FUNCTIONAL SERVICING AND STORMWATER MAGEMENT REPORT

FOR

67/71 MARQUETTE AVENUE

CITY OF OTTAWA

PROJECT NO.: 13-689

APRIL 2014 – REV 1

FUNCTIONAL SERVICING AND STORMWATER MAGEMENT REPORT

FUNCTIONAL SERVICING AND STORMWATER MAGEMENT REPORT
FOR
67/71 MARQUETTE AVENUE

APRIL 2014 – REV 1

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

FUNCTIONAL SERVICING AND STORMWATER MAGEMENT REPORT FOR

67/71 MARQUETTE AVENUE

CITY OF OTTAWA
APRIL 2014 – REV 1

PROJECT NO.: 13-689

1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare a Functional Servicing and Stormwater Management Report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 67/71 Marquette Avenue.

The subject property is located within the City of Ottawa urban boundary in the Rideau-Vanier ward. As illustrated in ***Figure 1*** the subject property is located approximately 100m northwest of the intersection of Monique Street and Marquette Avenue.

Figure 1: Site Location

The subject property currently contains two, one-storey, single-family homes and measures approximately ***0.074ha***. Under the existing City of Ottawa Zoning By-law, the existing lands are currently designated Residential Fourth density (R4E), as shown by the zoning map included in ***Appendix A***.

The proposed ZBLA and SPCwould allow for the development of a four-storey, 22-unit residential building fronting onto Marquette Avenue. The proposed development would include covered parking, with access from Marquette Avenue. A copy of the site plan is included in ***Drawings/Figures***.

The objective of this report is to provide sufficient detail to demonstrate that the proposed ZBLA and SPC development is supported by existing municipal services.

1.1 Existing Conditions

Sewer system and watermain distribution mapping, along with as-recorded drawings, collected from the City of Ottawa indicate that the following services exist across the property frontage within the adjacent municipal right-of-way:

Watermains:

- 150mm diameter UCI watermain service located within Marquette Avenue

Sanitary Sewers:

- 250mm diameter concrete sewer located within Marquette Avenue

Storm Sewers:

- 450mm diameter concrete sewer located within Marquette Avenue

1.2 Required Permits / Approvals

Development of the site is subject to the City of Ottawa Planning and development approvals process. The City of Ottawa must approve detailed engineering design drawings and reports prepared to support the proposed development plan.

The subject property contains large trees, and re-grading the site to accommodate the proposed development may impact or require removal of existing trees. Trees requiring removal will be subject to the City of Ottawa Urban Tree Conservation By-law No. 2009-200.

1.3 Pre-consultation

Pre-consultation with relevant parties, including the City of Ottawa was conducted via email for the proposed development.

Pre-consultation correspondence, along with the servicing guidelines checklist, is located in ***Appendix A***.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

The following studies were utilized in the preparation of this report.

- **Ottawa Sewer Design Guidelines,**
  City of Ottawa, October 2012.
  (City Standards)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010
  (Water Supply Guidelines)

    - **Technical Bulletin ISD-2010-2**
      City of Ottawa, December 15, 2010.
      (*ISD-2010-2*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update
  (OBC)

- **Water Supply for Public Fire Protection**
  Fire Underwriters Survey, 1999.
  (FUS)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1E pressure zone; as shown by the Pressure Zone map included in ***Appendix B***.

The site is currently serviced via an existing 150mm diameter local unlined cast iron watermain located within the Marquette Avenue right-of-way; as shown by the Water Distribution System map included in ***Drawings/Figures***.

3.2 Water Supply Servicing Design

It is proposed that the development be serviced via an independent 150mm diameter service connection to the existing 150mm diameter watermain within Marquette Avenue. Servicing details are illustrated by ***SSGP-1***.

A hydrant has been proposed to be located along Marquette Avenue as shown by ***SSGP-1*** to provide adequate fire protection to the proposed development.

Table 1 summarizes the ***Water Supply Guidelines*** employed in the preparation of the water demand estimate.

Table 1

Water Supply Design Criteria

Design Parameter	Value
Residential Bachelor/1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential Average Daily Demand	350 L/d/P
Residential Maximum Daily Demand	4.9 x Average Daily
Residential Maximum Hourly	7.4 x Average Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure shall not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa
** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.* *** Table updated to reflect ISD-2010-2*	

Table 2 summarizes the anticipated water demand and boundary conditions for the proposed development based on the ***Water Supply Guidelines***.

Table 2

Water Demand and Boundary Conditions

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (m H_2O / kPa)
Average Daily Demand	8.3	- / -
Max Day + Fire Flow	40.5 + 10,000 = 10,040.5	- / -
Peak Hour	61.2	- / -

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions supplied by the City of Ottawa. Assumed ground elevation ___m. See ***Appendix A.***

Fire flow requirements are to be determined in accordance with Local Guidelines (***FUS***), City of Ottawa ***Water Supply Guidelines***, and the Ontario Building Code. For the proposed development, the ***FUS*** estimates that approximately ***10,000L/s*** in addition to maximum daily demand is required for fire protection. Detailed calculations are provided in ***Appendix B***.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand as indicated in ***Table 2***. No response had been received at the time of publication. Correspondence with the City is included in ***Appendix B***.

3.3 Water Supply Conclusion

Anticipated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions. No response had been received at the time of publication.

The proposed design conforms to the relevant City of Ottawa ***Water Supply Guidelines***.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The site is currently tributary to the local Marquette Avenue sanitary sewer and Ottawa Outfall as shown by the Trunk Sewer Map in ***Appendix B***. The existing 250mm diameter sanitary sewer adjacent to the site within Marquette Avenue directs flow northwest to a 1050mm diameter sanitary sewer within Genest Street. The system then directs flow Jolliet Avenue and Garneau Street to the Ottawa Outfall, as shown by the Sanitary and Storm Collection System maps in ***Drawings/Figures***.

A sanitary analysis was conducted for the local municipal sanitary sewers located across the frontage of the subject property in order to assess the available capacity. The analysis was conducted from Des Peres Blancs to Genest Street Sewer, as shown by the sanitary drainage plan ***SAN-1*** in ***Appendix C***.

Based on the sanitary analysis, the available residual capacity of the Marquette Avenue sanitary sewer is ***24.5L/s***; detailed calculations are included in ***Appendix C***.

Table 3 summarizes the existing estimated wastewater flow to the municipal sewers. Detailed calculations are included in ***Appendix C***.

Table 3

Existing Wastewater Conditions

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow Rate	0.03
Total Estimated Peak Dry Weather Flow Rate	0.11
Total Estimated Peak Wet Weather Flow Rate	**0.13**

4.2 Wastewater Design

It is proposed that the development be serviced via an independent 200mm diameter service connection to the existing 250mm diameter sanitary sewer within Marquette Avenue. Servicing details are illustrated by ***SSGP-1***.

Table 4 summarizes the ***City Standards*** employed in the design of the proposed wastewater sewer system.

Table 4

Wastewater Design Criteria

Design Parameter	Value
Residential Bachelor/1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential Average Daily Demand	350 L/d/P
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Daily average based on Appendix 4-A from **City Standards* *-Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.*	

Table 5 summarizes the anticipated wastewater flow for the subject property. See ***Appendix C*** for associated calculations.

