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Prepared for:

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Assessment of Adequacy of Public Services

1927 Maple Grove Road

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

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1.0 Introduction

1.1 Background

In 2021, J.L. Richards & Associates Limited (JLR) was retained by Maple Grove Towns Inc. (MGTI) to prepare a Report that would assess the adequacy of public services in support of a Draft Plan of Subdivision Application for their property sited at 1927 Maple Grove Road.

This Assessment of Adequacy of Public Services (AAPS) Report has been prepared to outline the design objectives and criteria, servicing constraints and high-level strategies for developing the subject lands with water, wastewater, storm and stormwater management services in accordance with the following:

- the November 2009 Servicing Study Guidelines for Development Applications in the City of Ottawa (City);
- the Ottawa Sewer Design Guidelines (2012) and associated Technical Bulletins;
- Kanata West Master Servicing Study (KWMSS) prepared by Stantec Consulting Ltd. And CCL/IBI Group, June 2006;
- Design Brief – Pond 4, Kanata West, Mattamy Homes, City of Ottawa prepared by DSEL & JFSA, December 2014; and
- notes summarizing the February 2, 2020 pre-consultation meeting.

A copy of the original pre-consultation meeting notes (November 2, 2020) is included in Appendix A.

1.2 Site Description and Condition

The subject property is located in Kanata West, within the urban limits of the City of Ottawa. The subject property, 1927 Maple Grove Road, is located approximately 285m east of Stittsville Main Street. As illustrated on Figure 1 (below), the property is mostly vegetated and includes a single-family house and a garage.

Figure 1: Site Location

MGTI proposes to redevelop the subject property with 38 townhouse units in 6 blocks within a 0.892ha parcel of land fronting Maple Grove Land. There is also the potential for two (2) additional units, one on either side of the roadway. The Conceptual Plan (Option 2) for the proposed development (prepared by Fotenn) is included in Appendix B. A topographical survey was recently prepared by Annis, O'Sullivan, Vollebekk Ltd., a copy of which is also included in Appendix B.

1.3 Existing Conditions an Infrastructure

A review of existing services was carried out along the frontage of the subject property to identify existing sewers and watermains. Based on the review of the Drawings obtained from the City of Ottawa (Appendix C), the following infrastructure has been identified to exist within both municipal right-of-way (R.O.W.):

Watermains:

- 305 mm diameter PVC watermain along Maple Grove installed in 2013

Sanitary Sewers:

- 375mm diameter sanitary sewer capped across from a pedestrian pathway approximately 80m east of site.

Storm Sewers:

- 1800mm diameter concrete storm sewer approximately 90m east of site.

1.4 Pre-Consultation, Permits and Approvals

A pre-consultation meeting was originally held between the MGTI, Fotenn, the MVCA and the City of Ottawa on November 2, 2020 (Appendix A) to clarify the design criteria and servicing constraints. The storm discharge criteria used for the preparation of this Report is presented in Section 4.1 (below).

Once the Assessment of Adequacy of Public Services Report is approved, the development of the above-referenced property will be subject to the Draft Plan of Subdivision approval process with the City of Ottawa. At such time, the City of Ottawa Development Servicing Study Checklist and the preparation of supporting documents for the Application to the Ministry of the Environment, Conservation and Parks (MECP) will be completed for an Environmental Compliance Approval (ECA).

2.0 Water Servicing

2.1 Water Supply

The subject site is located within the urban boundary of the City of Ottawa and will be serviced by the central water distribution system. Water supply to the subject property will originate from Pressure Zone 3W as shown in the 2013 Ottawa Infrastructure Master Plan.

In 2006, the Kanata West Master Servicing Study was completed for that area, which encompasses the subject property. As shown on the Watermain Final Concept Plan (refer to Appendix C), the subject property is to be serviced from the existing Maple Grove 300 mm diameter watermain.

2.2 Water Supply Design Criteria

Any additions to the City of Ottawa water distribution system must be designed in accordance with the Ottawa Design Guidelines (ODG) for Water Distribution (July 2010), and Technical Bulletins ISDTB-2014-02 and ISTB-2018-02. The proposed system will be designed to satisfy the pressure constraints listed in Table 1 (below) for the peak hour demand, maximum day demand plus fire flow, and maximum hourly demand.

In terms of the required fire flow (RFF), water supply within the municipal right-of-way (ROW) must achieve the guidance of the Fire Underwriters Survey (FUS). Table 1 (below) summarizes the design criteria for water distribution systems, which will serve as basis of the detailed design of the proposed watermain for the site.

Table 1: Water Design Criteria

Design Criteria	Design Value
Population > 500	
Residential average demand	280 L/cap/day
Residential maximum demand	2.5 x Avg
Residential peak hour	2.2 x Max Day
Density Single Family	3.4
Density Semi & townhouse	2.7
Density (apt) 1-bedroom	1.4
Density (apt) 2-bedroom	2.1
Density (apt) 3-bedroom	3.1
Population < 500	
Residential average demand	280 L/cap/day
Peaking Factors	MOE Table 3-3
Fire Flow Requirements	
Municipal ROW	F.U.S.
Pressure/Flow	
Peak hour	>275 kPa (40 psi)
Maximum day plus fire flow	>140 kPa (20 psi)
Minimum hour (maximum HGL)	<552 kPa (80 psi)

Water demands were calculated based on the above-noted design criteria (population less than 500) and have been summarized in Table 2. Appendix C includes the domestic demand calculation sheet.

Table 2: Theoretical Water Demands

Demand Scenario	Water Demand (L/s)
Average Day	0.35
Peak Hour	3.44
Minimum Hour	0.04

It should be noted that the above-noted demands have been calculated based on 40 townhouse units. As previously noted, this total includes 2 potential units which may not occur in the future.

2.3 Fire Flow Requirements

Various guidelines are used throughout North America to establish fire flow requirements for different types of buildings. Along municipal ROW within the City of Ottawa, the required fire flow (RFF) is to be calculated in accordance with the Guidelines entitled “Water Supply for Public Fire Protection (1999)” developed by the Fire Underwriters Survey (FUS) as well as Technical Bulletins TB-2014-02 and TB-2018-02.

Given that the 3 m separation between the units is not provided, the required fire flow (RFF) calculation was carried out in accordance with TB-2018-02 where one fire flow area corresponding to 20 contiguous townhouse units yielded a RFF of 20,000 L/min (333 L/s) as

shown in the fire flow calculations and exposure sketch included in Appendix D. However, since the Townhouse Blocks have the minimum separation of 10 m between back of the units, the RFF was capped at 10,000 L/min (167 L/s) in accordance with TB-2014-02 (Appendix C).

2.4 Water Servicing and Simulation Results

Functional level servicing shows that the subdivision will be serviced by 200 mm diameter watermain up to the northern end limit of the subdivision. Looping to the future northern watermain is envisioned but will be implemented by others.

Boundary conditions (BC) were requested at the onset based on the domestic demands shown in Table 2 and the RFF of 10,000 L/min. The BC was used to assess headloss under; i) the peak hour demand, ii) maximum day plus fire flow, and iii) maximum hydraulic grade line (HGL) check.

Given that water servicing will consist of a system with a single connection to the existing system, headloss were calculated using the Hazen-Williams desktop calculation method. The operating pressures were assessed as follows (refer to Appendix C for Headloss Calculation Spreadsheet):

- Peak hour and maximum pressure: the headloss were estimated along the proposed ±125 m – 200 mm diameter watermain and was subtracted to the static elevation provided by the City. Static elevations of 156.7 m and 161.0 m for the peak hour and maximum pressure, respectively was provided.

- The maximum day plus fire flow: the headloss was estimated along the proposed ±92.0 m – 200 mm diameter watermain. This length represents the proposed 200 mm diameter watermain from the Maple Grove connection to the northern hydrant within the Site.

Headloss calculations included in Appendix C shows that the pressure and flow constraints under the water demand scenarios listed in Table 1 have been met with the proposed servicing. The pressure under peak hour was estimated at 478 kPa, the pressure under the maximum pressure condition at 520 kPa and the pressure under the maximum day plus fire flow was estimated at 251 kPa.

In regard to hydrant spacing, each townhouse block will be serviced by two (2) hydrants located within the prescribed distance of 75 m in accordance to ISTB-2018-02. Based on this technical Bulletin, these hydrants can provide an aggregate flow of 180 L/s. The exact hydrant locations will be confirmed at detailed design of the subdivision.

2.5 Water Servicing Conclusions

Based on the above calculated headloss, the proposed subdivision can be serviced by a 200 mm diameter watermain supplemented by two (2) hydrants. Headloss calculation under peak hour demand, maximum day plus fire flow and maximum hydraulic grade line (HGL) check showed that the pressure and flow constraints have been met.

3.0 Wastewater Servicing

3.1 Background

The subject property is within the Kanata West serviced area. Wastewater flows from the project site will be captured by a future sanitary sewer which is being currently designed by IBI on behalf of Claridge. This new sanitary sewer designed by IBI will discharge into the existing 375 mm diameter sanitary sewer on Maple Grove Road at Johnwoods Street. The captured flows will eventually outlet to the Kanata West Pumping Station and ultimately conveyed to the Robert O. Pickard Environmental Centre (ROPEC) for treatment.

The proposed sanitary sewers for 1927 Maple Grove Road was conceptually sized based on the City of Ottawa Sewer Design Guidelines ((OSDG) - (October 2012)) and associated Technical Bulletins. Key design parameters have been summarized in Table 3.

Table 3: Wastewater Servicing Design Criteria

Design Criteria	Design Value	Reference
Residential average flow	280 L per capita/day	ISTB-2018-01
Residential peaking factor	Harmon Formula x 0.8	City Section 4.4.1
Infiltration Allowance 0.05 L/s/ha (dry I/I) 0.28 L/s/ha (wet I/I)	0.33 L/s/ha	ISTB-2018-01
Minimum velocity	0.6 m/s	OSDG Section 6.1.2.2
Maximum velocity	3.0 m/s	OSDG Section 6.1.2.2
Manning Roughness Coefficient	0.013	OSDG Section 6.1.8.2
Minimum allowable slopes	Varies	OSDG Table 6.2, Section 6.1.2.2

3.2 Theoretical Sanitary Peak Flow

Wastewater flows conveyed to the local sanitary sewer were estimated based on the proposed density for townhouse units which is 2.7 person per unit and the theoretical unit flow of 280 L/capita/day. Based on this design criteria, a total combined peak wastewater flow of ±1.6 L/s was calculated. Table 4 summarizes the theoretical peak flows for the project site.

Table 4: Theoretical Peak Wastewater Flow

Design Criteria	Flow (L/s)
Theoretical Population: 108 (40 units)	
Theoretical Average Day Flow (Dry Weather)	0.33
Peaking Factor: 3.60 (Harmon)	
Peak Wastewater Flow (Dry Weather)	1.13
Dry & Wet I/I (0.33 L/s/ha 0.891 ha)	0.29
Total Theoretical Peak Flow	**1.55**

3.3 Proposed Sanitary Sewer Sizing

The wastewater analysis described in Section 3.2 shows that the proposed sanitary sewers must be sized to accommodate the peak wastewater flow of 1.55 L/s. An allocation for this site was provided as part of the KWMSS and confirmed as part of the Reconstruction of Maple Grove Road project. The sanitary sewer design sheet provided for the Maple Grove Road project (Appendix 'D') shows that the subject property was accounted for as part of a larger 20.03 ha. parcel with a population of 2044. The design basis was based on the previous OSDG of 350 L/p/day. Given the updated design parameters of 280 L/p/day prescribed in ISTB 2018-03 from the previous 350 L/cap/day, and the projected population of 93 people the sanitary sewer system on Maple Grove Road is expected to have adequate capacity to accommodate the flows generated from the subject site.

3.4 Wastewater Servicing Conclusions

The Project Site is tributary to the existing 375 mm diameter sanitary sewer located along Maple Grove Road. The theoretical peak wastewater flow of ±1.6 L/s was calculated based on the design criteria described in the Ottawa Sewer Design Guidelines and associated Technical Bulletins as summarized Table 4. The peak flow is consistent with the allocations previously made as part of the Maple Grove Road reconstruction.

4.0 Storm Servicing and Stormwater Management

4.1 Storm Criteria

Runoff generated from the subject site will be collected by storm sewers that will outlet to a future trunk storm sewer on Maple Grove Road. This sewer is currently being designed by IBI on behalf of Claridge and will span from the 1981 Maple Grove road property to the existing 2100mm dia. storm sewer further east at Johnwoods Street. Based on the design basis of Pond 4, the proposed Maple Grove storm sewer (designed by IBI) will route frequent flows up to 85 L/s/ha to Pond No. 4 for quality and quantity control. Flows in excess of 85 L/s/ha will be diverted to an existing diversion trunk sewer that outlets to Poole Creek via the existing Mattamy Subdivision.

The functional servicing presented in this AAPS Report was developed based on the requirements specified in the KWMSS and the Pond 4 detailed design documents prepared by David Schaeffer Engineering Ltd.

- The minor system within the Project Site shall be sized to capture the 1:100-year design storm event. No Major overland flow shall leave the site during the 1:100-year storm..

- The allowable peak flow is to be calculated using the IDF statistics provided in the Ottawa Sewer Design Guidelines (OSDG) based a time of concentration (Tc) of 15 minutes.

- Water quality control will be provided by Pond 4. Therefore, no additional measures are required for this site.

4.2 Allowable Peak Flow

Storm servicing and stormwater management for the subject property is to be developed to limit the 1:100-year post-development flow from the subject property to the prescribed allowable peak flow at the receiving outlet sewer.

Table 5: Allowable Peak Flows

Design Storm	1:100 year
Area	0.8916 ha.
Runoff Coefficient	0.6
Time of Concentration	15 minutes
Peak Flow	212.5 L/s

4.3 Storm Servicing

The general storm and stormwater servicing constraints used for this site are listed in Table 6 below.

