impervious Level 34.6 cu.m. (interpolated from Table 3.2 *)
 (for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench			
		Total	Void
Depth	Area	Volume	40%
m	sq.m.	cu.m.	cu.m.
1.45	60.0	87.0	34.8

Percolation Rate: 30 mm/hr (silty sand)

Time to Draw Down: 48 Hours

DRAINAGE AREA II

			C
Roof Area:	0	sq.m.	0.90
Granular:	5752	sq.m.	0.70
Landscape Area:	<u>985</u>	<u>sq.m.</u>	<u>0.20</u>

Total Catchment Area 6737 sq.m. 0.63

Require Storage Volume *: 63% Impervious Level 21.9 cu.m. (interpolated from Table 3.2 *)
 (for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench			
		Total	Void
Depth	Area	Volume	40%
m	sq.m.	cu.m.	cu.m.
1.45	38.0	55.1	22.0

Percolation Rate: 30 mm/hr (silty sand)

Time to Draw Down: 48 Hours

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Pre-Development (Existing) Conditions

			C-values
Creek:	2124	sq.m.	1.00
Roof Area:	198	sq.m.	0.90
Asphalt/Concrete Area:	0	sq.m.	0.90
Gravel:	22675	sq.m.	0.70
Landscape Area:	<u>6988</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	31985	sq.m.	0.61

Post Development Conditions

			C-values
Creek:	2124	sq.m.	1.00
Roof Area:	706	sq.m.	0.90
Asphalt/Concrete Area:	218	sq.m.	0.90
Gravel:	19149	sq.m.	0.70
Landscape Area:	<u>9788</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	31985	sq.m.	0.57