Table 5

Anticipated Wastewater Conditions

Design Parameter	Total Flow (L/s)
Total Estimated Average Dry Weather Flow Rate	0.14
Total Estimated Peak Dry Weather Flow Rate	0.55
Total Estimated Peak Wet Weather Flow Rate	**0.57**

The anticipated peak wastewater flow generated from the proposed development to the local Marquette Avenue sanitary sewer system and ultimately the Ottawa Outfall Sewer has been estimated to be **0.57L/s**; this results in a ***0.44L/s*** increase from the existing conditions. Based on the sanitary analysis conducted ***24.5L/s*** is available in the local sanitary sewer system. Refer to **Appendix C** for associated calculations.

4.3 Wastewater Servicing Conclusions

The proposed development results in an estimated increase in wastewater flow to the Marquette Avenue sanitary sewer of ***0.44L/s***. Based on the sanitary analysis conducted adequate capacity is available in the local sanitary sewer system to accommodate the proposed development.

The proposed wastewater design conforms to the relevant City of Ottawa Sewer Design Guidelines.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa storm sewer system located within the Ottawa River watershed. As such, approvals for proposed development within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA).

The existing site does not appear to contain any controls for stormwater runoff. Runoff from the existing site is directed overland to the existing municipal sewers. Stormwater is tributary to the Ottawa River via the municipal storm sewer system and travels approximately 2.5km before discharging to the watercourse, as shown by the Sanitary and Storm Collection System maps in ***Drawings/Figures***.

The estimated pre-development peak flows for the historical 2, 5, and 100-year storm events are summarized in ***Table 6***, detailed calculations are included in ***Appendix D***.

Table 6
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	8.9
5-year	12.0
100-year	25.8

5.2 Post-development Stormwater Management Targets

Stormwater management requirements for the proposed development are based on consultation with the City of Ottawa and the relevant ***Sewer Design Guidelines***. It has been established that the following criteria apply:

- Allowable release rate of ***7.9L/s*** based on a Rational Method Coefficient of 0.5 for the site, employing the City of Ottawa IDF parameters for a 2-year storm with a time of concentration equal to 10 minutes;
- Additional flow of ***1.3L/s*** and ***2.2L/s*** for the 5-year and 100-year events respectively in unattenuated external flow have been accounted for in the target release rates;
- All storms up to and including the City of Ottawa 100-year design event are to be attenuated on site;

- Quality controls are not anticipated to be required for the development based on the distance from the outlet and experience with similar development. The runoff from the site is primarily roof runoff, which is considered 'clean'.

Consultation with the City of Ottawa is included in ***Appendix A***.

5.3 Stormwater Management System

In order to achieve the allowable post-development stormwater runoff release rate established in ***Section 5.2*** above, the proposed development will employ a subsurface storage system.

The proposed stormwater management design will consist of a subsurface storage system with a pump to convey flow from the parking level to ***STM101***. Flow from ***STM101*** will flow by gravity to the municipal storm system via a 250mm storm lead connecting to the existing 450mm diameter storm sewer within Marquette Avenue.

Unattenuated flow will flow overland to the existing catchbasin located along Marquette Avenue. Unattenuated areas have be compensated for in areas with controls. Servicing details are illustrated by ***SSGP-1*** in ***Drawings/Figures***.

External flows from the adjacent property which may impact the subject property have been taken into account as part of the stormwater management design; additional flow had been taken into account with respect to the release rate from the site but has not been attenuated.

Table 7 shows the estimated storage required to attenuate the site to the established release rate taking into account that a portion of the site is release uncontrolled. Stormwater drainage areas are shown by ***SWM-1*** along with detailed calculations included in ***Appendix D***.

Table 7 summarizes the release rates and on site storage required to meet established target release rates.

Table 7

Summary of Release Rates and Estimated Storage

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	2.9	0.0	5.5	0.0
Attenuated Areas	2.3	12.7	4.7	25.8
Total	**5.2**	**12.7**	**10.2**	**25.8**

Table Notes: 1. Release rate calculated using the critical time of concentration as established by City of Ottawa pre-consultation and Sewer Design Guidelines.
2. Total release rate calculated using attenuated areas + unattenuated areas.

To attenuate stormwater runoff from the 100-year storm to the 2-year release rate of ***7.9L/s*** for the site with an additional ***2.2L/s*** of external flow approximately ***26m^3*** of storage will be required; as indicated by ***SSGP-1*** stormwater storage will be provided via a subsurface storage system. Detailed sizing and calculations are provided in ***Appendix D***.

5.4 Stormwater Servicing Conclusions

Post development stormwater runoff will be restricted to the allowable target for storm events up to and including the 1:100 year storm in accordance with the City of Ottawa ***Sewer Design Guidelines***. To attenuate stormwater runoff from the 100-year storm to the 2-year release rate of ***7.9L/s*** approximately ***26m^3*** of storage will be provided.

The proposed stormwater design conforms to all relevant City guidelines and policies for approval.

6.0 UTILITIES

Hydro and Telecommunications services currently exist within the Marquette Avenue right-of-ways. Utility servicing will need to be coordinated with the individual utility companies prior to site development.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated.

Catch basins will have filter fabric installed under the grate during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install filter cloth between catch basins and frames.
- Plan construction at proper time to avoid flooding.

Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers.
- Clean and change filter cloth at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Limited (DSEL) has been retained to prepare an Functional Servicing report in support of the application for a Zoning By-law Amendment (ZBLA) and Site Plan Control (SPC) at 67/71 Marquette Avenue. The preceding report outlines the following:

- Anticipated water demand under proposed conditions was submitted to the City of Ottawa for establishing boundary conditions, no response had been received at the time of publication.
- The post-development stormwater release rate has been calculated to be ***10.2L/s*** based on consultation with the City of Ottawa.
- It is estimated that approximately ***26m^3*** of stormwater retention volume will be required to meet the release criteria;
- Based on the sanitary analysis conducted adequate capacity is available within the local sanitary sewer system to accommodate the proposed development;
- Hydro and telecommunication services exist within the adjacent right-of-ways.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Robert D. Freel, E.I.T.

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Adam D. Fobert, P.Eng.

z:\projects\13-689_capitalview_marquette\b_design\b3_reports\b3-2_servicing (dsel)\fsr\sub_1\fsr_2014-04-15_689_rdf.docx

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

13-689 16/04/2014

4.1 General Content

☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☒	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	SSGP-1
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☒	Reference to geotechnical studies and recommendations concerning servicing.	Section 1.4
☒	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	SSGP-1

4.2 Development Servicing Report: Water

☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
☐	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
☐	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☒	Analysis of available capacity in existing public infrastructure.	Section 5.1, Appendix D
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings/Figures
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7.0
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

☒	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Section 1.2
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐	Changes to Municipal Drains.	N/A
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