Table 6: Storm Servicing Criteria

General Design Criteria
The calculated peak flows were estimated with the Rational Method and the City of Ottawa Intensity-Duration-Frequency (IDF) curves.
Peak flows estimated based on an inlet time of ten (10) minutes, as per the Technical Bulletin ISDTB-2012-4.
Calculated peak flows to be estimated based on weighted average C-Factors. The weighted C-Factors will be calculated based on 0.90 for all hard surfaces and 0.20 for all landscaped areas.
The sum of all storm flows to be controlled to the allowable peak flow noted in **Error! Reference source not found.**.
No major overland flow to leave site during the 1:100-year event.
Provide measures to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

4.4 Proposed Stormwater Management Strategy

4.4.1 Minor system

Split lot drainage will be implemented for the townhouse blocks. A sawtooth design will be utilized in rear yards, with landscape catchbasins and perforated pipe system per City of Ottawa Standard Detail S29. The 1:100-year storm will be captured within the rear yard pipe system or cascade to the ROW while maintaining

adequate freeboard to the openings in the units. Catch basins will be introduced at road sags within the roadway to capture minor system flows from the front yards, ROW and any excess from the rear yards. The minor system sewers will be sized to capture the 1:100-year peak flow generated from the site. The functional level servicing is depicted in drawing CS1.

4.4.2 Major system

Road sags will be introduced within the ROW to collect and direct runoff towards catch basins. Surface storage will be achieved using the street sags and inlet control devices (ICDs) in the catch basin. The ICDs and minor system pipes will be sized to ensure the 1:100-year event is accommodated. The emergency overland spill will be directed towards Maple Grove Road. Functional level is presented in Drawing CG1.

4.4.3 Storage Requirements

A 10-minute time of concentration will be used when calculating peak flows for detailed design. The runoff coefficient may increase slightly from the allocated value of 0.6 when detailed calculations are undertaken. As such, the peak flow generated from site will likely be higher than those allocated under the criteria stipulated in Table 5 given the shorter time of concentration. The difference between the calculated peak flow and allocation will need to be detained on-site. Storage is expected to be achieved using the proposed road sags (2) depicted in Drawing CG1. Functional stormwater management calculations are presented in Appendix F. The calculations show that, with the critical 10 minute and C factor of 0.65, approximately 45m^3 of storage would be required. Based on a single sag with 0.30m depth, 40 m^3 of storage volume was calculated (Appendix F). Two (2) sags with the same configuration would, therefore, meet the above-noted storage volume. At detailed design, the storage volume will be assessed for both sags and the depth revise accordingly to meet the storage volume requirement.

4.4.4 Infiltration

The Kanata West Master Servicing Study set an infiltration target of 25% above targeted infiltration from Figure 5.4 of the KWMSS (presented in Appendix G). The infiltration target for the subject site are therefore set between 88-125mm/year (25% above 70-100mm/yr). As the proposed subdivision will increase the imperviousness of the site, an increase in infiltration rate through imported material will be proposed to meet the target. A sample calculation is presented in Appendix G.

5.0 Erosion and Sedimentation Control

Erosion and sedimentation control measures, as outlined in the Ontario Ministry of Natural Resources (MNR) Guidelines on Erosion and Sediment Control for Urban Construction Sites, will be implemented to trap sediment on site. At a minimum, the following erosion and sedimentation control measures could be implemented during construction (refer to Drawing CS1):

- Supply and installation of a silt fence barrier, as per OPSD 219.110, if required;
- Supply and installation of filter fabric between the frame and cover of catch basins and maintenance holes adjacent to the project area during construction, to prevent sediment from entering the sewer system. The filter fabric is to be inspected regularly and corrected as required;
- Stockpiling of material during construction is to be located offsite;

The proposed erosion control measures shall conform to the following documents:

- “Guidelines on Erosion and Sediment Control for Urban Construction Sites” published by Ontario Ministries of Natural Resources, Environment, Municipal Affairs, and Transportation & Communication, Association of Construction Authorities of Ontario and Urban Development Institute, Ontario, May 1987.
- “MTO Drainage Manual”, Chapter F: “Erosion of Materials and Sediment Control”, Ministry of Transportation & Communications, 1985.
- “Erosion and Sediment Control” Training Manual by Ministry of Environment, Spring 1998.
- Applicable Regulations and Guidelines of the Ministry of Natural Resources.

This report has been prepared for the exclusive use of Maple Grove Towns Inc, for the stated purpose, for the named facility. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of Maple Grove Towns Inc and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Alexandre Tourigny, P.Eng.
Civil Engineer

Prepared by:

Guy Forget, P.Eng.
Senior Water Resources Engineer

PROJECT NORTH

N

LIGHT DUTY SILT FENCE BARRIER PER OPSD 219.110

CONNECT TO EXISTING STORM SEWER (INSTALLED BY OTHERS).

CONNECT TO EXISTING SANITARY SEWER (INSTALLED BY OTHERS).

CONNECT TO EXISTING WATERMAIN

18.6Mm

200mmØ1WM

LEGEND

- HYDRANT, VALVE & VB
- WATERMAIN
- CAP
- VALVE & VB
- TEE
- SANITARY SEWER
- FLOW DIRECTION
- MAINTENANCE HOLE
- STORM SEWER
- FLOW DIRECTION
- MAINTENANCE HOLE
- CATCHBASIN & LEAD
- FUTURE STORM SEWER
- FUTURE SANITARY SEWER
- FUTURE WATERMAIN

No.	ISSUE / REVISION	DD/MM/YY
1.	ISSUED FOR CITY REVIEW	07/09/21

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:250

CLIENT:

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

MAPLE GROVE TOWNS INC.

1927 MAPLE GROVE ROAD, OTTAWA

DRAWING:

CONCEPTUAL SITE SERVICING PLAN

DESIGN: AT	
DRAWN: TB	DRAWING #:
CHECKED: KF	CS1
JLR #: 29893	

File Location: P:\29800\29893-000 - 1927 Maple Grove\5-Production\1-Civil\Conceptual\29893 C Conceptual.dwg

PLOT DATE: Tuesday, September 7, 2021 10:35:02 AM

PROJECT NORTH

LEGEND

- 107.80 — CONCEPTUAL ELEVATION
- 108.10 — NYLOPLAST DRAINS AND ELEVATIONS
- EMERGENCY OVERLAND FLOW DIRECTION

No.	ISSUE / REVISION	DD/MM/YY
1.	ISSUE FOR CITY REVIEW	07/09/21

VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 — 25mm

SCALE: 1:250

CLIENT:

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PROFESSIONAL STAMP | PROFESSIONAL STAMP

PROJECT:

MAPLE GROVE TOWNS INC.

1927 MAPLE GROVE ROAD, OTTAWA

DRAWING:

CONCEPTUAL GRADING PLAN

DESIGN:	AT
DRAWN:	TB/KT
CHECKED:	KF
JLR #:	29893

DRAWING #: CG1

File Location: P:\29900\29893-000 - 1927 Maple Grove\5-Production\1-Civil\Conceptual\29893 C Conceptual.dwg

PLOT DATE: Tuesday, September 7, 2021 10:36:48 AM

Appendix A

Summary of Pre-Consultation meetings

1927 Maple Grove
Pre-Consultation Comments

Planning Comments

1. This is a pre-consultation for a Major Zoning By-law Amendment and Plan of Subdivision application. Application form, timeline and fees can be found here.
2. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
3. Option P2 is preferred. However, recognizing this is dependent on the construction of a public street by a different developer, both options are acceptable.
4. Please include a pedestrian walkway connection on the north end of the site for P1 to access the future park.
5. The proposal is within the Kanata West Concept Plan area. Please review the KWCP for policy directions and also contact the Kanata West Owners Group for any cost sharing requirements.
6. Please provide a sidewalk in front of the site on Maple Grove.
7. What is the plan for the hydro pole in front of the site?
8. Services on Maple Grove will have to be extended to reach the site. Adjacent developers including Claridge at 1981 Maple Grove (Vincent Denomme vincent.denomme@claridgehomes.com) and Formasian at 1919 Maple Grove (Jayant Gupta jayant@110architects.ca) are jointly responsible for street urbanization/services. Please contact representative from Claridge and Formasian to discuss about private cost sharing contribution, and whether it may be applicable to this site.
9. The site contains archeology potential, an archeology study is required.
10. Please consult with the Ward Councillor prior to submission.

Urban Design Comments

1. Please provide a sidewalk on west side of the local street to align with access to the park
2. Option 2 allows for better access to the park to the north and is therefore the preferable option from a design perspective.
3. Please ensure future illustrations account for the required widening on Maple Grove Road.
4. The proposed 2.5 m setback on Maple Grove should be increased to a minimum of 3 meters to allow for tree planting.
5. Consideration/coordination with the two abutting landowners (west and east) should be taken to allow for private street connections in the future. These would consist of 8 m wide blocks as shown on the attached illustration.

Engineering Comments

- The Servicing Study Guidelines for Development Applications are available at the following link: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans
- Record drawings and utility plans are available for purchase from the City's Information Centre. Contact the City's Information Centre by email at informationcentre@ottawa.ca or by phone at (613) 580-2424 x44455
- Stormwater quantity control criteria – be consistent with the criteria specified in the Pond 4 final report and/or in the Kanata west Master servicing Study.
- Stormwater quality control – Consult with the Conservation Authority (MVCA) for their requirements. Include the correspondence with the MVCA in the stormwater/site servicing report.
- When calculating the composite runoff coefficient (C) for the site (post development), please provide a drawing showing the individual drainage area and its runoff coefficient.
- When using the modified rational method to calculate the storage requirements for the site, the underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which, in this case, underestimates the storage requirement prior to the 1:100-year head elevation being reached. Alternately, if you wish to include the underground storage, you may use an assumed average release rate equal to 50% of the peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the design.
- Engineering plans are to be submitted on standard A1 size (594mm x 841mm) sheets.
- Phase 1 ESA and Phase 2 ESA must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
- Boundary conditions are required to confirm that the required fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
    - Type of Development and Units
    - Site Address
    - A plan showing the proposed water service connection locations.
    - Average Daily Demand (L/s)
    - Maximum Daily Demand (L/s)

- Peak Hour Demand (L/s)
- Fire Flow (L/min)
  [Fire flow demand requirements shall be based on Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection 1999]

  Exposure separation distances shall be defined on a figure to support the FUS calculation and required fire flow (RFF).

- Hydrant capacity shall be assessed to demonstrate the RFF can be achieved. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

- If the proposed development is going to be processed under a subdivision application with public streets, required storage needs to be provided at the street sags.

Transportation Comments

1. TIA will not be required.
2. ROW protection on Maple Grove between Huntmar and Stittsville Main is 26m even.
3. Geometric Road Design (GRD) drawings will be required with the first submission of underground infrastructure and grading drawings. These drawings should include such items as, but is not limited to:
   a. Road Signage and Pavement Marking for the subdivision;
   b. Intersection control measure at new internal intersections; and
   c. Location of depressed curbs and TWSIs;
   d. More details can be provided upon request
4. Residential roads are to be designed for 30km/h operating speed.
5. Include traffic calming measures on roads within the limits of their subdivision to limit vehicular speed and improve pedestrian safety. Traffic calming measures shall reference best management practices from the Canadian Guide to Neighbourhood Traffic Calming, published by the Transportation Association of Canada, and/or Ontario Traffic Manual, and/or the City of Ottawa's Draft Traffic Calming Design Guidelines. These measures may include either vertical or horizontal features (such measures shall not interfere with stormwater management and overland flow routing), including but not limited to:
   a. intersection or mid block narrowings, chicanes, medians;
   b. speed humps, speed tables, raised intersections, raised pedestrian crossings;
   c. road surface alterations (for example, use of pavers or other alternate materials, provided these are consistent with the City's Official Plan polices related to Design Priority Areas);
   d. pavement markings/signage; and

e. temporary/seasonal installations such as flexi posts or removable bollards.

6. Urbanize the north side of Maple Grove with curb and sidewalk (along the frontage).
7. Noise Impact Studies required:
    i. Detailed before registration
    b. Road

Environment Comments

In terms of preference, between the two options I prefer the one with the ability to provide the most urban tree canopy. This is something they can model in their TCR, EIS or planning rational.

In terms of the EIS, the only trigger is potential species at risk. If they identify special concern species (like the eastern wood-pewee) then they should address this species from a significant wildlife perspective.

Forestry Comments

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City; an approved TCR is a requirement of Site Plan or Plan of Subdivision approval
2. Any removal of privately-owned trees 10cm or larger in diameter require a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR
3. The TCR must list all trees on site by species, diameter and health condition.
4. The TCR must address all trees with a critical root zone that extends into the developable area.
5. If trees are to be removed, the TCR must clearly show where they are and document the reason they can not be retained
6. All retained trees must also be shown and all retained trees within the area impacted by the development process must be protected as per the City guidelines listed on Ottawa.ca
7. Trees with a trunk that crosses/touches a property line are considered co-owned by both property owners; permission from the adjoining property owner must be obtained prior to the removal of co-owned trees
8. The City does encourage the retention of healthy trees wherever possible; please ask your design/planning team to find opportunities for retention wherever

possible if the trees are healthy and will contribute to the design/function of the site. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca

9. The removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR; note that Forestry Services may ask for compensation for any City-owned tree that has to be removed.

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please contact me at stream.shen@ottawa.ca or at 613-580-2424 extension 24488 if you have any questions.

Sincerely,

Stream Shen MCIP RPP
Planner II
Development Review - West

Appendix B

Concept Plan and
Topographical Survey

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED

_____.

THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT, THIS ____ DAY OF _____ 20__.

_____
DERRICK MOODIE, MANAGER
DEVELOPMENT REVIEW-WEST
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

KEY MAP
NOT TO SCALE

DRAFT PLAN OF SUBDIVISION OF

PART OF SOUTH HALF LOT 1
CONCESSION 1
Geographic Township of Huntley
CITY OF OTTAWA

Prepared by Annis , O'Sullivan , Vollebekk Ltd.

Scale 1 : 400

16 12 8 4 0 8 16 Metres

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

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :
The boundaries of the lands to be subdivided and their relationship to adjoining lands have been accurately and correctly shown.

_____ Date

_____
T. Hartwick
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE

This is to certify that I am the owner / agent of the lands to be subdivided and that this plan was prepared in accordance with my instructions.

_____ Date

_____
xxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxx
I have authority to bind the corporation

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51-17 OF THE PLANNING ACT

(a) see plan
(b) see plan
(c) see plan
(d) multi-family residential housing
(e) see plan
(f) see plan
(g) see plan
(h) City of Ottawa
(i) see soils report
(j) see plan
(k) sanitary, storm sewers, municipal water, bell, hydro, cable and gas to be available
(l) see plan

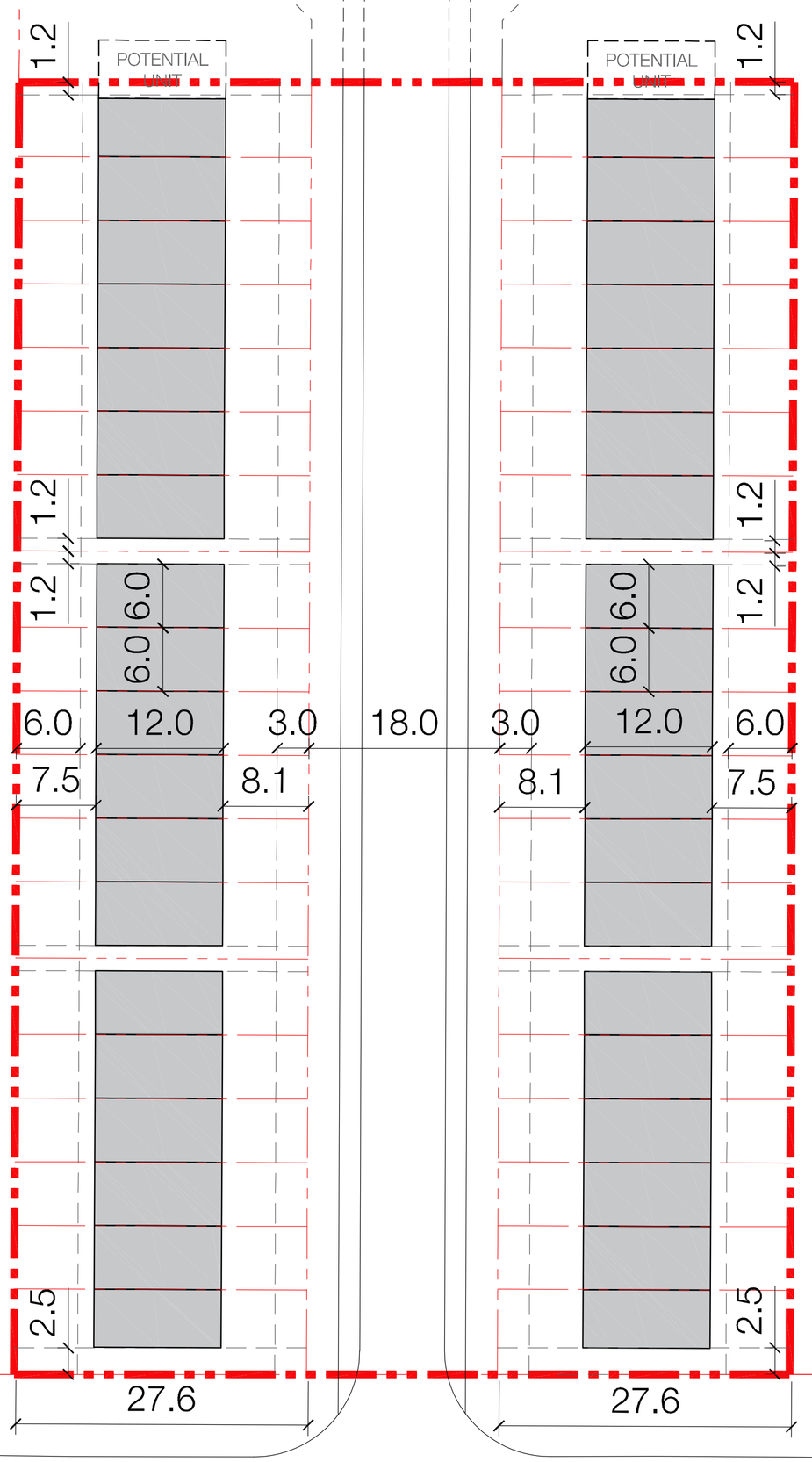
AREA SCHEDULE	
BLOCK	Square Metres
1	1085,5
2	1062.0
3	1202.6
4	1204.9
5	1062.1
6	1084,5

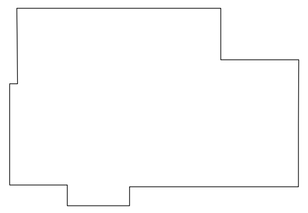
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com

Ontario Land Surveyors

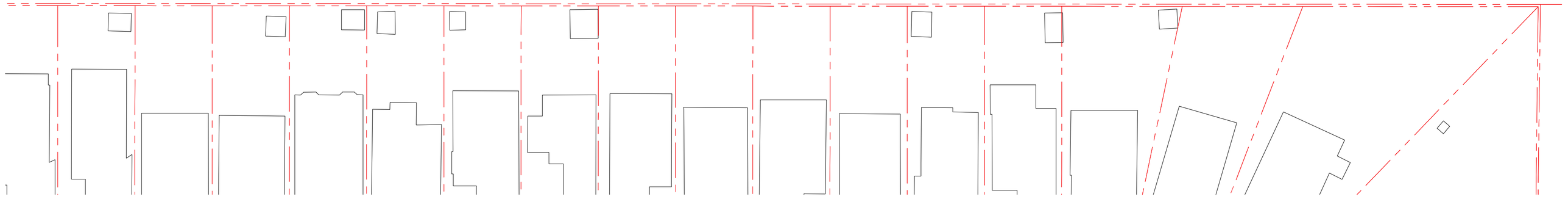
Job No. 21202-20 MGT Inc Pt Lt 1 Cl HU DPS Dl | N

PROPOSED STREET TO BE DEVELOPED BY ADJOINING DEVELOPER





MAPLE GROVE ROAD



SITE INFORMATION

ZONING	R3YY
SITE AREA	
Total Site Area:	8,916m^2
HEIGHT	
Residential:	4 Storeys (12m)
PARKING RATES	REQUIRED
Residential:	1.0 p/unit

SETBACKS	F.Y.	S.Y.	I.S.Y.	R.Y.
	3m	2.5m	1.2m	6m

DEVELOPMENT STATISTICS

RESIDENTIAL UNITS
Townhouses: 38

PARKING	Required	Provided
Residential:	38	38

NOTES

1. Assumes typical Residential floor height of 3m.

2. The base plan (lot lines, existing roads and surrounding areas) is based on the City's Open Data and aerial images. The site area is approximate and all dimensions need to be confirmed by a proper survey.

1927 MAPLE GROVE ROAD

CONCEPT PLAN 2

LEGEND

- PROPOSED BUILDING
- PROPERTY BOUNDARY
- SETBACKS

0 5m 10m 15m 30m

No.	REVISION	DATE	BY
1	DRAFT	2020.03.05	CB

CLIENT
ZAYOUN GROUP INC

FOTENN
Planning + Design
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	RP
REVIEWED	RP
DATE	2020.03.05

P2

Appendix C

Hydraulic Network Analysis
Information and Calculations

Water Demand Calculations
1927 Maple Grove (JLR 29893-001)

Unit Breakdown	**No.**	**Person Per Unit (Table 4.1)**
Singles	0	3.4
Semi-detached or Townhouse	40	2.7
Back to Back	0	2.7
Terrace Stacked Units	0	2.7
High Density Residential	0	1.8
Totla Unit Count =	40	
Total Population	108	ppl
Average Day Consumption Rate	280	L/c/d
Average Day Demand	**0.35**	**L/s**
Maximum Day Peaking Factor	6.51	x Avg Day (Table 3-3 MOE)
Maximum Day Demand	**2.28**	**L/s**
Peak Hour Peaking Factor	9.82	x Max Day (Table 3-3 MOE)
Peak Hour Demand	**3.44**	**L/s**
Minimum Hour Peaking Factor	0.10	x Avg Day (Table 3-1 MOE)
Minimum Hour Demand	**0.04**	**L/s**

1927 Maple Grove

Maple Grove Towns Inc.
29893-001

Boundary Conditions (March 12, 2021 Email from the City):

Water Demand Scenario	Demands (L/s)	Head (m) Maple Grove
Peak Hour	0.35	156.7
Maximum HGL	0.04	161.0
MXDY + FF	3.44	154.1

Note: The supply elevations under the maximum day demand plus fire flow estimated by the City based on RFF of 10,000 L/min

Headloss Calculations (Hazen Williams Equation)

Calculate headloss in a given pipe length based on flows and C value

HL = 10.675 * L * Q^1.852 / (C^1.856 * D ^4.8704)

Where,
HL = Headloss (m)
L - Length (m)
Q - Flow (m^3/s)
C - Hazen Williams "C"
D - Main Diameter (m)

Lengths used in the Headloss Calculations	
Pk HR & Max HGL (200 mm WM)	124.7
Max Day plus FF (at northern hydr	92.0

Water Demand Condition	Flow - Q (L/s)	Flow - Q (m^3/s)	Length (m) to U/S 200 mm	Length (m) to U/S hydrant	C	D (m)	HeadLoss (m)	HGL (m) @ Maple Grove	Calculated HGL (m)	Elevation (m)	Pressure @ Node (m)	Pressure @ Node (kPa)	Requirement	Criteria Acheived?
Average Day	0.35	0.00035	124.7	124.7	110	0.200								
Maximum Day	2.28	0.00228	124.7	124.7	110	0.200								
Peak Hour	3.44	0.00344	124.7	124.7	110	0.200	0.01507	156.700	156.685	108	48.685	478	275	Yes
Maximum HGL	0.04	0.00004	124.7	124.7	110	0.200	0.00000	161.000	161.000	108	53.000	520	552	Yes
Maximum Day Plus Fire (Q = 2.28 L/s + 167 L/s)	169.28	0.16928	92.0	124.7	110	0.200	20.55963	154.100	133.540	108	25.540	251	140	Yes

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
K1Z 7T1
Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

Stantec

Legend

- KANATA–WEST CONCEPT PLAN BOUNDARY
- EXISTING WATERMAIN
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 914mm
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 762mm
- PROPOSED 610mm DIA. WATERMAIN
- PROPOSED 406mm DIA. WATERMAIN
- PROPOSED 305mm DIA. WATERMAIN
- PROPOSED 203mm DIA. WATERMAIN

Notes

INTERNAL WATERMAIN SIZE ARE EXPECTED TO VARY FROM 152mm TO 305mm.

CCL/IBI

Revision	By	Appd.	Date
5 REVISED FOR DEC.21/05 SUBMISSION	GBU	SJP	DEC.21/05
4 REVISED AS PER CITY COMMENTS (Sept.16/05)	GBU	MAF	OCT.28/05
3 REVISED WATER DISTRIBUTION NETWORK	GBU	S.J.P.	AUG 09/05
2 REVISED POND 1 AREA	NB	MAF	JUNE 09/05
1 REVISED LOTTING FOR TARTAN AND MATTAMY	BCB	SJP	JAN.18/05

File Name:

Des.	Chkd.	Dsgn.	Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

Title

Watermain
Final Concept

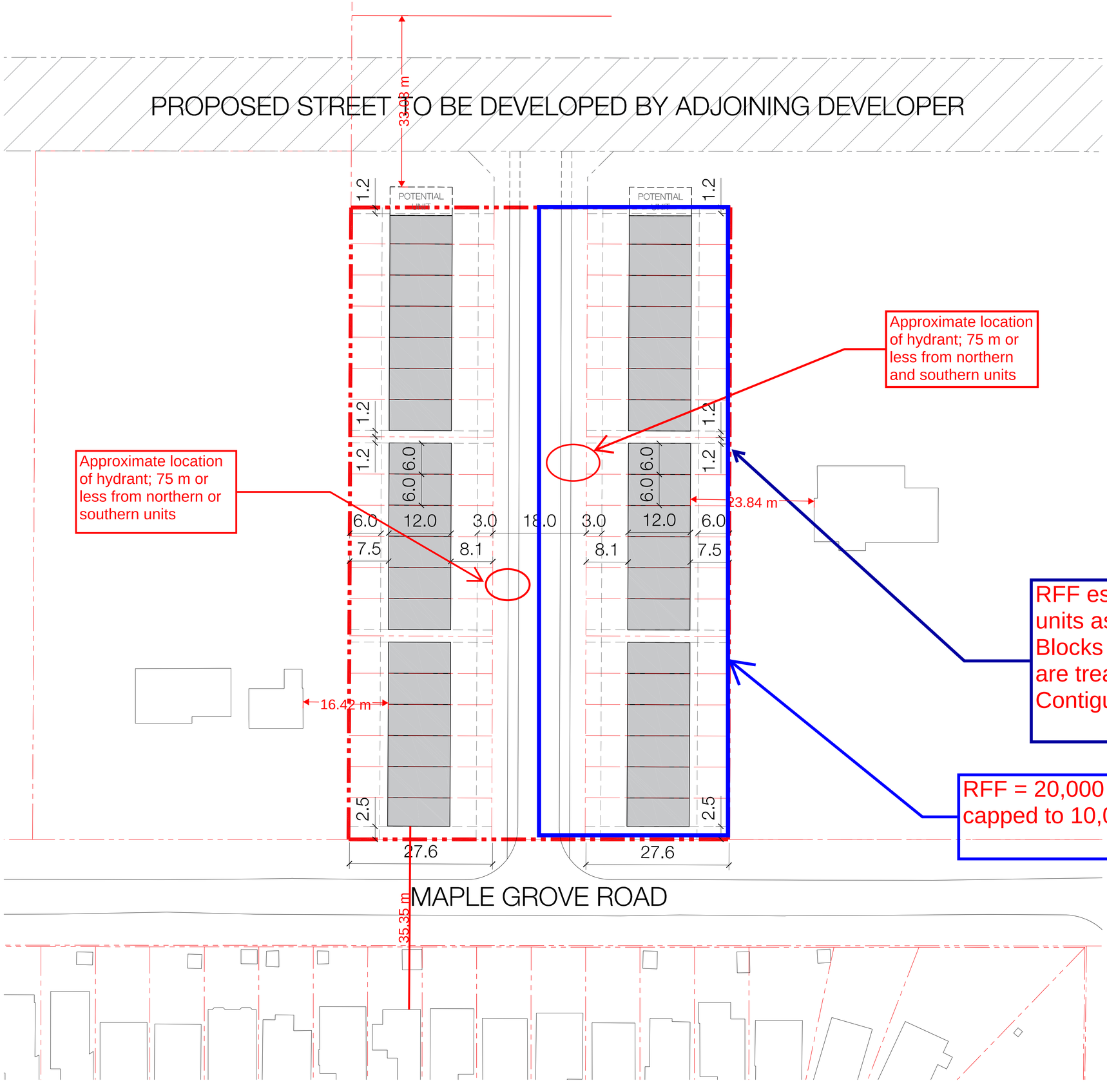
Project No.	Scale	Sheet	Revision
60400406	1:7500 (0, 75, 225, 375m)		
Drawing No.			
WM-1		2 of 7	5