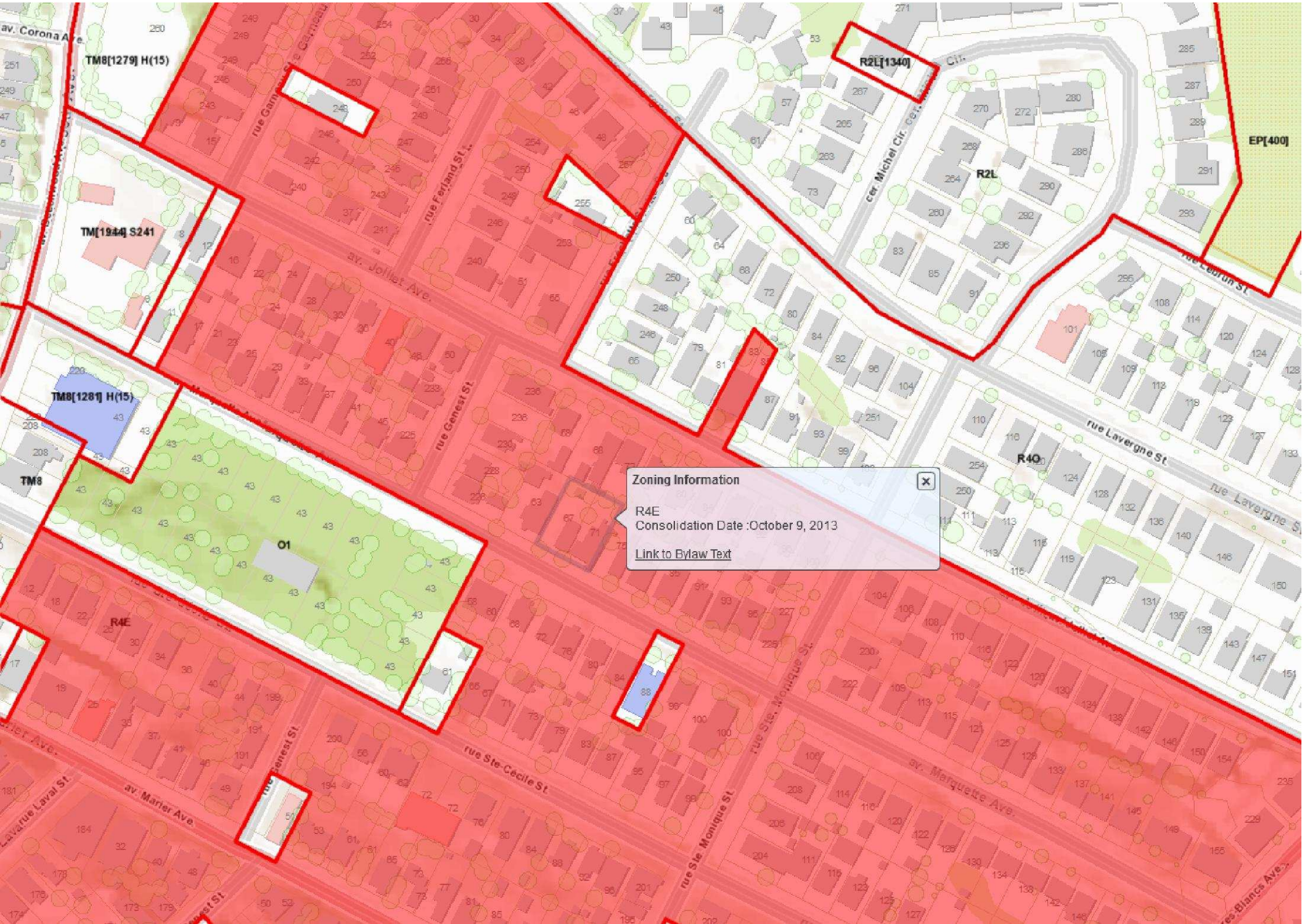
4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 8.0
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

67/71 Marquette Avenue

Zoning Map



Robert Freel

From: Wu, John <John.Wu@ottawa.ca>
Sent: October-01-13 9:52 AM
To: Robert Freel
Subject: FW: SWM in Vanier and New Edinburgh

This is the information for Marquette Ave of Storm Water Management.

From: White, Joshua
Sent: October 01, 2013 9:51 AM
To: Wu, John
Subject: FW: SWM in Vanier and New Edinburgh

fyi

From: Tousignant, Eric
Sent: October 01, 2013 9:36 AM
To: White, Joshua
Subject: RE: SWM in Vanier and New Edinburgh

Hi Josh

Yes, best to go with a 2 year storm in that area.

Eric

From: White, Joshua
Sent: September 23, 2013 11:56 AM
To: Tousignant, Eric
Cc: Wu, John
Subject: SWM in Vanier and New Edinburgh

Hi Eric,

I want to confirm that the SWM requirements for New Edinburgh and Vanier are based off of a 2 year storm as the sewers in these areas have been built in the 1960's before the MOE switch the requirements to use a 5 year storm.

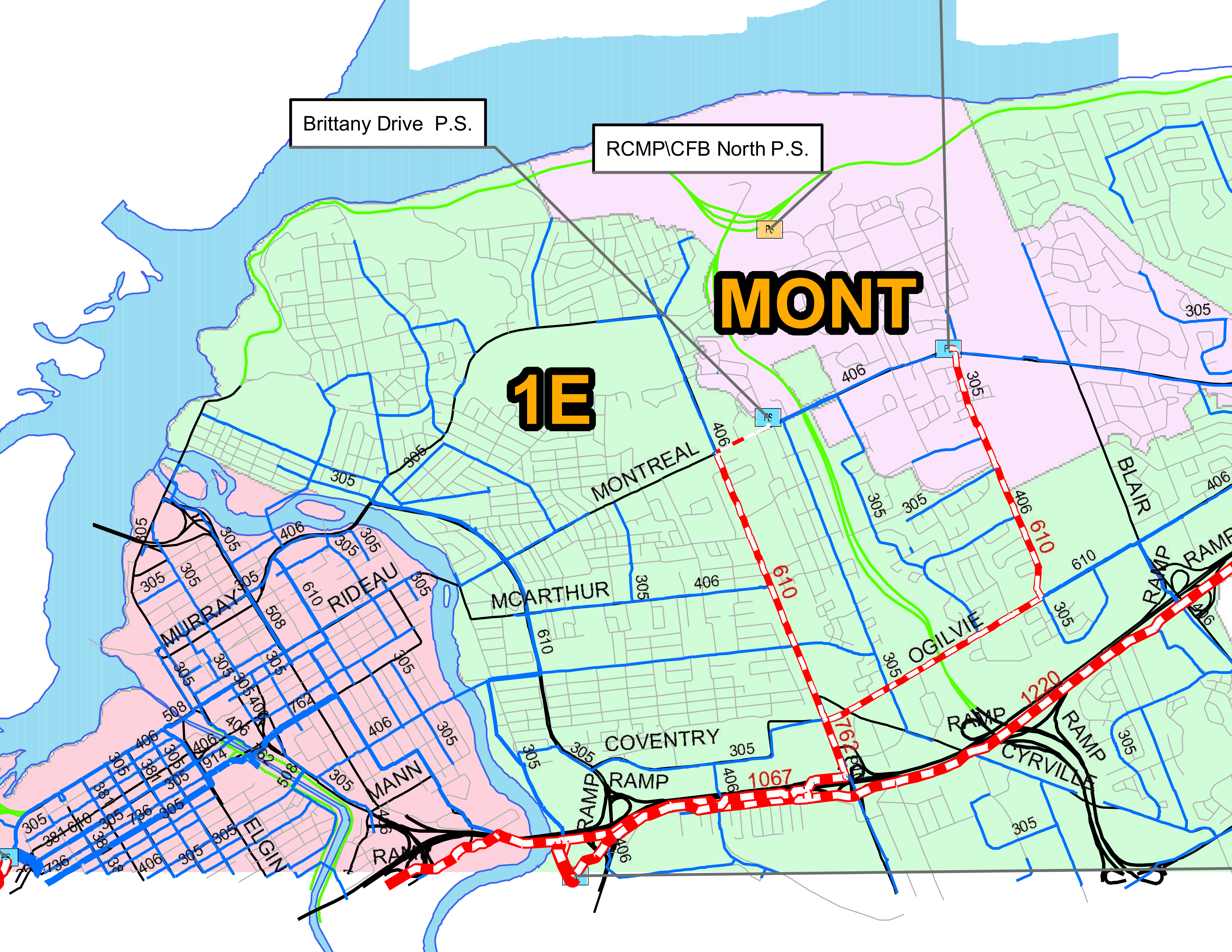
Cheers

Josh

Joshua White
Project Manager, Infrastructure Approvals
Development Review, Urban Services, City of Ottawa
Phone: (613) 580-2424 ext 15843
Email: joshua.white@ottawa.ca