FUS Fire Flow Calculations

1927 Maple Grove - Row Townhouse
(JLR 29893-001)
OPTION 2 Concept

Step	Parameter	Value		Note
A	Type of Construction	Wood Frame		
	Coefficient (C)	1.5		
B	Ground Floor Area	1440	m^2	Includes 3 Blocks of TH (20 units) as the seperation between the Blocks is 2.4 m (less than 3 m), blocks to be treated as contiguous
C	Height in storeys	2	storeys	Basements are excluded.
	Total Floor Area	2880	m^2	
D	Fire Flow Formula	$F=220C\sqrt{A}$		
	Fire Flow	17710	L/min	
	Rounded Fire Flow	18000	L/min	Flow rounded to nearest 1000 L/min.
E	Occupancy Class	Limited Combustible		Residential buildings have a limited combustible occupancy.
	Occupancy Charge	-15%		
	Occupancy Increase or Decrease	-2700		
	Fire Flow	15300	L/min	No rounding applied.
F	Sprinkler Protection	None		
	Sprinkler Credit	0%		
	Decrease for Sprinkler	0	L/min	
G	*North Side Exposure*			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	12.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	24.0	m-storeys	
	Separation Distance	33.03	m	
	North Side Exposure Charge	5%		
	East Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	18.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	36.0	m-storeys	
	Separation Distance	23.84	m	
	East Side Exposure Charge	8%		
	South Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	12.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	24.0	m-storeys	
	Separation Distance	35.25	m	
	South Side Exposure Charge	5%		
	West Side Exposure			
	Exposing Wall:	Wood Frame		
	Exposed Wall:	Wood Frame		
	Length of Exposed Wall:	12.0	m	
	Height of Exposed Wall:	2	storeys	
	Length-Height Factor	24.0	m-storeys	
	Separation Distance	16.42	m	
	West Side Exposure Charge	12%		
	Total Exposure Charge	30%		The total exposure charge is below the maximum value of 75%.
	Increase for Exposures	4590	L/min	
H	Fire Flow	19890	L/min	
	Rounded Fire Flow	20000	L/min	Flow rounded to nearest 1000 L/min.
City Cap	**Required Fire Flow (RFF)**	**10000**	**L/min**	The City of Ottawa's cap does apply since there is the 10 m minimum separation between the back of the units and no side flankage.
		167	**L/s**	

Fire Underwriters Survey (FUS) Fire Flow Calculations
In accordance with City of Ottawa Technical Bulletin ISTB-2018-02 dated March 21, 2018



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DEVELOPMENT STATISTICS

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1927 MAPLE GROVE ROAD

CONCEPT PLAN 2

LEGEND

- PROPOSED BUILDING
- PROPERTY BOUNDARY
- SETBACKS

0 5m 10m 15m 30m

No.	REVISION	DATE	BY
1	DRAFT	2020.03.05	CB

CLIENT
ZAYOUN GROUP INC

FOTENN Planning + Design
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	RP
REVIEWED	RP
DATE	2020.03.05

P2

Appendix D

Background Documents
Sanitary

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
K1Z 7T1
Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

CCL/IBI
Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225-1311

Legend

- ULTIMATE MAJOR DRAINAGE LIMIT
- SUBCATCHMENT AREAS
- PROPOSED TRUNK SEWER
- PROPOSED FORCEMAIN
- TEMPORARY FORCEMAIN
- PROPOSED STITTSVILLE PUMPING STATION AND FORCEMAIN
- EXISTING TRUNK SEWER
- MAJOR DRAINAGE SPLIT
- ① NODES
- EXISTING PUMPING STATION AND FORCEMAIN (TO BE DECOMMISSIONED)
- 44 / 25.54 ha. INPUT POINT AND AREA IN HECTARES
- EXISTING PUMPING STATION GRAVITY OUTLET

Revision	By	Appd.	Date
5 REVISED FOR DEC.21/05 SUBMISSION	G.B.U.	S.J.P.	05:12:21
4 REVISED TRUNK SEWER FROM 16 TO KWPS	R.W.W.	R.W.W.	05:10:05
3 ARROWS FOR EXIST. PUMP STATIONS ADDED	R.W.W.	R.W.W.	05:08:09
2 REPORT JUNE 2005	R.W.W.	R.W.W.	05:06:07
1 REPORT APR. 2005	R.W.W.	R.W.W.	05:04:20

File Name:	Dwn.	Chkd.	Dsgn.	Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

Title

Preferred Waste-Water Option

Project No.	Scale
60400406	1:7500 (0, 75, 225, 375m)
Drawing No.	Sheet / Revision
S-I	7 of 7 / 5

SANITARY SEWER DESIGN SHEET
PROJECT : Kanata West Servicibility Study
LOCATION : CITY OF OTTAWA

PROJECT: 3598-LD-03
DATE: April 2005
DESIGN: JM
FILE: 3598LD.sewers.XLS

MODEL 1 ULTIMATE (population based criteria..ICI simultaneous peaking)

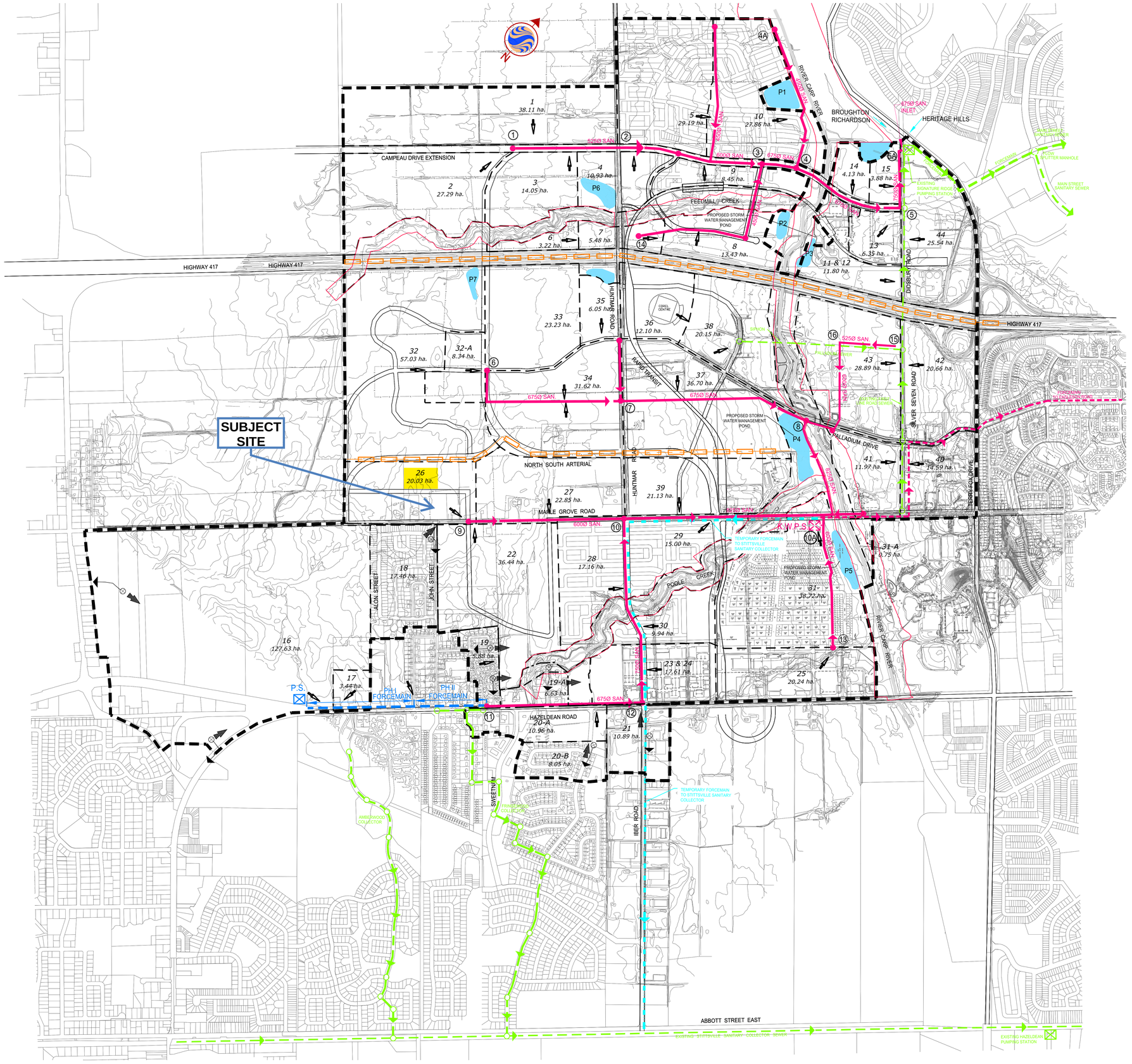
LOCATION				TOTAL AREA	RESIDENTIAL							EMPLOYMENT/RETAIL/BUSINESS PARK/OPEN SPACES							INFILTRATION			TOTAL FLOW	PROPOSED SEWER						HARMON PF	ACTUAL q/Q	va/Vf	ACTUAL VELOCITY
STREET	FROM MH	TO MH			APPLIC AREA	UNIT/Ha	TOTAL UNITS	POPULATION INDIV	POPULATION ACCUM	PEAK FACTOR	PEAK FLOW	APPLIC AREA	ACCUM AREA	TOTAL AREA	FLOW RATE	PEAK FLOW INDIV	PEAK FLOW ACCUM	PEAK FLOW TOTAL	AREA (Ha) INDIV	AREA (Ha) CUMUL	TOTAL CUMUL	PEAK FLOW		CAPACITY	VELOCITY (full)	LGTH.	PIPE	GRADE	AVAIL. CAP.				
				(Ha)	(Ha)						(l/s)	(Ha)	(Ha)	(Ha)	(l/Ha/d)	(l/s)	(l/s)	(l/s)				(l/s)	(l/s)	l/s	m/s	(m)	(mm)	%	(%)				(m/s)
Campeau Drive Trunk Sewer	1	2	Area 1 (PBP)	38.11								38.11	38.11		35000	23.16	23.16		38.11	38.11												
			Area 2 (PBP)	27.29								27.29	65.40		35000	16.58	39.74		27.29	65.40												
			Area 3 Ext Employment	14.05								14.05	79.45		50000	12.20	51.94		14.05	79.45												
			Area 4 HP Employment	10.93								10.93	90.38	90.38	50000	9.49	61.42	61.42	10.93	90.38	90.38	25.31	86.73	283.79	1.27	525.0	525	0.40	69.44%				
	2	3	Area 5 Residential	29.19	29.19	19	555	1664	1664	3.65	24.58			90.38				61.42	29.19	29.19									3.65			
			Area 9 Ext Employment	8.45							24.58	8.45	8.45	98.83	50000	7.34	7.34	68.76	8.45	128.02	128.02	35.85	129.18	286.61	0.98	700.0	600	0.20	54.93%		0.451	0.830	0.815
	14	3	Area 6/8 Ext Employment	16.65								16.65	16.65		50000	14.45	14.45		16.65	16.65												
			Area 7 HP Employment	5.48								5.48	22.13	22.13	50000	4.76	19.21	19.21	5.48	22.13	22.13	6.20	25.41	148.74	0.91	910.0	450	0.25	82.92%		0.171	0.630	0.571
	3	4							1664	3.65	24.58	0.00	0.00	120.96		0.00	0.00	87.97	0.00	0.00	150.15	42.04	154.59	392.29	1.06	300.0	675	0.20	60.59%	3.65	0.394	0.790	0.839
	4A	4	Area 10 Residential	27.86	27.86	19	529	1588	1588	3.66	23.55								27.86	27.86	27.86	7.80	31.36	148.74	0.91	750.0	450	0.25	78.92%	3.66	0.211	0.660	0.598
	4	5	14 Mixed Use	4.13	1.76	50	88	263	3515	3.38	48.17	2.37	2.37	123.33	35000	1.44	1.44	89.41	4.13	4.13	182.14	51.00	188.58	392.29	1.06	450.0	675	0.20	51.93%	3.38	0.481	0.840	0.892
	Queensway	5	Area 13 Community Retail	6.35								6.35	6.35	6.35	35000	3.86	3.86	3.86	6.35													
			Area 11/12 Mixed Use	11.80	5.02	50	251	752	752	3.88	11.81	6.79	13.14	13.14	35000	4.12	7.98	7.98	11.80	18.15	18.15	5.08	24.88	43.88	0.87	420.0	250	0.50	43.31%	3.88	0.567	0.880	0.762
	5	5A	Area 15 Community Retail	3.88				0	4267	3.31	57.19	3.88			35000	2.36			3.88											3.31			
First Line Road Sewer			Area 44	25.54							57.19	25.54	29.42	165.89	35000	15.52	17.88	115.27	25.54	29.42	229.71	64.32	236.77	519.43	1.14	300.0	750	*0.20*	54.42%		0.456	0.830	0.945
				229.71							57.19							115.27				64.32	236.77									
Signature Ridge		5A	Area 100 Residential	90.20	90.20	19	1714	5141	5141	3.23	67.35	0.00											65.00							3.23			
Signature Ridge		5A	Area 100 Non-Residential	4.88							67.35	4.88	4.88	4.88	50000	4.24	4.24	4.24	95.08	95.08	95.08	26.62	98.21										
Interstsicial Lands & Broughton/Richardson		5A																														
Total To SRPS	**5A**	**SRPS**		**324.79**	**154.02**		**3136**		**9409**		**124.54**	**170.77**						**119.51**			**324.79**	**90.94**	**399.98**	**580.53**	**1.27**	**30.0**	**750**	**0.25**	**31.10%**	2.98	0.689	0.940	1.197
Palladium Drive Trunk Sewer	6	7	Area 32 (PBP)	57.03								57.03	57.03		50000	49.51	49.51		57.03	57.03													
			Area 32A Park	8.34								8.34	65.37		0	0.00	49.51		8.34	65.37													
			Area 33/34 Ext Employment	54.85								54.85	120.22	120.22	50000	47.61	97.12	97.12	54.85	120.22	120.22													
	7	8	Area 37 Mixed Use	36.70	15.60	50	780	2340	2340	3.53	33.47	21.10	21.10	141.32	50000	18.32	18.32	115.44	36.70	36.70	156.92	43.94	192.85	455.83	1.23	925.0	675	0.27	57.69%	3.53	0.423	0.810	1.000
				156.92	15.60		780		2340		33.47	141.32						115.44	156.92		156.92	43.94	192.85							3.53			
Corel Centre Etc. (Existing Sewer) *		16	Area 35 HP Employment	6.05								6.05	6.05		30000	3.15	3.15		6.05													
		16	Area 36 (Corel Centre)																			30.00										
		16	Area 38 Exten Employment	20.15								20.15	26.20	26.20	14400	5.04	8.19	8.19	20.15	26.20	26.20	7.34	45.52				*Existing*						
First Line Road Sewer	15	16	Area 40 Employment	14.59								14.59	14.59		35000	8.87	8.87		14.59	14.59													
			Area 41 Employment	11.97								11.97	26.56		35000	7.27	16.14		11.97	26.56													
			Area 42 Employment	20.66								20.66	47.22		35000	12.55	28.69		20.66	47.22													
			Area 43 Employment	28.89								28.89	76.11	76.11	35000	17.55	46.25	46.25	28.89	76.11	76.11	21.31	67.56	224.35	1.00	525.0	525	0.25	69.89%		0.301	0.730	0.733
Carp River Trunk	16	8	Nothing To Add	102.31	15.60		780		2340	3.53	33.47	102.31	102.31	102.31	0	0.00	54.44	54.44	0.00	102.31	102.31	28.65	113.08	286.61	0.98	400.0	600	0.20	60.54%	3.53	0.395	0.790	0.776
Carp River Trunk	8	10A	Nothing To Add	259.23	15.60		780		2340		33.47	0.00	0.00	243.63		0.00	0.00	169.87	0.00	139.01	259.23	109.92	305.93	579.95	1.05	550.0	825	0.15	47.25%	3.53	0.528	0.860	0.904
																			23.34	23.34										3.72			
Marie Grove Road Trunk Sewer	9	10	Area 18/19 Exist. Residential	23.34	23.34	19	443	1330	1330										79.32	102.66	102.66	28.74	132.56	405.11	1.39	775.0	600	0.40	67.28%	3.03	0.327	0.740	1.027
			Area 22/26/27 Residential	79.32	79.32	30	2380	7139	8469	3.03	103.82																			3.20			
Hazeldean/Huntmar Trunk Sewer	11	12	Area 16/20 Residential	99.01	99.01	19	1881	5644	5644	3.20	73.06								99.01	99.01													
			Area 16/20 Commercial	33.50								33.50	33.50	33.50	50000	29.08	29.08	29.08	33.50	132.51													
			Area 16/20 Open Space	14.13								14.13							14.13	146.64													
			Area 17 Ex. Commercial	3.44							73.06	3.44	36.94	36.94	35000	2.09	31.17	31.17	3.44	150.08	150.08	42.02	146.26	554.82	1.50	775.0	675	0.40	73.64%		0.264	0.700	1.051
	12	10	Area 21 Exist. Employment	10.89								10.89	10.89	10.89	50000	9.45	9.45		10.89	10.89													
			Area 19A Exist Residential	6.63	6.63	19	126	378									9.45		6.63	17.52													
			Area 23/24 Community Retail	17.61								17.61	28.50	28.50	35000	10.70	20.15	51.32	17.61	35.13													
			Area 28/30 Residential	27.10	27.10	30	813	2439	8460	3.03	103.72	0.00	0.00	65.44				51.32	27.10	62.23	212.31	59.45	214.49	519.43	1.14	950.0	750	0.20	58.71%	3.03	0.413	0.800	0.911
Marie Grove Road Trunk Sewer	10	10A	Area 39 Mixed Use	21.13	8.98	50	449	1347				12.15	12.15	77.59	35000	7.38	7.38	58.71	21.13														
			Area 29 Residential	15.00	15.00	30	450	1350	19627	2.66	211.54							58.71	15.00	36.13	351.10	98.31	368.56	669.89	1.21	1000.0	825	0.20	44.98%	2.66	0.550	0.870	1.056
Carp River Trunk Sewer	13	10A	Area 25 Community Retail	20.24								20.24	20.24	20.24	35000	12.30	12.30	12.30	20.24														
			Area 31 residential	38.72	38.72	30	1162	3485	3485	3.39	47.80							12.30	38.72	58.96	58.96	16.51	76.61	320.17	1.10	1000.0	600	0.25	76.07%	3.39	0.239	0.680	0.746
		10A	Area 31A (PBP)	0.75								0.75	0.75	0.75	50000	0.65	0.65	0.65	0.75	0.75	0.75	0.21	0.86	36.69	0.72	100.0	250	0.35	97.65%		0.023	0.340	0.246
Pumping Station 2 to KWPS	**10A**	**KWPS**		**670.04**	**313.70**		**8484**		**25451**		**292.82**	**356.34**						**241.53**			**670.04**	**224.95**	**759.29**	**1273.71**	**1.43**	**30.0**	**1050**	**0.20**	**40.39%**	2.55	0.596	0.900	1.283
STUDY TOTALS				994.83	467.72		11620		34860			527.11																		2.41			

Average Daily Per capita Flow Rate = 350 l/cap/d
Infiltration Allowance Flow Rate = 0.28 l/sec/Ha
Residential Peaking Factor = 1+(14/(4+(P^0.5))), P=Pop. in 1000's, Max of 4
Population density per unit = 3.00
Peak Fof Employment/Retail/Business Park = 1.50
Mixed Uses Assumes: 15% Community Retail, 42.5% Business Park and 42.5% Residential

Revision No. 1: April 01; 2005
Revision No. 2: April 11, 2005
Revision No. 3: April 21, 2005
Revision No. 4: June 07, 2005
Revision No. 5: August 10, 2005
Revision No. 6: Oct. 14, 2005
Revision No. 7: Nov. 10, 2005
Revision No. 8: Nov. 11, 2005
Revision No. 9: Apr. 19, 2006

Stantec
CCL/IBI

FIG. 4.2-1



Stantec Consulting Ltd.
1505 Laperriere Avenue
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CCL/IBI
Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225-1311

Legend

- ULTIMATE MAJOR DRAINAGE LIMIT
- SUBCATCHMENT AREAS
- PROPOSED TRUNK SEWER
- PROPOSED FORCEMAIN
- TEMPORARY FORCEMAIN
- PROPOSED STITTSVILLE PUMPING STATION AND FORCEMAIN
- EXISTING TRUNK SEWER
- MAJOR DRAINAGE SPLIT
- (1) NODES
- EXISTING PUMPING STATION AND FORCEMAIN (TO BE DECOMMISSIONED)
- 44 / 25.54 ha. — INPUT POINT AND AREA IN HECTARES
- EXISTING PUMPING STATION GRAVITY OUTLET

5	REVISED FOR DEC.21/05 SUBMISSION	G.B.U.	S.J.P.	05:12:21
4	REVISED TRUNK SEWER FROM 16 TO KWPS	R.W.W.	R.W.W.	05:10:05
3	ARROWS FOR EXIST. PUMP STATIONS ADDED	R.W.W.	R.W.W.	05:08:09
2	REPORT JUNE 2005	R.W.W.	R.W.W.	05:06:07
1	REPORT APR. 2005	R.W.W.	R.W.W.	05:04:20
Revision		By	Appd.	Date

File Name:	Dwn.	Chkd.	Dsgn.	Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

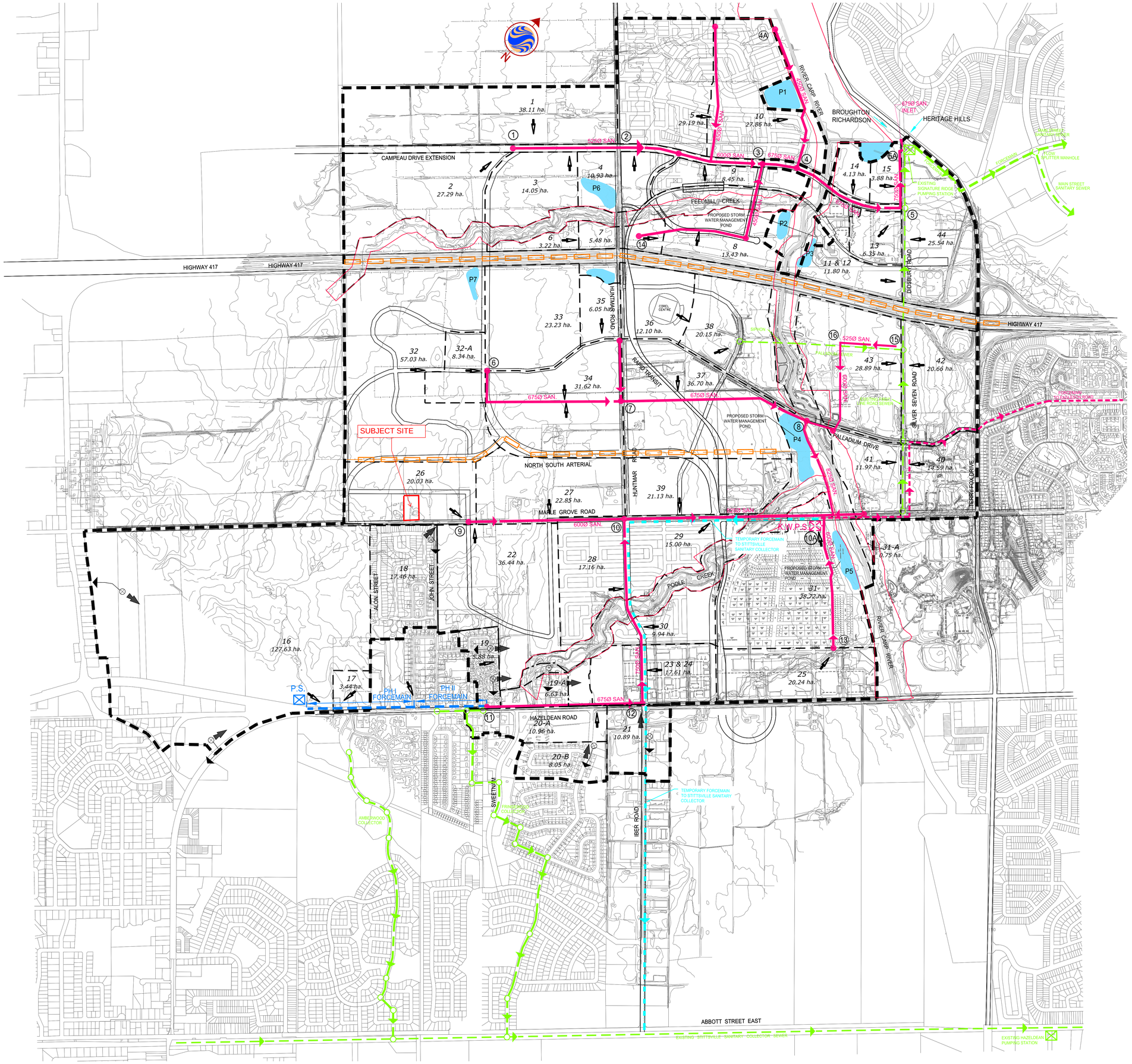
Ottawa, Ontario

Title

Preferred Waste-Water Option

Project No.	Scale	Sheet	Revision
60400406	1:7500 (0, 75, 225, 375m)	7 of 7	5

Drawing No. S-I



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Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225-1311

Legend

- ULTIMATE MAJOR DRAINAGE LIMIT
- SUBCATCHMENT AREAS
- PROPOSED TRUNK SEWER
- PROPOSED FORCEMAIN
- TEMPORARY FORCEMAIN
- PROPOSED STITTSVILLE PUMPING STATION AND FORCEMAIN
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- 44 / 25.54 ha. INPUT POINT AND AREA IN HECTARES
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5	REVISED FOR DEC.21/05 SUBMISSION	G.B.U.	S.J.P.	05:12:21
4	REVISED TRUNK SEWER FROM 16 TO KWPS	R.W.W.	R.W.W.	05:10:05
3	ARROWS FOR EXIST. PUMP STATIONS ADDED	R.W.W.	R.W.W.	05:08:09
2	REPORT JUNE 2005	R.W.W.	R.W.W.	05:06:07
1	REPORT APR. 2005	R.W.W.	R.W.W.	05:04:20
Revision		By	Appd.	Date

File Name:

Dwn. Chkd. Dsgn. Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

Title

Preferred Waste-Water Option

Project No. 60400406

Scale 1:7500 (0, 75, 225, 375m)