APPENDIX B

Water Supply


Brittany Drive P.S.
RCMP\CFB North P.S.
MONT
1E
MONTREAL
MCARTHUR
RIDEAU
MURRAY
OGILVIE
COVENTRY
CYRVILLE
BLAIR
MANN
ELGIN
RAMP
610
762
1067
1220
406
305
508

67|71 Marquette Avenue
Proposed Site Conditions

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4	11	16
1 Bedroom	1.4	9	13
2 Bedroom	2.1	2	5
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	34	11.9	8.3	58.3	40.5	88.1	61.2

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate	Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day m^3/d	Max Day L/min	Peak Hour m^3/d	Peak Hour L/min
Commercial floor space	2.5 $L/m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Office	75 $L/9.3m^2/d$		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand	0.0	0.0	0.0	0.0	0.0	0.0
		Total Demand	**11.9**	**8.3**	**58.3**	**40.5**	**88.1**	**61.2**

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$F = 220C\sqrt{A}$ L/min *Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Ordinary Construction

C	1		*Type of Construction Coefficient per FUS Part II, Section 1*
A	1383.4	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	8182.7	L/min	
	8000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Non-Combustible	-25%	
Fire Flow	**6000.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%	
Reduction	**0**	**L/min**

4. Increase for Separation Distance

N	3.1m-10m	20%	
S	20.1m-30m	10%	
E	3.1m-10m	20%	
W	3.1m-10m	20%	
	% Increase	**70%**	*value not to exceed 75% per FUS Part II, Section 4*
	Increase	**4200.0**	**L/min**

Total Fire Flow

Fire Flow	10200.0	L/min	*fire flow not to exceed 45,000 L/min nor be less than 2,000 L/min per FUS Section 4*
	10000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by _____.
-Calculations based on Fire Underwriters Survey - Part II

Robert Freel

From: Robert Freel <rfreel@dsel.ca>
Sent: December-11-13 9:10 AM
To: John.Wu@ottawa.ca
Subject: 67/71 Marquette Avenue - Watermain boundary conditions

Good afternoon John,

We would like to request water boundary conditions for 67/71 Marquette Avenue site using the following proposed development demands:

1. Location of Service / Street Number: 67/71 Marquette Avenue

2. Type of development and the amount of fire flow required for the proposed development:

- Proposed development is a residential building with covered parking. The residential building has 22 units.
- It is anticipated that the development will be services from the existing 150mm diameter watermain within Marquette Avenue.
- Can you provide the available fire flow at 140kPa (20 psi). Once further construction details are available an estimated fire demand based on FUS will be completed to include with our submission.

3.

	L/min	L/s
Avg. Daily	8.3	0.14
Max Day	40.5	0.67
Peak Hour	61.2	1.02

It you have any questions please feel free to contact me.

Thanks,

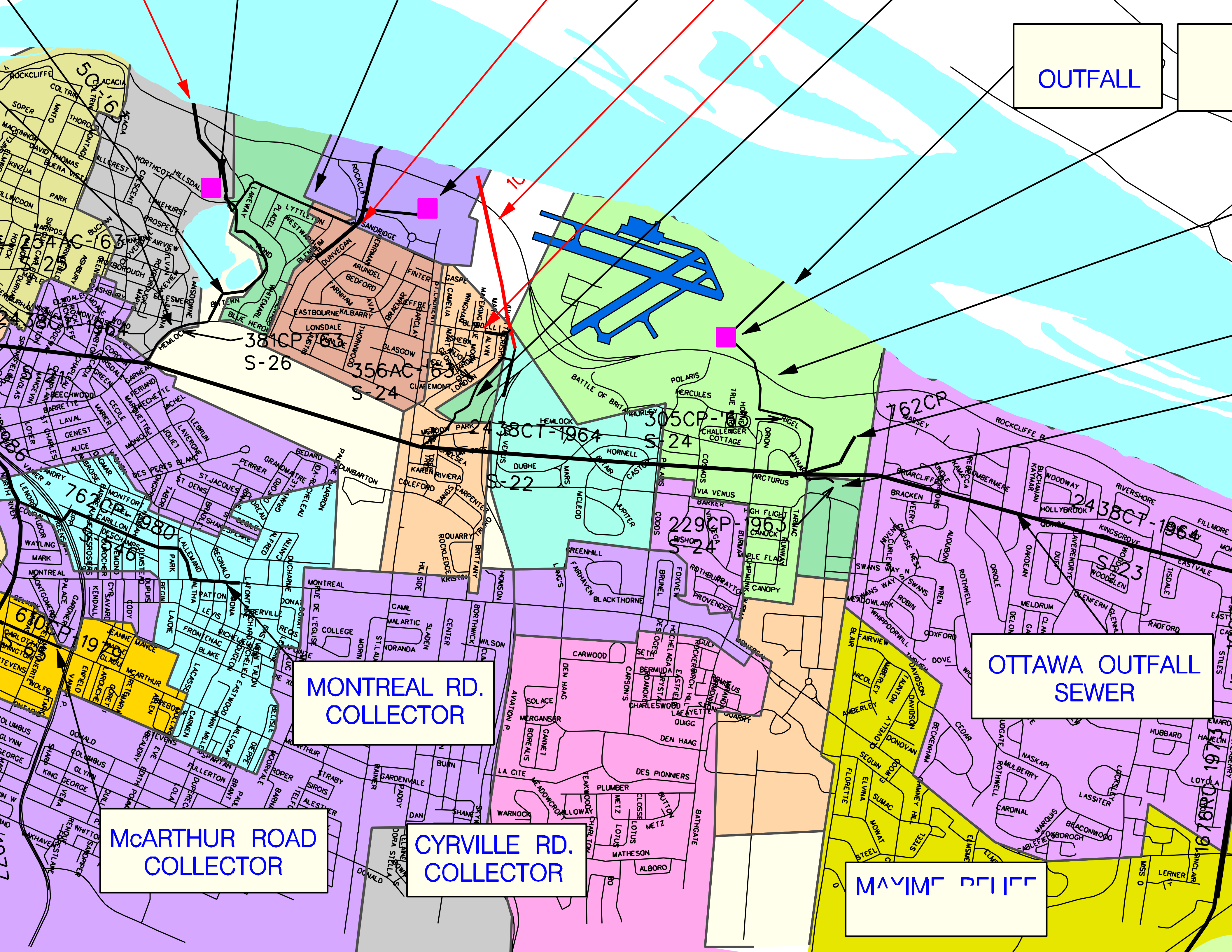
Bobby Freel, EIT.