Drawing No. S-I

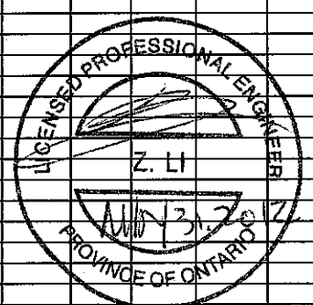
Sheet 7 of 7

Revision 5

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

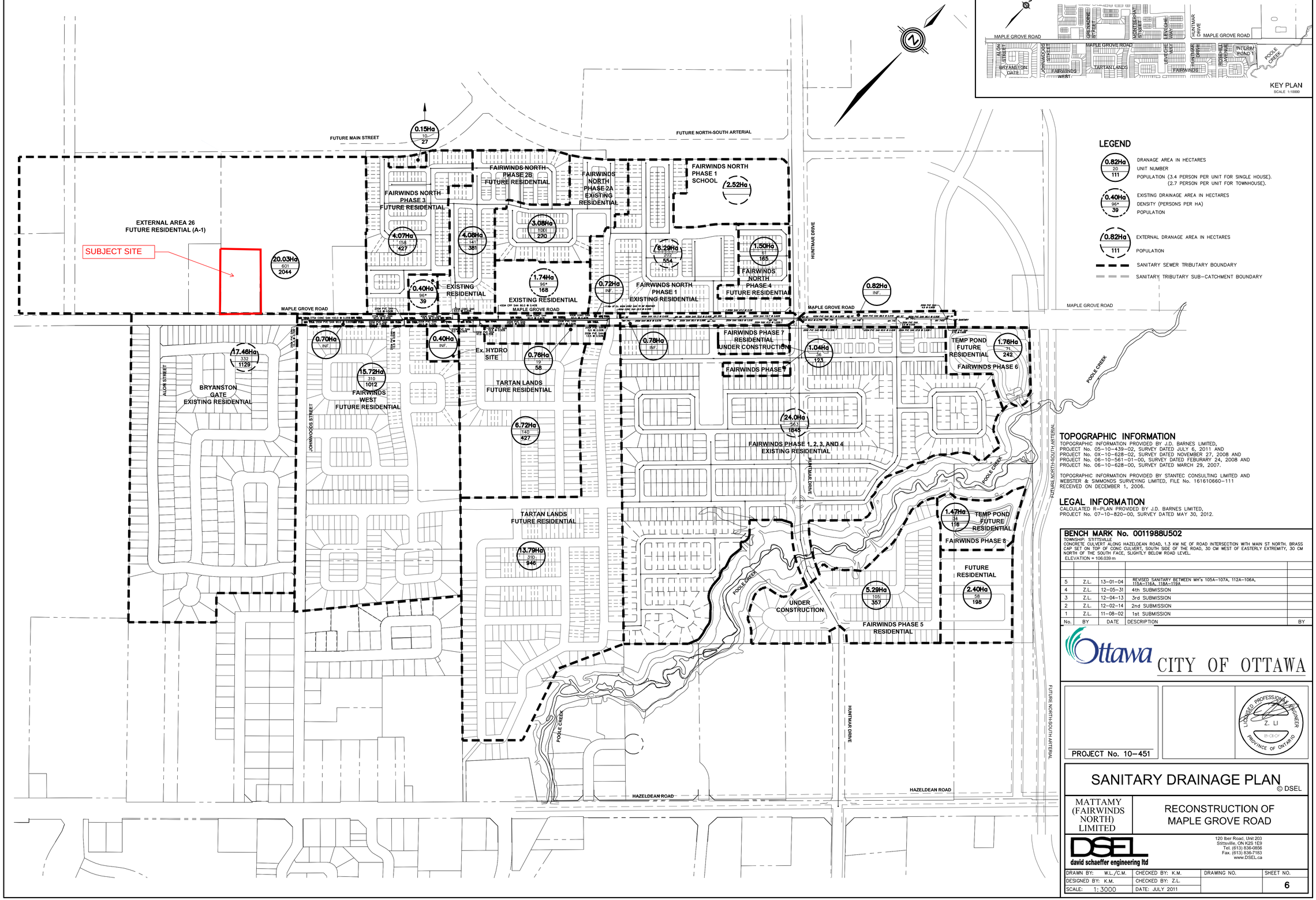
LOCATION			RESIDENTIAL AREA AND POPULATION						COMM		INDUST		INSTIT		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
MAPLE GROVE ROAD																											
			20.03	601	2044	20.03	2044										20.03	20.03									
	104A	105A	17.46	332	1129	37.49	3173	3.42	43.96								17.46	37.49	10.497	54.46	100.0	375	0.25	87.67	0.62	0.79	0.83
	105A	106A	0.70	0	0	38.19	3173	3.42	43.96								0.70	38.19	10.693	54.65	101.0	375	0.25	87.67	0.62	0.79	0.83
			0.40		39	38.59	3212										0.40	38.59									
			0.40	0	0	38.99	3212										0.40	38.99									
	106A	107A	15.72	310	1012	54.71	4224	3.31	56.64								15.72	54.71	15.319	71.96	70.0	450	0.20	127.50	0.56	0.80	0.82
	107A	108A	0.72	0	0	55.43	4224	3.31	56.64								0.72	55.43	15.520	72.16	63.0	450	0.20	127.50	0.57	0.80	0.82
	108A	109A	6.72	140	427	62.15	4651	3.27	61.61								6.72	62.15	17.402	79.01	80.0	450	0.40	180.32	0.44	1.13	1.09
	109A	1090A	1.74		168	63.89	4819	3.26	63.64								1.74	63.89	17.889	81.53	80.0	450	0.40	180.32	0.45	1.13	1.10
	1090A	110A				63.89	4819	3.26	63.64								0.00	63.89	17.889	81.53	83.0	450	0.40	180.32	0.45	1.13	1.10
			0.76	19	58	64.65	4877										0.76	64.65									
	110A	Ex. 88	13.79	310	946	78.44	5823	3.18	75.01								13.79	77.68	21.750	96.76	22.0	600	0.40	388.33	0.25	1.37	1.14
	Ex. 88	Ex. 89	0.78	0	0	79.22	5823	3.18	75.01								0.78	78.46	21.969	96.98	101.3	600	0.40	388.33	0.25	1.37	1.14
			4.07	158	427	83.29	6250										4.07	82.53									
			4.08	141	381	87.37	6631										4.08	86.61									
			3.08	100	270	90.45	6901										3.08	89.69									
			2.52			92.97	6901																				
			6.29	202	554	99.26	7455										6.29	95.98									
	Ex. 89	Ex. 89A	1.50	61	165	100.76	7620	3.07	94.76								1.50	97.48	27.294	122.05	72.8	600	0.40	388.33	0.31	1.37	1.21
	Ex. 89A	Ex. 90				100.76	7620	3.07	94.76								0.00	97.48	27.294	122.05	47.2	600	0.40	388.33	0.31	1.37	1.21
	Ex. 90	Ex. 91				100.76	7620	3.07	94.76								0.00	97.48	27.294	122.05	112.7	600	0.62	483.47	0.25	1.71	1.42
			0.82	0	0	101.58	7620										0.82	98.30									
			1.04	36	123	102.62	7743										1.04	98.52									
			1.76	71	242	104.38	7985										1.76	100.28									
			24.00	563	1845	128.38	9830										24.00	124.28									
			2.40	58	198	130.78	10028										2.40	126.68									
			5.29	105	357	136.07	10385										5.29	131.97									
	Ex. 91	Ex. 92	1.47	34	116	137.54	10501	2.93	124.64								1.47	133.44	37.363	162.00	96.1	825	0.28	759.56	0.21	1.42	1.12
	Ex. 92	Ex. 93				137.54	10501	2.93	124.64								0.00	133.44	37.363	162.00	88.9	825	0.51	1025.11	0.16	1.92	1.39
	Ex. 93	Ex. 94				137.54	10501	2.93	124.64								0.00	133.44	37.363	162.00	96.4	825	0.50	1015.01	0.16	1.90	1.39



DESIGN PARAMETERS

Average Daily Flow =	350	l/p/day	Industrial Peak Factor =	as per MOE Graph	
Commercial/Institution Flow =	50000	L/ha/da	Extraneous Flow =	0.280	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.760	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/Institution peak Factor =	1.50		Townhouse coeff=	2.7	
			Single house coeff=	3.4	

Designed: K.M.	PROJECT: RECONSTRUCTION OF MAPLE GROVE ROAD		
Checked: Z.L.	LOCATION: City of Ottawa		
Dwg. Reference: Sanitary Drainage Plan, Dwg. No. 6	File Ref: 10-451	Date: May, 2012	Sheet No. 1 of 1



TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 05-10-439-02, SURVEY DATED JULY 6, 2011 AND
PROJECT No. 04-10-628-02, SURVEY DATED NOVEMBER 27, 2008 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBURARY 24, 2008 AND
PROJECT No. 06-10-628-00, SURVEY DATED MARCH 29, 2007.

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC CONSULTING LIMITED AND WEBSTER & SIMMONDS SURVEYING LIMITED, FILE No. 161610660-111 RECEIVED ON DECEMBER 1, 2006.

LEGAL INFORMATION

CALCULATED R-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 07-10-820-00, SURVEY DATED MAY 30, 2012.

BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
5	Z.L.	13-01-04	REVISED SANITARY BETWEEN MH's 105A-107A, 112A-106A, 115A-116A, 118A-119A	
4	Z.L.	12-05-31	4th SUBMISSION	
3	Z.L.	12-04-13	3rd SUBMISSION	
2	Z.L.	12-02-14	2nd SUBMISSION	
1	Z.L.	11-08-02	1st SUBMISSION	

CITY OF OTTAWA

PROJECT No. 10-451

LICENSED PROFESSIONAL ENGINEER Z. LI PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN

MATTAMY (FAIRWINDS NORTH) LIMITED

RECONSTRUCTION OF MAPLE GROVE ROAD

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: W.L./C.M.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		6
SCALE: 1:3000	DATE: JULY 2011		

Appendix E

Background Documents
Storm

SUBJECT SITE

C-6 | 11.36 | 0.60
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-7 | 5.18 | 0.30
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-8 | 1.29 | 0.70
Model: lumped future (KWMSS)
Capture: 10-year (arterial)
Storage: 40 m3/ha

C-9 | 14.44 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 360 m3/ha
(store 100-year on-site)

C-10 | 1.03 | 0.70
Model: lumped future (KWMSS)
Capture: 10-year (arterial)
Storage: 40 m3/ha

C-11 | 0.71 | 0.70
Model: lumped future (KWMSS)
Capture: 10-year (arterial)
Storage: 40 m3/ha

C-12 | 5.04 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 360 m3/ha
(store 100-year on-site)

C-13 | 6.46 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-14 | 19.10 | 0.60
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-15 | 11.75 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 360 m3/ha
(store 100-year on-site)

C-16 | 4.13 | 0.70
Model: lumped future (KWMSS)
Capture: 10-year (arterial)
Storage: 40 m3/ha

C-17 | 1.62 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 360 m3/ha
(store 100-year on-site)

C-18 | 7.19 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 360 m3/ha
(store 100-year on-site)

C-19 | 0.48 | 0.70
Model: lumped future (KWMSS)
Capture: 10-year (arterial)
Storage: 40 m3/ha

C-20 | 0.96 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-21 | 15.57 | 0.80
Model: lumped future (KWMSS)
Capture: 5-year
Storage: 50 m3/ha

C-22 | 2.00 | 0.70
Model: lumped future (KWMSS)
Capture: 226 L/s/ha (arterial)
Storage: 40 m3/ha

C-23 | 1.52 | 0.70
Model: lumped future (KWMSS)
Capture: 271 L/s/ha (arterial)
Storage: 40 m3/ha

C-24 | 2.58 | 0.80
Model: lumped future (KWMSS)
Capture: 85 L/s/ha
Storage: 50 m3/ha

C-25 | 0.68 | 0.80
Model: lumped future (KWMSS)
Capture: 85 L/s/ha
Storage: 50 m3/ha

C-26 | 3.24 | 0.80
Model: lumped future (KWMSS)
Pond Block

A-1 | 16.78 | 0.60
Model: lumped future (KWMSS)
Capture: 100-year
Storage: none required

A-3
4.23 ha
36%
Model: existing lumped (IBI Group)

A-8 | 1.40 | 0.70
Model: lumped future (KWMSS)
Capture: 230 L/s/ha (arterial)
Storage: 40 m3/ha

A-9 | 10.67 | 0.80
Model: lumped future (KWMSS)
Capture: 85 L/s/ha
Storage: 360 m3/ha

A-3b
4.25 ha
26%
Model: existing lumped (IBI Group)

Maple Gr.
4.58 ha
72%
Model: detailed design (DSEL / JFSA)
Capture: 100-year
Storage: road ponding areas

FW North
23.71 ha
60%
Model: detailed design (DSEL / JFSA)
Capture: 5-year
Storage: road ponding areas + 152 m3 park
(store 100-year on-site)

Bryanston
30.83 ha
43%
Model: lumped existing (DSEL / JFSA)
Capture: 5-year on site + 100-year at outlet
Storage: 2000 m3 park, 1042 m3 road ponding

FW West
14.63 ha
48%
Model: detailed design (DSEL/JFSA)
Capture: 5-year on-site + 100-year at outlet
Storage: road ponding

Hydro
0.40 ha
26%
Model: lumped existing (DSEL / JFSA)
Capture: 5-year on site
Storage: none

PC Village
21.47 ha
59%
Model: detailed design (IBI Group)

FW South
29.01 ha
51%
Model: detailed design (DSEL / JFSA/Stantec)
Capture: 5-year
Storage: road ponding areas

MH 103 (850 mm orifice)
MH 131 (818 mm orifice)
Outlet (12 m weir)

Diversion Pipe
Diversion Pipe
Diversion Pipe
Diversion Pipe

Fairwinds South Outfall
Servicing Fairwinds South

Diversion Pipe Outfall
Servicing Claridge, Bryanston Gate, Fairwinds West, Tartan Lands, and part of Maple Grove Road

FUTURE NORTH SOUTH ARTERIAL
PROPOSED NORTH SOUTH ARTERIAL
HUNTMAR DRIVE
HUNTMAR DRIVE
JOHNWOODS STREET
MAPLE GROVE ROAD
MAPLE GROVE ROAD
MAPLE GROVE ROAD
HAZELDEAN ROAD
HAZELDEAN ROAD
POND 4
POOLE CREEK
POOLE CREEK
POOLE CREEK
CARP RIVER

LEGEND :

INTERIM DRAINAGE AREA (S TRUNK, DETAILED)
INTERIM DRAINAGE AREA (S TRUNK, LUMPED)
ULTIMATE DRAINAGE AREA (N TRUNK, LUMPED)

Hydro 0.40 ha 26%
DRAINAGE AREA ID
DRAINAGE AREA (HA)
TOTAL IMPERVIOUSNESS

C-23 | 1.52 | 0.70
KWMSS DRAINAGE AREA ID
RUNOFF COEFFICIENT
DRAINAGE AREA (HA)

TRUNK SEWER

MAJOR SYSTEM OUTFALL TO POOLE CREEK UPSTREAM OF HUNTMAR (PC1 / PCreek1)

MAJOR SYSTEM OUTFALL TO POOLE CREEK DOWNSTREAM OF HUNTMAR (PC2 / PCreek2)

SCALE :
0 100 200 300 400 m

J.F. Sabourin & Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
OTTAWA (613) 836-3884
GATINEAU (819) 243-6858

CLIENT :

DSEL
david schaeffer engineering ltd
120 IBER ROAD, SUITE 203
OTTAWA, ONTARIO K2S 1E9
(613) 836-0856

PROJECT :

Kanata West Community Pond 4

No.	BY	DATE	DESCRIPTION	BY

Proposed Ultimate Conditions Drainage Area to SWM Facility

FIGURE 3

DESIGNED:
DRAWN: LP
VERIFIED: JFS
APPROVED: JFS

DRAWING REF.
631-07\Design\Pond Exp\201412\CAD\JFSA Fairwinds Global.dwg

DATE: Dec/14
PROJECT No.: 631-07

4.1 Minor and Major System Drainage

In accordance with current City of Ottawa standards, it is understood that the north trunk sewer will be designed to provide a 5-year level of service (10-year on arterial roads) based on City of Ottawa IDF curves. Conversely, the partially installed south trunk provides a capacity of 85 L/s/ha, in accordance with now outdated City of Ottawa Guidelines. A 5-year level of service is provided to Bryanston Gate (which contains the proposed Hartin Street development), Fairwinds North, Fairwinds South, Fairwinds West, the Hydro Site, the future Claridge development (A-1), and Poole Creek Village, which are all serviced by the south trunk sewer. Note that excess 100-year flows in Fairwinds North are stored on-site to avoid crossing Maple Grove Road, and the 100-year flows on Maple Grove Road west of the future north-south arterial are captured to the minor system to compensate for the lack of a safe overland flow route. Future developments draining to the south trunk east of Huntmar Drive are limited to the 85 L/s/ha capacity of the south trunk sewer per the ***KWMSS***.