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Phone: (613) 836-0856 Ext. 258
Fax: (613) 836-7183
Email: rfreel@dsel.ca

APPENDIX C

Wastewater Collection


OUTFALL
OTTAWA OUTFALL SEWER
MONTREAL RD. COLLECTOR
McARTHUR ROAD COLLECTOR
CYRVILLE RD. COLLECTOR
381CP-'63
S-26
356AC-'63
S-24
2438CT-1964
S-22
305CP-'65
S-24
229CP-1963
S-24
762CP
762CP-1980
S-23
254AC-'63
S-25
MONTREAL
ROCKCLIFFE
BATTLE OF BRITAIN
POLARIS
HERCULES
ARCTURUS
VIA VENUS
DUNBARTON
BLACKTHORNE
ROTHWELL
RIVERSHORE
KINGSGROVE
HOLLYBROOK
FILLMORE
LERNER
BEACONWOOD
DES PIONNIERS
MATHESON
DEN HAAG
CARWOOD
COLLEGE
NORANDA
FULLERTON
DONALD
COLUMBUS
GLYNN
KING GEORGE

Existing Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 0.074 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.02 L/s**

Domestic Contributions

Unit Type	**Unit Rate**	**Units**	**Pop**
Single Family	3.4	2	7
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop **7**

Average Domestic Flow **0.03 L/s**

Peaking Factor **4**

Peak Domestic Flow **0.11 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5 $L/m^2/d$		0.00
Hospitals	900 L/bed/d		0.00
School	70 L/student/d		0.00
Industrial - Light**	35,000 L/gross ha/d		0.00
Industrial - Heavy**	55,000 L/gross ha/d		0.00

Average I/C/I Flow **0.00**

Peak Institutional / Commercial Flow 0.00
Peak Industrial Flow** 0.00
Peak I/C/I Flow **0.00**

** assuming a 12 hour commercial operation*
*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.03 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.11 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.13 L/s**

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area 0.074 **ha**

Extraneous Flow Allowances

Infiltration / Inflow **0.02 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4	11	16
1 Bedroom	1.4	9	13
2 Bedroom	2.1	2	5
3 Bedroom	3.1		0
Average	1.8		0

Total Pop **34**

Average Domestic Flow **0.14 L/s**

Peaking Factor **4.00**

Peak Domestic Flow **0.55 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Commercial floor space*	5	$L/m^2/d$		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0.00

Average I/C/I Flow **0.00**

Peak Institutional / Commercial Flow 0.00
Peak Industrial Flow** 0.00
Peak I/C/I Flow **0.00**

** assuming a 12 hour commercial operation*
*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**0.14 L/s**
Total Estimated Peak Dry Weather Flow Rate	**0.55 L/s**
Total Estimated Peak Wet Weather Flow Rate	**0.57 L/s**

SANITARY SEWER CALCULATION SHEET

PROJECT:
LOCATION: **67/71 Marquette Ave**
FILE REF: **13-689**
DATE: **16-Aug-13**

DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Comn	50,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	50,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indus	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	

Location			Residential Area and Population										Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
				by type					Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow								
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
A			2.960	30	12		54	232.0	2.960	232.0	4.00	3.76		0.00		0.00		0.00	0.0	2.960	2.960	0.829	4.59	250	0.24		0.049	0.063	0.59	29.1	0.16

67/71 Marquette Avenue

SAN-1

APPENDIX D

Stormwater Management

67/71 Marquette Avenue
Existing Conditions

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2004

Existing Drainage Area Charateristics

Area	0.074	ha
C	0.56	Rational Method runoff coefficient
t_c	10.0	min

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	8.9	12.0	25.8	L/s

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

67/71 Marquette
Proposed Conditions

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2004

Target Flow Rate

Site Area
Area 0.074 ha
C 0.50 Rational Method runoff coefficient
t_c 10.0 min

2-year
i 76.8 mm/hr
Q 7.9 L/s Note: Site Target Per City Standards

Off-Site Area
Area 0.009 ha
C 0.50 Rational Method runoff coefficient
t_c 10.0 min

5-year			**100-year**	
i	104.2 mm/hr		**i**	178.6 mm/hr
Q	1.3 L/s		**Q**	2.2 L/s

Total

5-year Target			**100-year Target**	
Q	9.2 L/s		**Q**	10.2 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Area ID U1
Total Area 0.011 ha
C 0.90 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	2.9	2.9	0.0	0.0	178.6	5.5	5.5	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Area ID BLDG + X1
Total Area 0.074 ha
C 0.84 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	18.0	2.3	15.7	9.4	178.6	36.7	4.7	32.0	19.2
15	83.6	14.4	2.3	12.1	10.9	142.9	29.4	4.7	24.7	22.2
20	70.3	12.1	2.3	9.8	11.8	120.0	24.7	4.7	20.0	24.0
25	60.9	10.5	2.3	8.2	12.3	103.8	21.3	4.7	16.6	25.0
30	53.9	9.3	2.3	7.0	12.6	91.9	18.9	4.7	14.2	25.5
35	48.5	8.4	2.3	6.1	12.7	82.6	17.0	4.7	12.3	25.8
40	44.2	7.6	2.3	5.3	12.7	75.1	15.4	4.7	10.8	25.8
45	40.6	7.0	2.3	4.7	12.7	69.1	14.2	4.7	9.5	25.6
50	37.7	6.5	2.3	4.2	12.5	64.0	13.1	4.7	8.4	25.3
55	35.1	6.1	2.3	3.7	12.3	59.6	12.3	4.7	7.6	24.9
60	32.9	5.7	2.3	3.4	12.1	55.9	11.5	4.7	6.8	24.5
65	31.0	5.4	2.3	3.0	11.8	52.6	10.8	4.7	6.1	23.9
70	29.4	5.1	2.3	2.7	11.5	49.8	10.2	4.7	5.5	23.3
75	27.9	4.8	2.3	2.5	11.2	47.3	9.7	4.7	5.0	22.6
80	26.6	4.6	2.3	2.3	10.8	45.0	9.2	4.7	4.6	21.8
85	25.4	4.4	2.3	2.0	10.4	43.0	8.8	4.7	4.1	21.1
90	24.3	4.2	2.3	1.9	10.1	41.1	8.5	4.7	3.8	20.3
95	23.3	4.0	2.3	1.7	9.6	39.4	8.1	4.7	3.4	19.4
100	22.4	3.9	2.3	1.5	9.2	37.9	7.8	4.7	3.1	18.6
105	21.6	3.7	2.3	1.4	8.8	36.5	7.5	4.7	2.8	17.7
110	20.8	3.6	2.3	1.3	8.3	35.2	7.2	4.7	2.5	16.8

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year $Q_{attenuated}$	**2.32 L/s**	**100-year $Q_{attenuated}$**	**4.70 L/s**
5-year Max. Storage Required	**12.7 m^3**	**100-year Max. Storage Required**	**25.8 m^3**

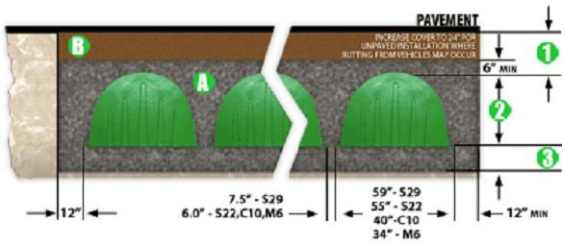
Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	2.9	0.0	5.5	0.0
Attenuated Areas	2.3	12.7	4.7	25.8
Total	**5.2**	**12.7**	**10.2**	**25.8**