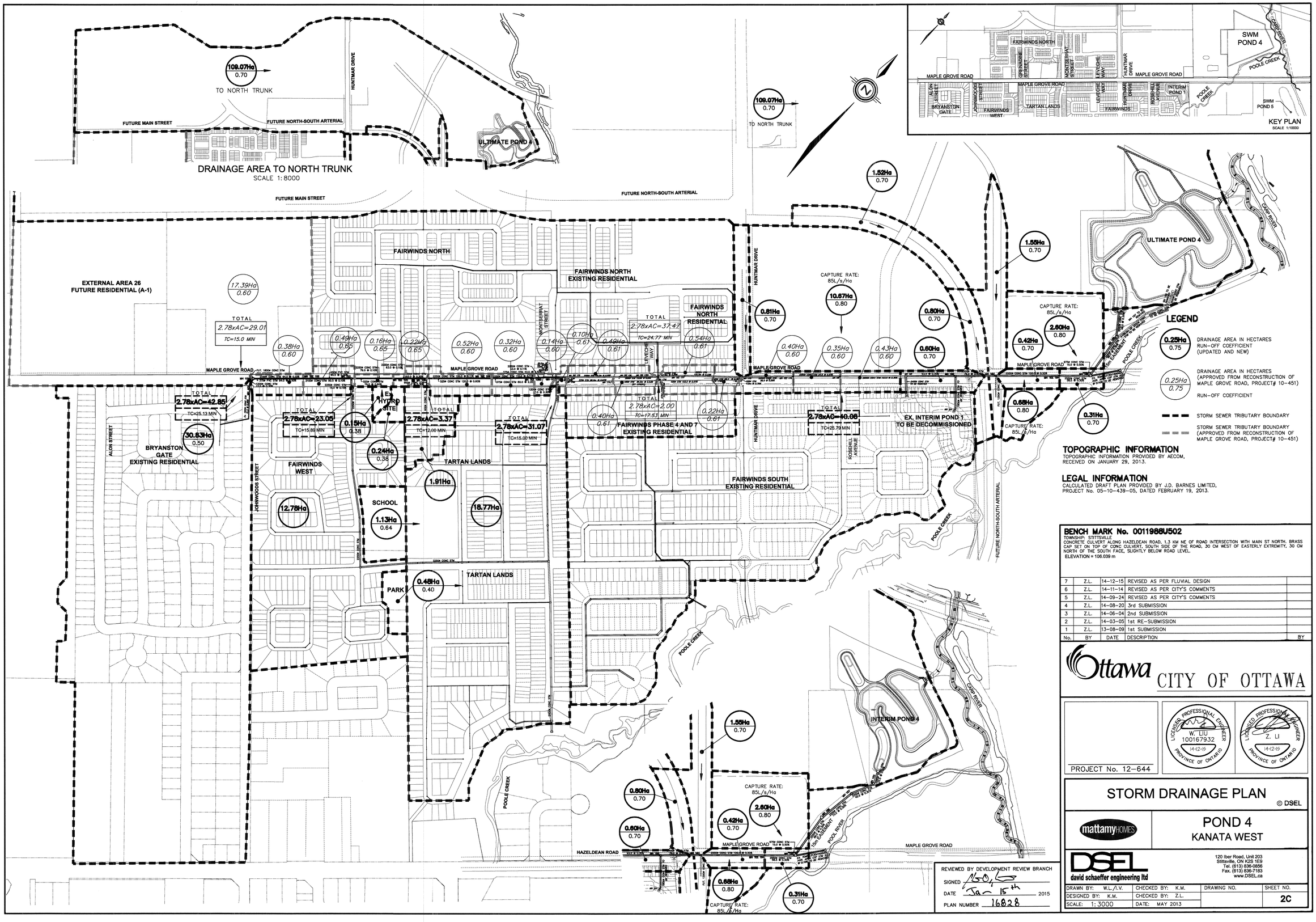
DDSWMM drainage area characteristics for those future development areas draining to the north trunk or to the south trunk east of Huntmar Drive are as per the ***KWMSS***. Poole Creek Village is as modelled by IBI Group, with inflow hydrographs and storm sewer data provided to DSEL / JFSA on April 11th and 14th, 2014 (including the design of the diversion pipe within Poole Creek Village and the outfall to Poole Creek). The DDSWMM length parameter for Bryanston Gate, Maple Grove Road and the Fairwinds Community was measured along the centreline of the road for street sub-catchments, and along the centreline of the drainage swale or path for other subcatchments. The corresponding DDSWMM width parameter was set as equal to or twice the measured length, for catchments that drain to the road/swale from one or two directions, respectively.

The DDSWMM model depression storage and infiltration parameters are as per the October 2012 City of Ottawa Sewer Design Guidelines. The percent imperviousness values of lumped and future drainage areas were calculated based on the runoff coefficient (C) provided by DSEL or from the June 2006 KWMSS, where C = 0.7 x imperviousness ratio + 0.2. Percent imperviousness values of detailed drainage areas within the Fairwinds Community and on Maple Grove Road were calculated based on the actual development layout; impervious areas were taken as fully effective in the front and half effective in the rear of each lot to account for indirectly connected roof drainage.

The 105.83 ha natural area draining to Pond 4 under interim conditions (future development to the north trunk sewer) was modelled in SWMHYMO with an SCS Curve Number of 84 based on an average of those used in the March 2009 existing conditions Carp River XPSWMM model by Greenland Engineering for areas 115P, 116P and 206F. A time to peak of 0.76 hours was calculated using distance and elevations from Google Earth, where time to peak is equal to two-thirds of the Bransby-Williams 85/10 time of concentration.

4.2 Diversion Pipe to Poole Creek

A diversion pipe to Poole Creek through the Fairwinds West and Tartan lands is proposed in order to respect the capacity of the downstream south trunk sewer while still providing a 5-year level of service to the upstream Claridge, Bryanston Gate, Fairwinds West and Poole Creek Village developments. The excess 100-year flows from these developments are also captured to the minor system upstream of the diversion pipe in order to compensate for the lack of a safe overland flow route for major system flows to Poole Creek.



BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
7	Z.L.	14-12-15	REVISED AS PER FLUVIAL DESIGN	
6	Z.L.	14-11-14	REVISED AS PER CITY'S COMMENTS	
5	Z.L.	14-09-24	REVISED AS PER CITY'S COMMENTS	
4	Z.L.	14-08-20	3rd SUBMISSION	
3	Z.L.	14-06-04	2nd SUBMISSION	
2	Z.L.	14-03-05	1st RE-SUBMISSION	
1	Z.L.	13-08-09	1st SUBMISSION	

CITY OF OTTAWA

PROJECT No. 12-644

W. LIU 100167932 14-12-15 PROVINCE OF ONTARIO

Z. LI 14-12-15 PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

mattamyHOMES

POND 4
KANATA WEST

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE Jan 15th 2015
PLAN NUMBER 16828

DRAWN BY: W.L./I.V.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		2C
SCALE: 1:3000	DATE: MAY 2013		

M:\12644\Subm_3\Drawings\02C_644_Strm_Drainage.dwg, 02C, 15/01/2015 11:59:01 AM, VY

Appendix F

Stormwater Management Calculations

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

ALLOWABLE RELEASE RATE

Prepared by: AT
Verified by: GF

STREET	Maintenance Hole Number		Total Area	Inlet Time (min.)	100 YR PEAK FLOW			
	FROM	TO	0.60		2.78AR	Cum. 2.78AR	100 Yr Intensity (mm/hr)	Peak Flow (L/s)
1297 Maple Grove	1	2	0.89	15.00	1.49	1.49	142.89	212.51

1297 Maple Grove
Group Zayoun Inc.

JLR No. 29893-000

STORMWATER MANAGEMENT CALCULATIONS

Allowable release rate set from Pond 4 Design

Prepared by: AT
Verified by: GF

Design Storm	1:100 year
Area	0.8916 ha.
Runoff Coefficient	0.6
Time of Concentration	15 minutes
Peak Flow	212.51

FUNCTIONAL STORAGE VOLUME CALCULATIONS

Projected Release Rate

Design Storm	1:100 year
Area	0.8916 ha.
Runoff Coefficient	0.65
Time of Concentration	10 minutes

Time (min)	Intensity 1:100 Yr (mm/hr)	Qp 1:100 Yr (L/s)	Qp ICD (L/s)	Qp stored (L/s)	Max Stoage Volume Requirement [2] (m^3)
10	178.56	287.68	212.51	75.17	45.1
15	142.89	230.22	212.51	17.71	15.9
20	119.95	193.25	212.51	N/A	N/A
25	103.85	167.31	212.51	N/A	N/A
30	91.87	148.01	212.51	N/A	N/A
35	82.58	133.04	212.51	N/A	N/A
40	75.15	121.07	212.51	N/A	N/A
45	69.05	111.25	212.51	N/A	N/A

Calculation Sheet: Storage In Typical Road Ponding Area

User Input Characteristics

Depth of Static Ponding Over Low Point (LP)	0.300	m
Distance (U/S High Point to D/S Spill Point)	55.0	m
Longitudinal Slope (U/S High Point to LP)	1.2	%
Longitudinal Slope (LP to D/S Spill Point)	1.5	%
Distance (LP to U/S High Point)	35.0	m
Road Width	8.5	m
Road Cross-Slope	0.030	m/m
Right-of-Way Cross-Slope	0.035	m/m
Curb Height	0.15	m
Street Crown	0.1275	m

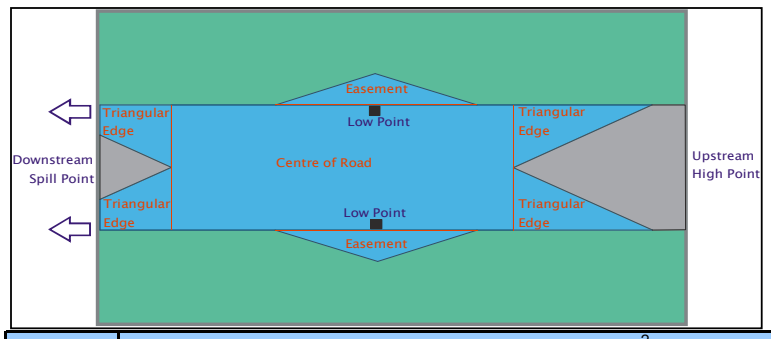
Calculated Results

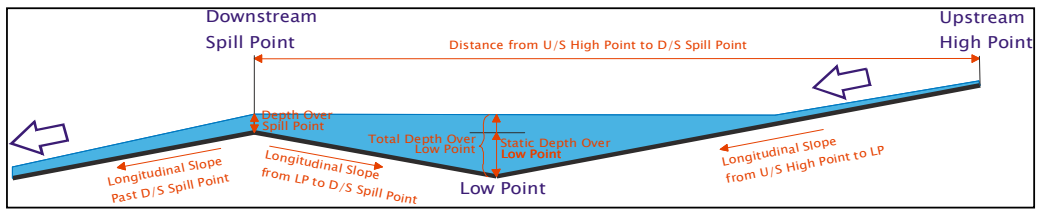
Maximum Volume of Static Ponding	41.3	m^3
Maximum Volume of Dynamic Storage	128.9	m^3
Maximum Total Volume	170.2	m^3
Maximum Area of Static Ponding	397.6	m^2
Maximum Area of Dynamic Storage	583.8	m^2
Maximum Total Area	981.5	m^2

Note: Storage calculations performed based on the geometry of the road, where volumes within the triangular edge and easement sections are calculated as triangular pyramids, the volume within the centre of the road is calculated as a series of rectangular prisms, and:

$Area_{(triangular\ pyramid)}$ = Length x Width / 2 $Area_{(rectangular\ prism)}$ = Length x Width

$Volume_{(triangular\ pyramid)}$ = Area x Height / 3 $Volume_{(rectangular\ prism)}$ = Area x Height