Chamber Type

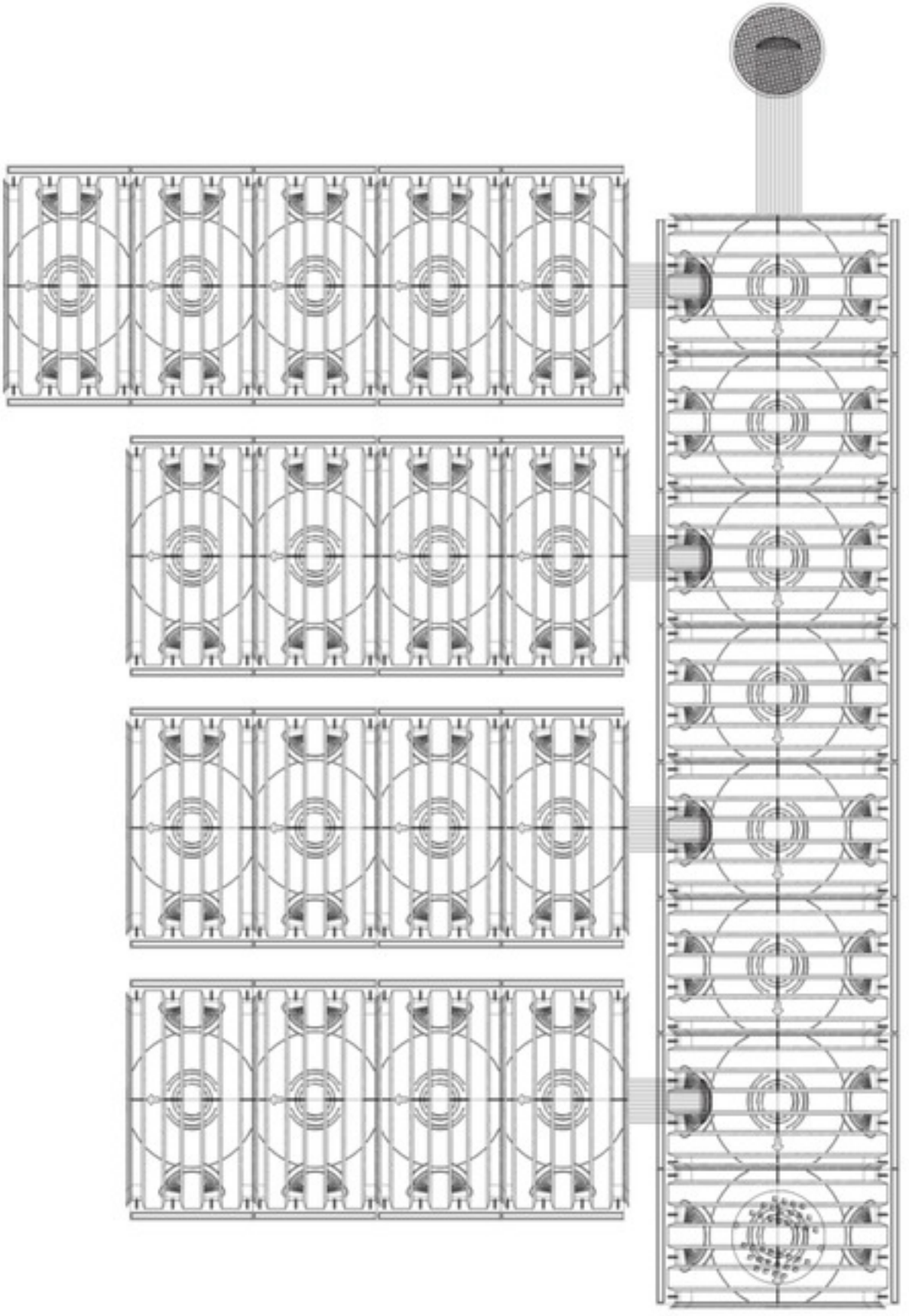
Dimensions 55" x 35" x 30" (WxHxL)
1397mm x 889mm x 762mm
Weight 28 lbs / 12.7 kg
Bare Chamber Storage 23.2 ft³ / 0.66 m³

Project Results

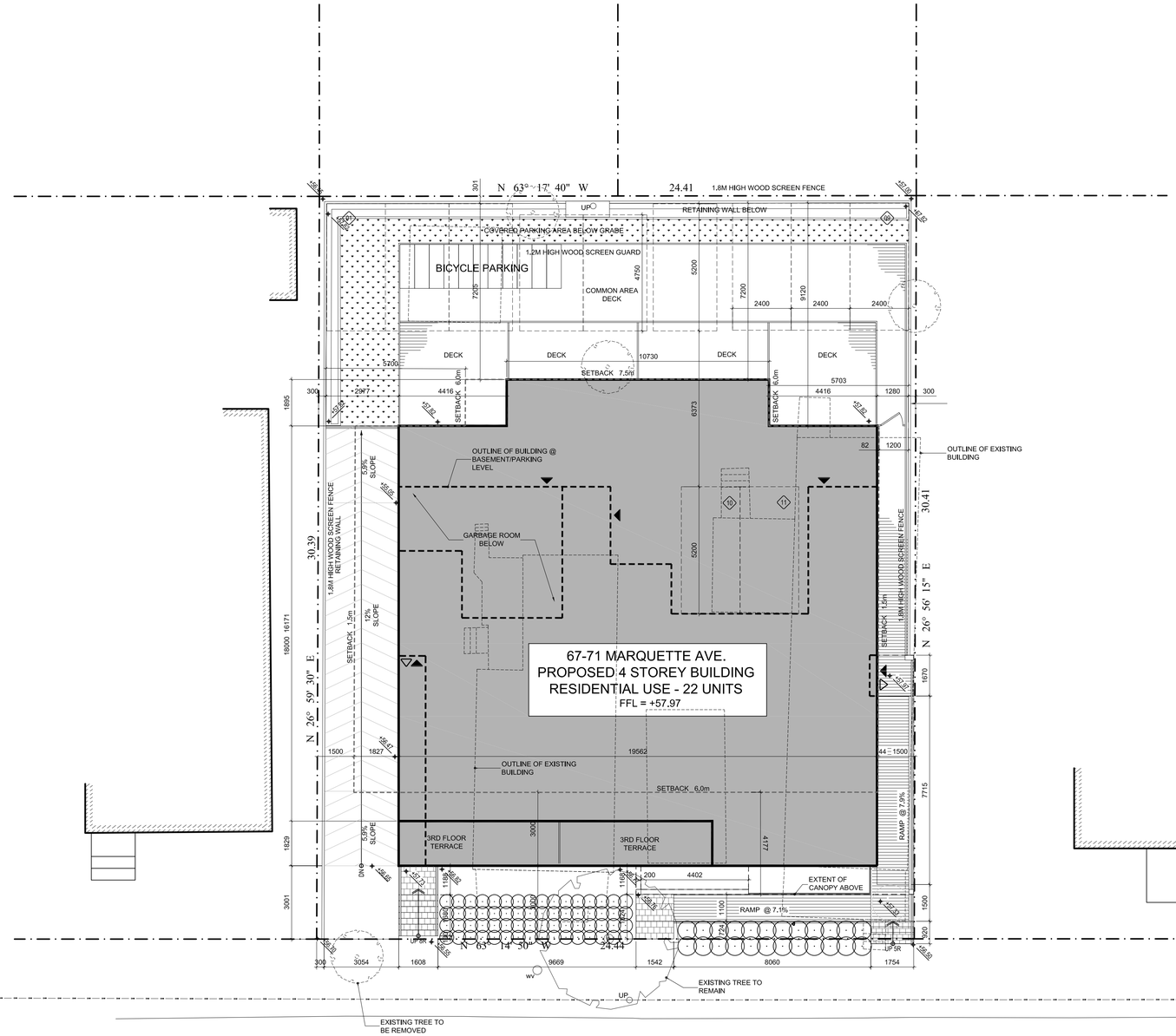


- 1 Total Cover Over Chambers: 45.72 cm
- 2 Height of Chamber: 88.7476 cm
- 3 Embedment Stone Under Chambers: 15.24 cm
- A Volume of Embedment Stone Required: 26 Cu. M
- B Volume of Fill Material Required: 11 Cu. M

Total Storage Provided:	29.6 Cu. M
Type of Distribution Chambers:	S-22
# of Distribution Chambers Required:	17
# of end caps required:	10
Type of header row chambers required:	S-22 Header
# of header row chambers required:	8
Floors:	0
Bins:	0
Dumpsters:	0
Required Bed Size:	38.14 Sq. M
Volume of Embedment Stone Required:	26.44 Cu. M
Volume of Fill Material Required:	11.63 Cu. M
Volume of Excavation:	57.1 Cu. M
Area of Filter Fabric:	67.68 Sq. M
# of Chambers long:	5
# of rows:	4
Actual Trench Length:	5.731 M
Actual Trench Width:	6.655 M



DRAWINGS / FIGURES



LOCATION PLAN

SITE STATISTICS

SITE INFORMATION BASED ON SURVEY PLAN PREPARE BY:

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
REFERENCE#: 14189-13

ZONING INFORMATION

Zone: R4E

Legal Description: LOTS 136 & 137
REGISTERED PLAN 4M-27
CITY OF OTTAWA

Lot Area: 742.5 m²

PROPOSED USE

Apartment Dwelling, low rise; 22 Units.

Building Footprint Area: 372.4 m²

Lot Frontage: 24.44 m

Lot Coverage: 50.2%

BUILDING HEIGHT

Permitted: 11 m MAXIMUM

Proposed: 11 m

PROPERTY SETBACKS

Front and Corner Yard: 6.0 m
Interior Yard: 1.5m
(6.0m when 21m from front property line)
Rear Yard: 7.5m

GROSS FLOOR AREA

Basement : 157.3 m²
First Floor : 288.3 m²
Second Floor : 303.3 m²
Third Floor : 274.2 m²

Total Building GFA: 1023.1 m²

AMENITY AREA As Per Conversion Bylaw	Required	Provided
Total Amenity Area:	204 m²	292.1 m²
Total Communal Amenity Area: (Rear Communal Amenity Area Provided Is At Ground Floor Level)	120 m²	205.2 m²
• Communal Amenity Area at grade in rear yard	120 m²	0 m²
• Communal Amenity Area landscaped	120 m²	0 m²
• Communal Amenity Area soft landscaped	96 m²	0 m²
• Communal Amenity Area abutting rear lot line	120 m²	120 m²

As per Cons. Zoning Bylaw	Required	Provided
Total Amenity Area:	132 m²	292.1 m²
Total Communal Amenity Area:	66 m²	205.2 m²

PARKING

Table 101, Area B (as per amendment 1779, By-law 2011-13)
Uses Related - Residential, sentence (b):

• Parking Required:	13
• Residential spaces:	11
• Visitor spaces:	2
Parking Provided:	11
• Residential spaces:	11
• Visitor spaces:	0
• Physically Disabled:	0

BICYCLE PARKING

Parking Required:	11
Parking Provided:	11

LEGEND

- BUILDING ENTRANCE
- BUILDING EXIT
- SC SIAMESE CONNECTION
- FH FIRE HYDRANT
- 145.00 PROPOSED GRADE ELEVATION
- UP STAIR DIRECTION
- UP RAMP DIRECTION
- 101 PARKING SPACE NUMBER
- TRAFFIC DIRECTION ARROW
- BARRIER-FREE PARKING SPACE
- V VISITOR PARKING SPACE
- DEPRESSED CURB
- CB CATCH BASIN
- MH MANHOLE
- FENCE
- TREE
- PARKING NUMBERING
- WINDOW WELL
- SN SIGN POST

GENERAL NOTES

A THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL DISCREPANCIES TO THE ARCHITECT.

B DO NOT SCALE DRAWINGS.

C ALL WORK SHALL COMPLY WITH THE ONTARIO BUILDING CODE AND THE REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION.

D THIS DRAWING IS THE EXCLUSIVE PROPERTY OF CHRISTOPHER SIMMONDS ARCHITECT INC. COPYRIGHT RESERVED.

PRELIMINARY SET NOT FOR CONSTRUCTION

No.	DATE	DESCRIPTION
01	xxx	ISSUED FOR

ARCHITECT'S SEAL:

ONTARIO ASSOCIATION OF ARCHITECTS
C. SIMMONDS
LICENCE
4650

PROJECT NORTH:

Christopher Simmonds Architect
THE ANNEX / 45 EUCCLES ST. OTTAWA ON K1R 6S3
613.567.7888 PHONE / 613.567.7528 FAX
csarchitect.com

PROJECT:
67-71 MARQUETTE AVE.
CAPITAL VIEW DEVELOPMENTS

DRAWING TITLE:
SITE PLAN

DATE:	NOV. 8, 2015
SCALE:	1:100
DRAWN BY:	JAH
JOB No:	509-15

DRAWING No: SP-1

TOPOGRAPHICAL PLAN OF

LOTS 136 & 137
REGISTERED PLAN 4M-27
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.
Field Work Completed October 2, 2013

Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Notes & Legend

	Denotes	
—□—	"	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
(PI)	"	(857) Plan dated July 23, 2013
○ MH-S	"	Maintenance Hole (Sanitary)
— OHW —	"	Overhead Wires
○ UP	"	Utility Pole
□ CB	"	Catch Basin
○ FH	"	Fire Hydrant
⊗ WV	"	Water Valve
T/G	"	Top of Grate
▭ GM	"	Gas Meter
	"	Deciduous Tree
	"	Coniferous Tree
○ B	"	Bollard
CLF	"	Chain Link Fence
BF	"	Board Fence
MF	"	Metal Fence
C/L	"	Centreline
Ø	"	Diameter
+ 65.00	"	Location of Elevations
+ *65.00*	"	Top of Concrete Curb Elevation
———	"	Property Line

Bearings are MTM NAD-83 Zone 9 Grid.

SITE AREA = 742.4 m²

BOUNDARY INFORMATION COMPILED FROM PLANS
Sewer Diameter and Inverts derived, from City of Ottawa Service Sheet G100-A6.

ELEVATION NOTES

1. Elevations shown are referred to geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 14189-13 Captial View Lts1368137 4M-27 T D1 | AE

Y:\2013\14189-13\Drawings\14189-13 Captial View Lts1368137 4M-27 T D1.dwg

2012 Water Distribution System

Department of Infrastructure Services

Scale 1:2,500

Ottawa

Legend

- Public Hydrant
- Private Hydrant
- Summer only Flusher Hydrant
- Flusher Hydrant
- Gate Valve
- Tapping Valve
- Butterfly Valve
- Buried Valve
- Drain Pipe
- Check Valve
- Closed Valve
- Drain-Out Valve
- Left Hand Valve
- Spot Elevation
- Pressure Reducing Valve
- Air Relief Valve
- Bypass Valve
- Feedermain Valve
- Inspection Plate
- Cap
- Reducer
- Jump
- Water Meter
- Water Service
- Backbone Pipe
- Watermain with Pipe Diameter, Material and Install Year (e.g. 203 PVC-1981)
- Pipe Casing
- Pressure Zone Delineation and Identifier (e.g. 2W)
- Well
- Elevated Tank
- Water Pumping Station
- Water Reservoir
- Water Treatment Plant

Pipe Equivalents

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

	366-035	368-035	370-035	372-035
	366-034	368-034	370-034	372-034
	366-033	368-033	370-033	372-033
	366-032	368-032	370-032	372-032
364-031	366-031	368-031	370-031	372-031

2008
SANITARY & STORM COLLECTION SYSTEM

Department of Infrastructure Services and Community Sustainability

0 25 50 100 150 200 250 Meters

Scale 1 : 2500 approx.

Ottawa ©

Legend

- Regulator
- Storm Pump Station
- Sanitary Pump Station
- WTP Wastewater Treatment Plant
- Storm Outlet
- Storm Manhole
- Storm Pipe
- Sanitary Trunk Sewer
- Sanitary Manhole
- Sanitary Pipe
- Combined Manhole
- Combined Pipe

PIPE EQUIVALENTS

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

PIPE MATERIALS

ABS - ACRYL BUTADENE STYRENE
AC - ASBESTOS CEMENT
BRICK - BRICK
CLAY - CLAY
CONC - CONCRETE
CONPP - CONCRETE PRESSURE PIPE
CONR - REINFORCED CONCRETE PIPE
CONX - EXTRA STRENGTH CONCRETE PIPE
CORI - CORRUGATED IRON PIPE
CSP - CORRUGATED STEEL PIPE
CSPA - ASPHALT COATED CSP
DI - DUCTILE IRON PIPE
FRP - FIBERGLASS REINFORCED PLASTIC PIPE
GALV - GALVANIZED PIPE
KI - KITEC PIPE
PE - POLYETHYLENE PIPE (DR17)
PP - POLYPROPYLENE PIPE
PVC - POLYVINYL CHLORIDE PIPE
ST - STEEL PIPE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON PIPE
UNK - UNKNOWN MATERIAL

366-035	368-035	370-035
366-034	368-034	370-034
366-033	368-033	370-033
366-032	368-032	370-032
366-031	368-031	370-031

2008
SANITARY & STORM COLLECTION SYSTEM

Department of Infrastructure Services and Community Sustainability

0 25 50 100 150 200 250 Meters

Scale 1 : 2500 approx.

Ottawa ©

Legend

Regulator	Storm Outlet	Sanitary Manhole
Storm Pump Station	Storm Manhole	Sanitary Pipe
Sanitary Pump Station	Storm Pipe	Combined Manhole
Wastewater Treatment Plant	Sanitary Trunk Sewer	Combined Pipe

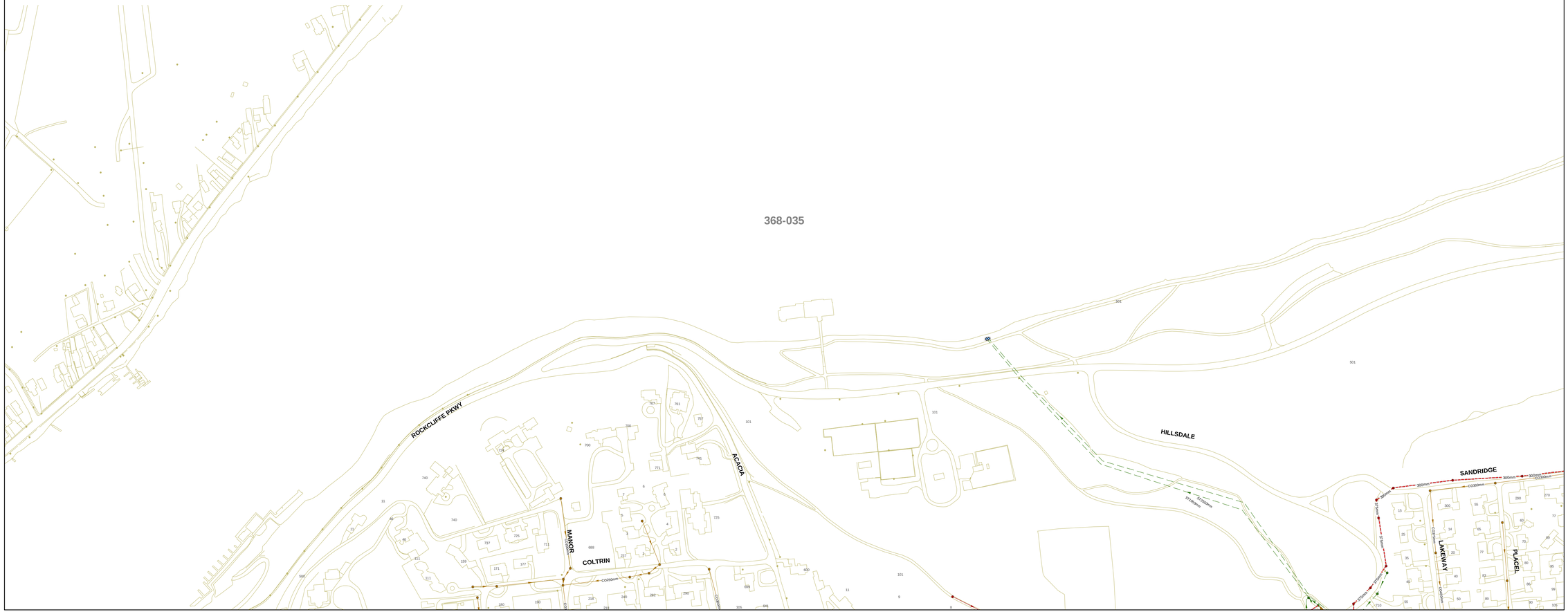
PIPE EQUIVALENTS

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

PIPE MATERIALS

ABS - ACRYL BUTADENE STYRENE
AC - ASBESTOS CEMENT
BRICK - BRICK
CLAY - CLAY
CONC - CONCRETE
CONPP - CONCRETE PRESSURE PIPE
CONR - REINFORCED CONCRETE PIPE
CONX - EXTRA STRENGTH CONCRETE PIPE
CORI - CORRUGATED IRON PIPE
CSP - CORRUGATED STEEL PIPE
CSPA - ASPHALT COATED CSP
DI - DUCTILE IRON PIPE
FRP - FIBERGLASS REINFORCED PLASTIC PIPE
GALV - GALVANIZED PIPE
KI - KITEC PIPE
PE - POLYETHYLENE PIPE (DR17)
PP - POLYPROPYLENE PIPE
PVC - POLYVINYL CHLORIDE PIPE
ST - STEEL PIPE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON PIPE
UNK - UNKNOWN MATERIAL

	368-036	370-036
366-035	368-035	370-035
366-034	368-034	370-034
366-033	368-033	370-033
366-032	368-032	370-032



2008
SANITARY & STORM COLLECTION SYSTEM

Department of Infrastructure Services and Community Sustainability

0 25 50 100 150 200 250 Meters

Scale 1 : 2500 approx.

Ottawa ©

Legend

Regulator	Storm Outlet	Sanitary Manhole
Storm Pump Station	Storm Manhole	Sanitary Pipe
Sanitary Pump Station	Storm Pipe	Combined Manhole
Wastewater Treatment Plant	Sanitary Trunk Sewer	Combined Pipe

PIPE EQUIVALENTS

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

PIPE MATERIALS

ABS - ACRYL BUTADENE STYRENE
AC - ASBESTOS CEMENT
BRICK - BRICK
CLAY - CLAY
CONC - CONCRETE
CONPP - CONCRETE PRESSURE PIPE
CONR - REINFORCED CONCRETE PIPE
CONX - EXTRA STRENGTH CONCRETE PIPE
CORI - CORRUGATED IRON PIPE
CSP - CORRUGATED STEEL PIPE
CSPA - ASPHALT COATED CSP
DI - DUCTILE IRON PIPE
FRP - FIBERGLASS REINFORCED PLASTIC PIPE
GALV - GALVANIZED PIPE
KI - KITEC PIPE
PE - POLYETHYLENE PIPE (DR17)
PP - POLYPROPYLENE PIPE
PVC - POLYVINYL CHLORIDE PIPE
ST - STEEL PIPE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON PIPE
UNK - UNKNOWN MATERIAL

	368-036	370-036
366-035	368-035	370-035
366-034	368-034	370-034
366-033	368-033	370-033