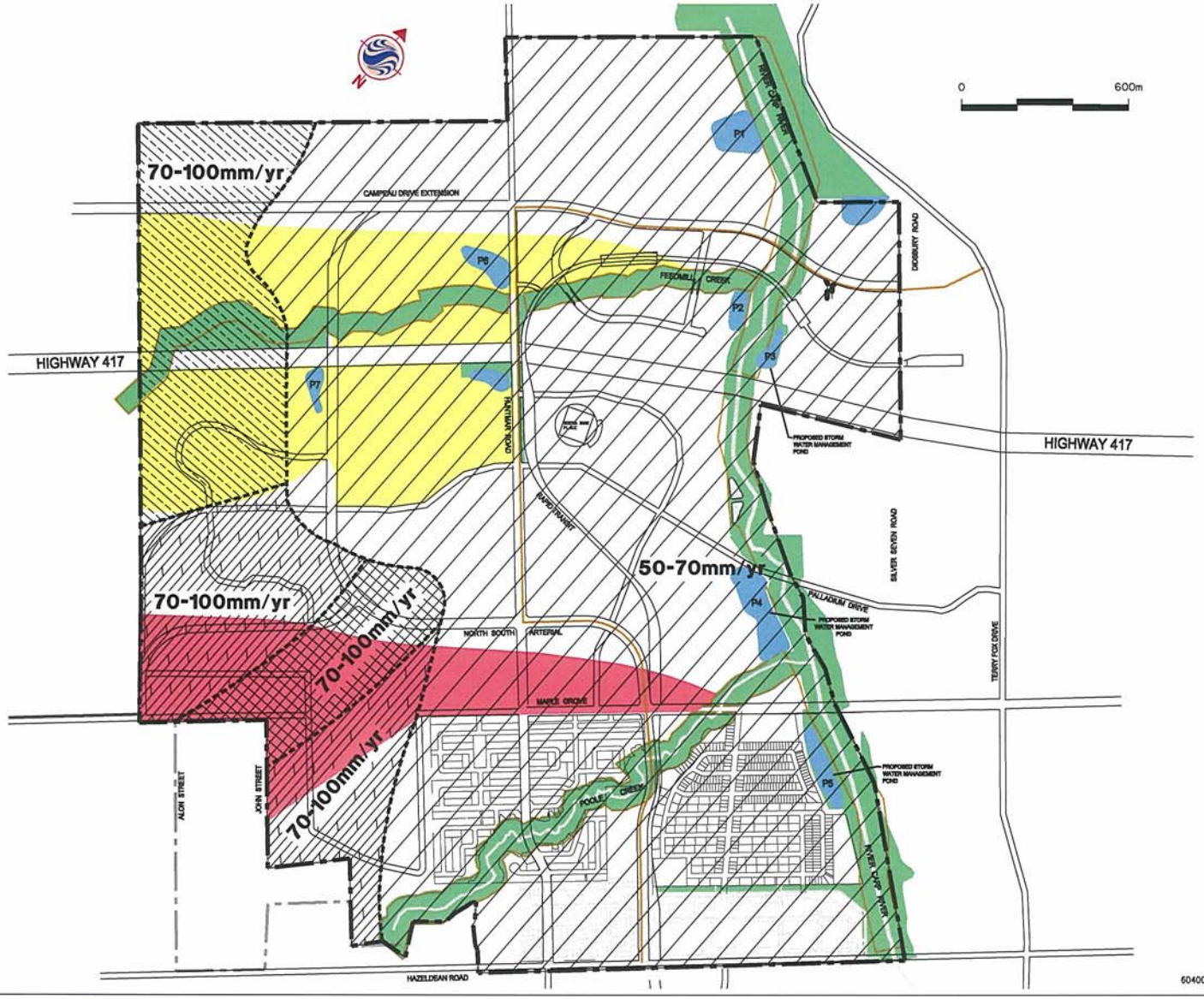




Depth Over Low Point (m)	Surface Area (m^2)							Volume (m^3)						
	From Low Point to D/S Spill Point			From Low Point to U/S High Point			Total	From Low Point to D/S Spill Point			From Low Point to U/S High Point			Total
	Triangular Edge	Centre of Road	Easement	Triangular Edge	Centre of Road	Easement		Triangular Edge	Centre of Road	Easement	Triangular Edge	Centre of Road	Easement	
0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.005	0.06	0.07	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.010	0.22	0.28	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.015	0.50	0.63	0.00	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.020	0.89	1.11	0.00	0.00	0.00	0.00	2.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01
0.025	1.39	1.74	0.00	0.00	0.00	0.00	3.13	0.01	0.00	0.00	0.01	0.00	0.00	0.03
0.030	2.00	2.50	0.00	0.00	0.00	0.00	4.50	0.02	0.00	0.00	0.03	0.00	0.00	0.05
0.035	2.72	3.40	0.00	0.00	0.00	0.00	6.13	0.03	0.00	0.00	0.04	0.00	0.00	0.07
0.040	3.56	4.44	0.00	0.00	0.00	0.00	8.00	0.05	0.00	0.00	0.06	0.00	0.00	0.11
0.045	4.50	5.63	0.00	0.00	0.00	0.00	10.13	0.07	0.00	0.00	0.08	0.00	0.00	0.15
0.050	5.56	6.94	0.00	0.00	0.00	0.00	12.50	0.09	0.00	0.00	0.12	0.00	0.00	0.21
0.055	6.72	8.40	0.00	0.00	0.00	0.00	15.13	0.12	0.00	0.00	0.15	0.00	0.00	0.28
0.060	8.00	10.00	0.00	0.00	0.00	0.00	18.00	0.16	0.00	0.00	0.20	0.00	0.00	0.36
0.065	9.39	11.74	0.00	0.00	0.00	0.00	21.13	0.20	0.00	0.00	0.25	0.00	0.00	0.46
0.070	10.89	13.61	0.00	0.00	0.00	0.00	24.50	0.25	0.00	0.00	0.32	0.00	0.00	0.57
0.075	12.50	15.63	0.00	0.00	0.00	0.00	28.13	0.31	0.00	0.00	0.39	0.00	0.00	0.70
0.080	14.22	17.78	0.00	0.00	0.00	0.00	32.00	0.38	0.00	0.00	0.47	0.00	0.00	0.85
0.085	16.06	20.07	0.00	0.00	0.00	0.00	36.13	0.45	0.00	0.00	0.57	0.00	0.00	1.02
0.090	18.00	22.50	0.00	0.00	0.00	0.00	40.50	0.54	0.00	0.00	0.68	0.00	0.00	1.22
0.095	20.06	25.07	0.00	0.00	0.00	0.00	45.13	0.64	0.00	0.00	0.79	0.00	0.00	1.43
0.100	22.22	27.78	0.00	0.00	0.00	0.00	50.00	0.74	0.00	0.00	0.93	0.00	0.00	1.67
0.105	24.50	30.63	0.00	0.00	0.00	0.00	55.13	0.86	0.00	0.00	1.07	0.00	0.00	1.93
0.110	26.89	33.61	0.00	0.00	0.00	0.00	60.50	0.99	0.00	0.00	1.23	0.00	0.00	2.22
0.115	29.39	36.74	0.00	0.00	0.00	0.00	66.13	1.13	0.00	0.00	1.41	0.00	0.00	2.53
0.120	32.00	40.00	0.00	0.00	0.00	0.00	72.00	1.28	0.00	0.00	1.60	0.00	0.00	2.88
0.125	34.72	43.40	0.00	0.00	0.00	0.00	78.13	1.45	0.00	0.00	1.81	0.00	0.00	3.26
0.130	36.13	45.16	1.42	1.77	0.00	0.00	84.47	1.54	0.09	0.00	1.92	0.12	0.00	3.66
0.135	36.13	45.16	4.25	5.31	0.00	0.00	90.84	1.54	0.29	0.00	1.92	0.36	0.00	4.10
0.140	36.13	45.16	7.08	8.85	0.00	0.00	97.22	1.54	0.50	0.00	1.92	0.62	0.00	4.57
0.145	36.13	45.16	9.92	12.40	0.00	0.00	103.59	1.54	0.72	0.00	1.92	0.90	0.00	5.07
0.150	36.13	45.16	12.75	15.94	0.00	0.00	109.97	1.54	0.96	0.00	1.92	1.20	0.00	5.61
0.155	36.13	45.16	15.58	19.48	0.05	0.06	116.45	1.54	1.21	0.00	1.92	1.51	0.00	6.17
0.160	36.13	45.16	18.42	23.02	0.19	0.24	123.15	1.54	1.47	0.00	1.92	1.84	0.00	6.77
0.165	36.13	45.16	21.25	26.56	0.43	0.54	130.06	1.54	1.75	0.00	1.92	2.19	0.00	7.40
0.170	36.13	45.16	24.08	30.10	0.76	0.95	137.18	1.54	2.05	0.01	1.92	2.56	0.01	8.07
0.175	36.13	45.16	26.92	33.65	1.19	1.49	144.52	1.54	2.36	0.01	1.92	2.94	0.01	8.77
0.180	36.13	45.16	29.75	37.19	1.71	2.14	152.08	1.54	2.68	0.02	1.92	3.35	0.02	9.51
0.185	36.13	45.16	32.58	40.73	2.33	2.92	159.84	1.54	3.01	0.03	1.92	3.77	0.03	10.29
0.190	36.13	45.16	35.42	44.27	3.05	3.81	167.83	1.54	3.36	0.04	1.92	4.21	0.04	11.11
0.195	36.13	45.16	38.25	47.81	3.86	4.82	176.02	1.54	3.73	0.06	1.92	4.66	0.06	11.96
0.200	36.13	45.16	41.08	51.35	4.76	5.95	184.43	1.54	4.11	0.08	1.92	5.14	0.08	12.86
0.205	36.13	45.16	43.92	54.90	5.76	7.20	193.06	1.54	4.50	0.11	1.92	5.63	0.11	13.79
0.210	36.13	45.16	46.75	58.44	6.86	8.57	201.90	1.54	4.91	0.14	1.92	6.14	0.14	14.77
0.215	36.13	45.16	49.58	61.98	8.05	10.06	210.95	1.54	5.33	0.17	1.92	6.66	0.17	15.80
0.220	36.13	45.16	52.42	65.52	9.33	11.67	220.22	1.54	5.77	0.22	1.92	7.21	0.22	16.86
0.225	36.13	45.16	55.25	69.06	10.71	13.39	229.70	1.54	6.22	0.27	1.92	7.77	0.27	17.98
0.230	36.13	45.16	58.08	72.60	12.19	15.24	239.40	1.54	6.68	0.33	1.92	8.35	0.33	19.13
0.235	36.13	45.16	60.92	76.15	13.76	17.20	249.31	1.54	7.16	0.39	1.92	8.95	0.39	20.34
0.240	36.13	45.16	63.75	79.69	15.43	19.29	259.43	1.54	7.65	0.46	1.92	9.56	0.46	21.59
0.245	36.13	45.16	66.58	83.23	17.19	21.49	269.77	1.54	8.16	0.54	1.92	10.20	0.54	22.90
0.250	36.13	45.16	69.42	86.77	19.05	23.81	280.33	1.54	8.68	0.63	1.92	10.85	0.63	24.25
0.255	36.13	45.16	72.25	90.31	21.00	26.25	291.09	1.54	9.21	0.74	1.92	11.51	0.74	25.65
0.260	36.13	45.16	75.08	93.85	23.05	28.81	302.08	1.54	9.76	0.85	1.92	12.20	0.85	27.11
0.265	36.13	45.16	77.92	97.40	25.19	31.49	313.27	1.54	10.32	0.97	1.92	12.90	0.97	28.61
0.270	36.13	45.16	80.75	100.94	27.43	34.29	324.68	1.54	10.90	1.10	1.92	13.63	1.10	30.18
0.275	36.13	45.16	83.58	104.48	29.76	37.20	336.31	1.54	11.49	1.24	1.92	14.37	1.24	31.79
0.280	36.13	45.16	86.42	108.02	32.19	40.24	348.15	1.54	12.10	1.39	1.92	15.12	1.39	33.47
0.285	36.13	45.16	89.25	111.56	34.71	43.39	360.20	1.54	12.72	1.56	1.92	15.90	1.56	35.19
0.290	36.13	45.16	92.08	115.10	37.33	46.67	372.47	1.54	13.35	1.74	1.92	16.69	1.74	36.98
0.295	36.13	45.16	94.92	118.65	40.05	50.06	384.95	1.54	14.00	1.94	1.92	17.50	1.94	38.83
0.300	36.13	45.16	97.75	122.19	42.86	53.57	397.65	1.54	14.66	2.14	1.92	18.33	2.14	40.73
0.305	36.07	45.16	100.58	125.73	45.76	57.20	410.50	1.54	15.34	2.36	1.92	19.17	2.36	42.70

Appendix G

Infiltration Calculations



INFILTRATION TARGETS

	SOIL TYPE	RECHARGE
	FINE SAND	MODERATE
	PALEOZOIC BEDROCK	MODERATE
	TILL	MODERATE
	CLAY	LOW

- Kanata-West Concept Plan Boundary
- Area Tributary To Feedmill Creek (Existing Conditions)
- Area Tributary To Maple Grove Ditch System and Poole Creek (Existing Conditions)
- OPEN SPACE

NOTE:
SOIL TYPES AND RECHARGE POTENTIAL FROM CARP RIVER WATERSHED/SUBWATERSHED STUDY BY ROBINSON CONSULTANTS INC. 2004.
TARGET INFILTRATION RATES OBTAINED FROM ENVIRONMENTAL FACT SHEETS FROM 2004 REPORT.

Stantec

CCL/IBI

MAY 2006

FIG. 5.4

The Kanata West Master Servicing Study set an infiltration target of 25% above targeted infiltration from Figure 5.4 of the KWMSS (presented in Appendix G). The infiltration target for the subject site are therefore set between 88-125mm/year (25% above 70-100mm/yr). As the proposed subdivision will increase the imperviousness of the site, an increase in infiltration rate through imported material will be proposed to meet the target. The calculations below demonstrate how the target could me met:

Post Development Infiltration:

Total drainage area: 0.8916ha (8916m^2)

Target infiltration volume: 8916m2 x (0.088/m to 0.125m/year target) = 784.6m^3/year to 1114.5 m^3/year target

Weighted Imperviousness from site (approximate) : 60%

Impervious Area: 5349.6m^2

Pervious Area: 3566.4m^2

Imported Soil type: Fine Sandy Loam

Table 3.1 MOE SWMPDM Sandy Loam has an infiltration of 228mm/year

Total Infiltration: 3566.4m^2 x 0.228m/year = 813.1m^3/year

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Platinum member

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Ottawa ON Canada
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Tel: 613 728-3571

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Kingston

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K7L 5N4
Tel: 613 544-1424

kingston@jlrichards.ca

Sudbury

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P3E 6G2
Tel: 705 522-8174

sudbury@jlrichards.ca

Timmins

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Tel: 705 360-1899

timmins@jlrichards.ca

North Bay

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Hawkesbury

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J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS