

CONCEPTUAL SERVICING STUDY

Talos Homes

Richmond Square Subdivision

NOVATECH

Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

August 11, 2010
Revised: April 18, 2016

Ref: R-2010-104
Novatech File No. 109222



Engineers, Planners & Landscape Architects

April 18, 2016

City of Ottawa
110 Laurier Avenue West
Ottawa, Ontario
K1P 1J1

Attention: Kevin Hall
Project Manager Infrastructure Approvals, Planning and Growth
Management Department

Reference: Richmond Square Subdivision
11 King Street
Application Draft Plan of Subdivision
Our File No. 109222-6

The following Conceptual Servicing Study is prepared for the City of Ottawa in support of a Draft Plan of Subdivision application for the above-mentioned property.

The subject property consists of a vacant parcel of land located south of Perth Street, between Cockburn Street and King Street, in the Village of Richmond. The proposed development consists of 40 semi-detached residential dwellings on public streets.

Based on the findings of this Study, the proposed subdivision can be serviced with existing sanitary and storm sewers and by individual water wells.

This report has been revised based on City comments and is hereby submitted for approval.

If you have any questions as you complete your review, please do not hesitate to contact the undersigned.

NOVATECH



Cara Ruddle, P. Eng.
Project Manager

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1.0 INTRODUCTION

1.1 PURPOSE

Novatech has prepared this Conceptual Servicing Study in support of a Draft Plan of Subdivision application for a proposed residential development to be located at 11 King Street in the Village of Richmond, in the City of Ottawa. The proposed development will consist of 40 semi-detached residential dwellings.

This Conceptual Servicing Study will outline the servicing aspects of the proposal with respect to water, wastewater (sanitary) and stormwater and will also demonstrate how servicing for the development will be consistent with previous and on-going studies and initiatives for the Village of Richmond.

1.2 BACKGROUND

The Subject Property is located within the Village of Richmond, within the City of Ottawa (see Figure 1). The former Village of Richmond was annexed by the Township of Goulbourn in 1974. The Township of Goulbourn was subsequently included in the amalgamation of the City of Ottawa in 2001. It is understood that this site has never been developed and remains a vacant parcel within the village.

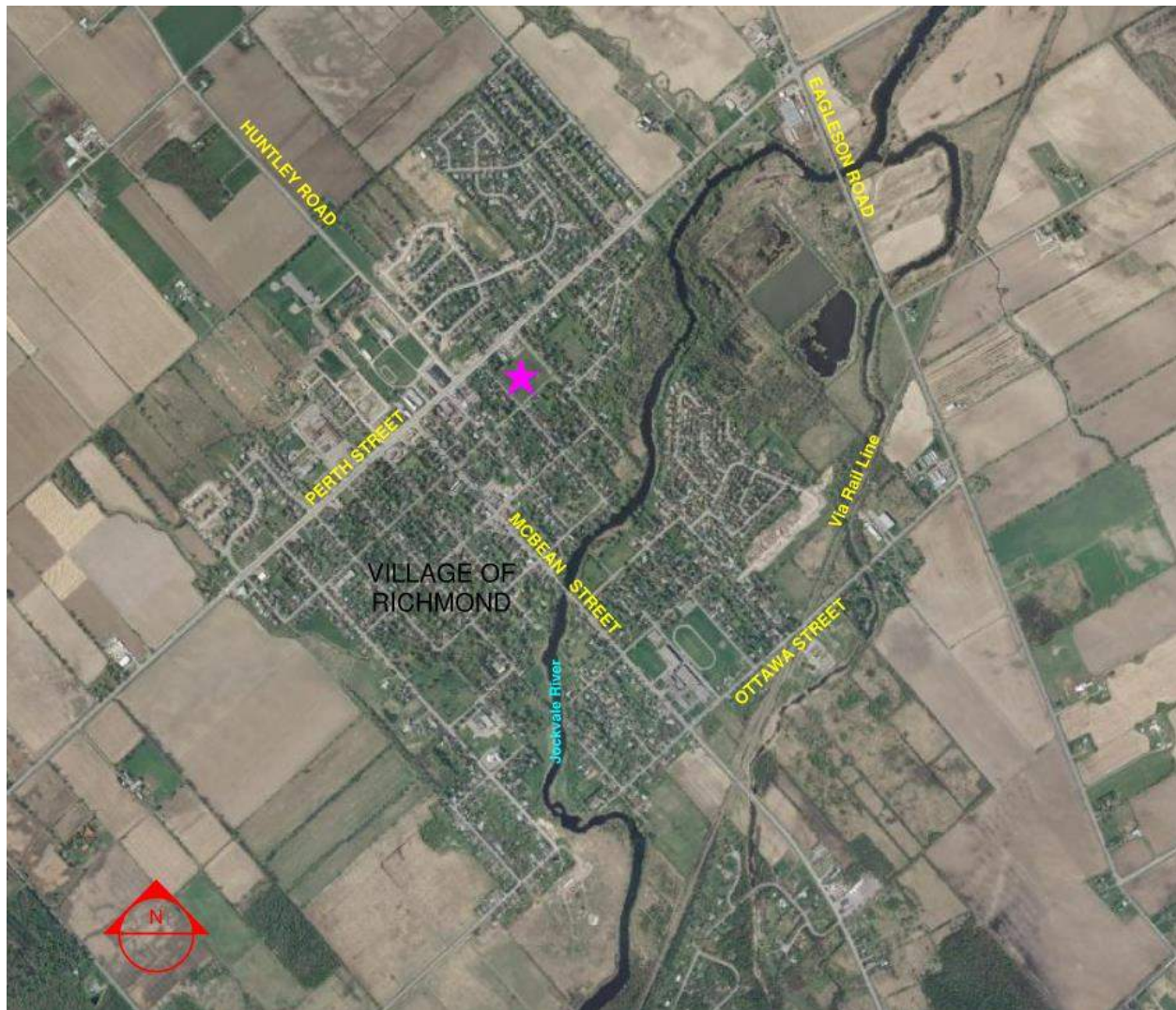


Figure 1 – Aerial Photo of Richmond, Ontario

1.3 LOCATION AND SITE DESCRIPTION

The Subject Property is near the intersection of Perth Street and King Street (see Figure 2). The site is currently a through-lot with frontage on two local streets, King Street on the east side and Cockburn Street on the west side. The south limit of the Subject Property is an unopened road allowance, which will be known as the Hamilton Street, when completed.

The Subject Property is approximately 1.59 hectares (3.9 acres) in size and has a frontage of approximately 120 metres on King Street and approximately 128 metres on Cockburn Street. The Subject Property also has approximately 131 metres of frontage along the future extension of Hamilton Street. The legal description for the Subject Property is Unit 59 and Part of Unit 56, Index Plan D-13, Geographic Township of Goulbourn, now in the City of Ottawa.



Figure 2 – Aerial view of subject property

The physical characteristics of the site are standard across the site. As shown in Figure 2, the property is vacant and has remained dormant in terms of past uses. In the late 1980's, the topsoil of the site was stripped in anticipation of new development and, at the time, the site was also used as staging area during the construction of sewers in the adjacent streets. The topsoil was stockpiled in the south-central part of the property.

Recently, the City of Ottawa passed a new Comprehensive Zoning By-law (By-law 2008-250). Included in the new Comprehensive Zoning By-law, is new mapping of floodplains, based on land elevations in proximity to watercourses.

As a result of the stripping of topsoil, portions of the Subject Property were below the elevation of the 1:100 year floodplain at the time the floodplain mapping was prepared. Subsequently, the Subject Property was shown as floodplain area in the Zoning By-law. Through discussions and acceptance by the Rideau Valley Conservation Authority, the site has been re-graded using the stockpiled topsoil to raise the site grade back to the original elevation, which is above the 1:100 year floodplain. Refer to Appendix A for RVCA approval. A Zoning By-law Amendment

has recently been passed by Ottawa City Council to recognize that the Subject Property is not within the 1:100 year floodplain.

1.4 CONSULTATION AND REFERENCE MATERIAL

A pre-consultation meeting was held with the City of Ottawa on December 16, 2009 at which time Novatech was advised of submission requirements. Subsequently, additional communication transpired regarding the need for a hydrogeological study and the City response confirmed the need for the hydrogeological study (copy of e-mail attached in Appendix B). At the December 16th meeting, the engineering representative identified that the recent study "Village of Richmond Alternative Sanitary and Storm Servicing Options", David McManus Engineering Ltd., Final August 2008 is to be referred to. This study did not provide the necessary data and criteria for the sanitary servicing for the Subject Property as it addressed future growth areas but did identify the criteria for stormwater drainage. The McManus study included detailed analysis of the Hamilton Drain system including modelling of the storm sewers and open channels.

Consequently, additional information was obtained in the form of a water and sanitary drainage study, "Village of Richmond Water & Sanitary Master Servicing Study, prepared by Stantec Consulting Ltd., dated July 22, 2011. This study identified the water and sanitary options for the existing, infill, and future development lands scenario and combinations thereof.

The Master Servicing Study gives the following recommendations:

- Water Servicing – existing and infill development are to be serviced by private wells until a connection to a communal system is warranted (Section 4.6 and Section 7.5.1).
- Wastewater Servicing – existing and infill development will continue to be serviced by the existing pump station within Richmond (Section 8.3.1).

The Master Servicing Study outlines the subject property as an infill area but does not display the entire area, see figure 5.4 from the Master Servicing Study in Appendix A for reference. This is due to previous site grading with stockpiles of material within the site. A Cut/Fill Application was submitted and approved by the RVCA and the site was re-graded so that the subject property is above the 1:100 year floodline. The revised floodline is shown on Figure A1 in Appendix A. Correspondence with the RVCA is also included in Appendix A.

2.0 THE PROPOSAL

2.1 SEMI-DETACHED RESIDENTIAL

The proposed development is a 40-unit residential development on two public streets, Hamilton Street (which is proposed to be built as part of this development) and a new street connecting King Street and Cockburn Street. Individual units are designed to have a minimum of 290 square metres of lot area and a minimum of 9.0 metres of frontage. Figure 3 shows the Subdivision Concept Plan.

3.0 SERVICING

3.1 WATER

As indicated previously the Master Servicing Study recommends that existing and infill development continue to be serviced by private wells until a communal system is required.

A Hydrogeological Assessment for Private Services was prepared by Paterson Group Inc., dated February 2010 (Updated January 2016). This report indicates that there are two water resource aquifers in the area: the Upper Oxford Formation aquifer and the Lower March-Nepean Formation aquifer. The preferred aquifer is the Lower March Formation. The report concludes that the site is suitable for the proposed development. The report recommends that a warning clause be used to notify of elevated sodium levels and the potential use of water softeners to reduce hardness.

Therefore, it is feasible to service the proposed development with individual private wells as recommended in the Master Servicing Study.

3.2 SANITARY

The Village of Richmond is serviced by a sanitary sewer collection system with a pumping station that outlets via a forcemain along Eagleson Road connecting to the City of Ottawa Glen Cairn Trunk Sewer at just south of Hazeldean/Robertson Roads in Kanata. Existing sanitary sewers lie within the roadway on King Street and within the unopened Hamilton Street roadway.

The proposed subdivision will include a sanitary sewer in the proposed subdivision roadway with a connection to the sanitary sewer in King Street. Lots fronting on Hamilton Street will be serviced directly to the sanitary sewer in that street. This servicing approach will be consistent with Master Servicing Study.

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VILLAGE OF RICHMOND

SUBDIVISION CONCEPT
PLAN

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FIGURE 3

The Master Servicing Study recommended that existing and infill development within the Village of Richmond will continue to be serviced by the existing pump station and that the existing pump station has adequate capacity. The existing lagoons will continue to be used as storage during snowmelt and extreme wet weather events. The existing collection system will require some upgrades but none are required within the system immediately servicing the subject development. Supporting information from the Master Servicing Study is included in Appendix C.

The Master Servicing Study estimated flows from the subject site to be 2.2 L/s based on the zoning. Sanitary flows from the proposed development are calculated to be 2.3 L/s. This increase in sanitary flows is considered negligible. Calculations are included in Appendix D.

3.3 STORMWATER

The Subject Property is located near the downstream end of the Hamilton Drain system. The McManus study (modelling by J.F. Sabourin and Associates Inc.) identified capacity issues for the existing sewers and channels and recommends (Sections 3.4 and 4.) that the flows directed to the sewer system be limited to the 1:2 year pre-development flows. Major system flows were also examined and surface flows in excess of sewer system inlet flows are conveyed along the Hamilton drain to its outlet to the Jock River, a little over 100m south of the proposed subdivision on King Street. Existing storm sewers lie within the roadway on King Street south of Hamilton Street and within the unopened Hamilton Street roadway.

The proposed subdivision will be serviced by a storm sewer in the proposed roadway with a connection to the storm sewer in King Street at the corner of Hamilton Street. The section of existing storm sewer south of the corner of King and Hamilton has a flow/capacity ratio of 0.54 as shown in Table C2.3 of Appendix 6 in the McManus report. There is more than enough capacity for the internal subdivision roadway with the possibility of draining more than the 1:2 year pre-development runoff. Lots fronting on Hamilton Street will be serviced directly to the existing storm sewer in that street. This section of existing storm sewer has a flow/capacity ratio of 1.00, therefore flows will need to be restricted to the 1:2 year predevelopment level.

The proposed storm servicing will include catchbasins with inlet control devices (ICD's) to promote the storage of stormwater. Preliminary stormwater management calculations have been completed based on the proposed concept plan. The allowable release rate is calculated to be 67.9 L/s based on the 1:2 year predevelopment condition. Storage of stormwater will be provided within the storm sewer, at the surface on road sags and in the rear yards swale and subdrain system. A storage of 356 m³ is required for the 100 year storm event and 232 m³ can be provided. This equates to storage being provided for storms up to and greater than the 1:5 year event.

As indicated previously, the regulatory 1:100 year floodplain borders the southeast side of the site. The elevation of the 100 year floodplain is 93.78. The tables below show the anticipated stormwater storage provided for two scenarios: during a 100 year event in the Jock River (spring snowmelt) and during normal water levels in the Jock River.

Table 3.1: Anticipated Stormwater Storage during a 100 Year Event in the Jock River (Spring Conditions)

Area	Surface Storage (m ³)		Underground Storage (m ³)			Total Storage (m ³)
	Road Sags	Swales	Structure	Pipe	Subdrain Train	
Total	42.7	0.0	0.3	0.0	0.0	43.0

Table 3.2: Anticipated Stormwater Storage under Normal Conditions in the Jock River

Area	Surface Storage (m ³)		Underground Storage (m ³)			Total Storage (m ³)
	Road Sags	Swales	Structure	Pipe	Subdrain Trench	
Total	65.9	22.3	8.2	47.4	88.6	232.4

These tables show that minimal storage will be achieved when water levels in the Jock River are at the 1:100 levels. However, adequate storage is provided for the development under normal conditions in the Jock River. Figure 4 outlines the conceptual servicing for the proposed subdivision and preliminary stormwater management calculations are provided in Appendix E.

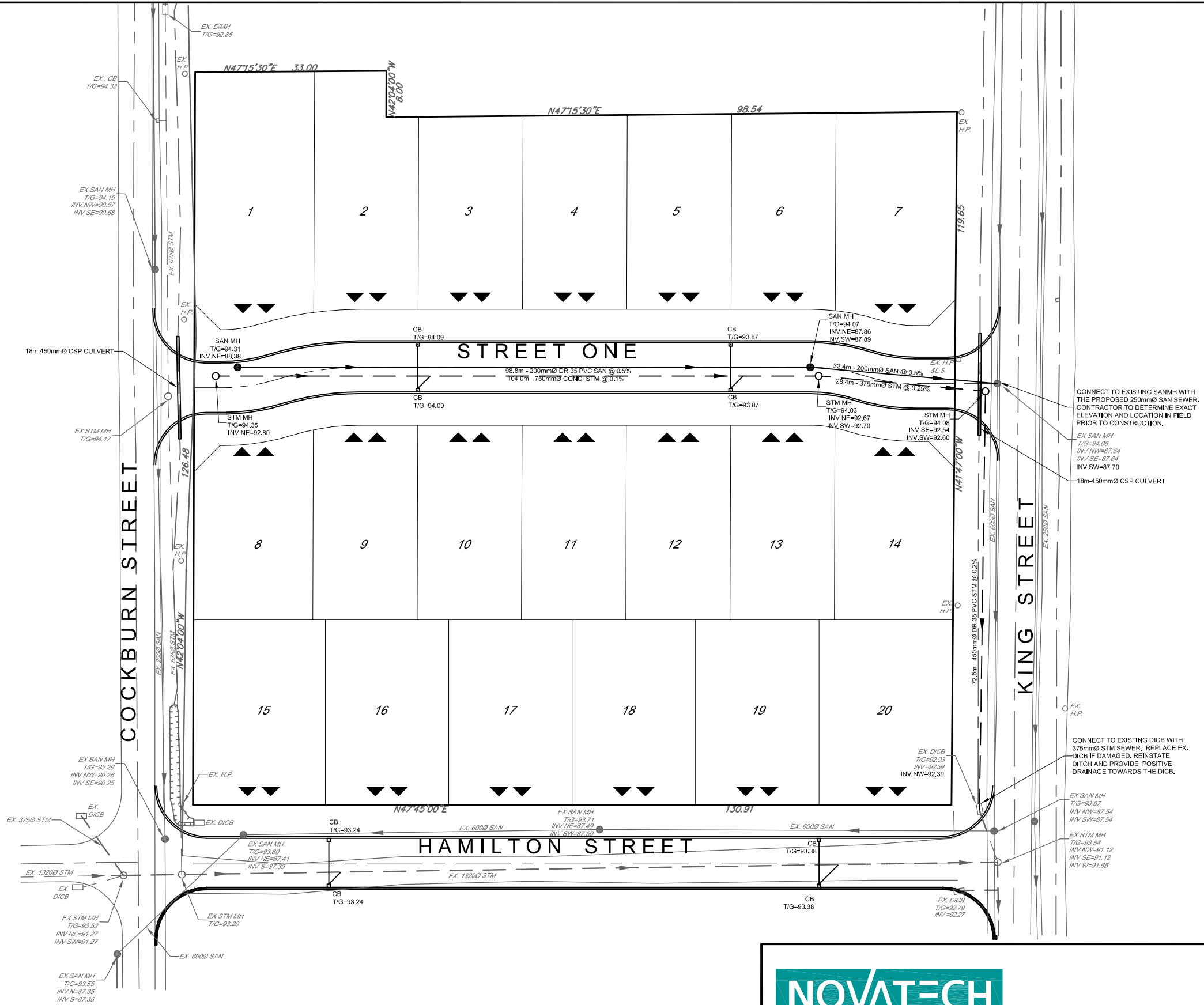
Since the regulatory 1:100 year floodline is above the proposed footings in the development, the basements will not be serviced with gravity service laterals but rather the weeping tile will drain to sump pumps to be pumped to the proposed storm sewer in the subdivision roadway and the existing storm sewer in Hamilton Street. The proposed residential building openings will be at least 0.3m above the 1:100 year regulatory floodline.

Correspondence from RVCA, in relation to the previous rezoning application, was received regarding stormwater water quality treatment. RVCA identified that an enhanced level of treatment was required. This requirement will be met through Best Management Practices. A quality control unit is not appropriate since it would be submerged in the spring conditions due to the 100 year floodline elevation in relation to the storm sewers.

Best Management Practices shall be implemented to reduce transport of sediments and promote on-site groundwater recharge. The Best Management Practices to be implemented are as follows:

- Roof leaders will discharge to grass surfaces which will promote infiltration;

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LEGEND

- PROPOSED PROPERTY LIMIT
- PROPOSED CURB
- PROPOSED C OF ROAD
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY AND STORM LOT SERVICES LOCATION
- PROPOSED SANITARY MH
- PROPOSED STORM MH
- PROPOSED CATCHBASIN
- PROPOSED SEWER FLOW DIRECTION
- EXISTING DITCH INLET CB
- EXISTING SEWER FLOW DIRECTION
- EXISTING STORM MH
- EXISTING SANITARY MH



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VILLAGE OF RICHMOND
CONCEPTUAL SERVICING PLAN
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- The drainage system for the development will consists of grassed swales to convey runoff from primarily landscaped areas and to minimize the use of storm sewers, where possible, and where possible the use of storm sewers minimized. Swales will be vegetated and constructed at minimum grade, where possible. This will promote surface water infiltration on the property.

An overland flow route will also be provided to the surrounding municipal right-of-ways.

3.4 SITE GRADING

A Preliminary Grading Plan has been prepared and is shown on Figure 5. Storage limits of surface storage and the 1:100 year floodline are also shown on the Preliminary Grading Plan. As previously indicated lot grading will be designed to provide grades at openings to the proposed buildings that are 0.3m above the 1:100 regulatory floodline.

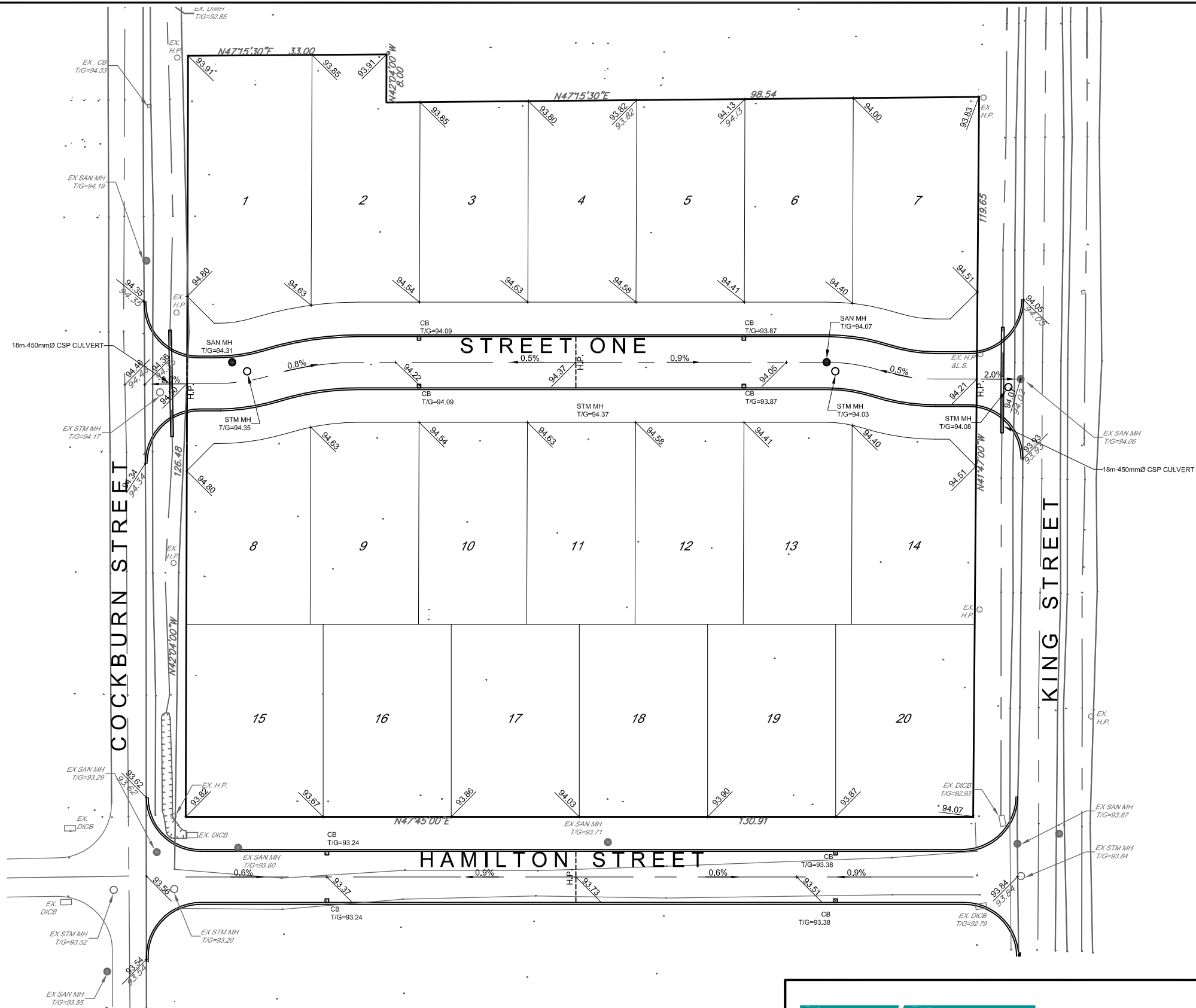
3.5 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter bags will be placed under the grates of nearby catchbasins and manholes, and will remain in place until vegetation has been established and construction is completed;
- Silt fencing will be placed along the surrounding construction limits;
 - Mud mats will be installed at the site entrances;
 - The contractor will be required to perform regular street sweeping and cleaning as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site.

The erosion and sediment control measures will be implemented prior to construction and will remain in place during all phases of construction. Regular inspection and maintenance of the erosion control measures will be undertaken

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VILLAGE OF RICHMOND

CONCEPTUAL GRADING
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4.0 CONCLUSION

The conclusions of this report are as follows:

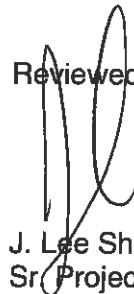
- Water servicing will be provided by private wells as recommended in the Master Servicing Study.
- Sanitary servicing can be provided from the existing and proposed sanitary sewers within the road right-of-ways which drain to the existing pump station servicing the Village as recommended in the Master Servicing Study.
- Stormwater will drain to the existing and proposed storm sewers which drain to the existing municipal storm sewer system and to the Hamilton Drain.
- Stormwater management is required for the development. Quantity control can be provided to control storm flows to the 2 year pre-development flow rate. Storage of stormwater will be required and can be provided in storm sewers and on the surface in road sags. However, in spring conditions, storage of stormwater will not be provided due to the elevation of the 1:100 year floodline but the potential requirement of storage at this time of year is considered minimal.
- Quality control of stormwater can be provided through Best Management Practices since other methods cannot be implemented due to the elevation of the 1:100 year floodline.
- Foundation drainage will be pumped to the storm sewer system via sump pumps.
- The lot grading design should include grading at openings to the proposed buildings that are 0.3m above the 1:100 regulatory floodline.
- An overland flow route will be provided.
- Erosion and sediment control measures will be implemented during construction.

Prepared by:



Cara Ruddle, P.Eng.
Project Manager

Reviewed by:



J. Lee Sheets, CET
Sr Project Manager

APPENDIX A

Floodplain Information

Ron Cebryk

From: Ron Cebryk [r.cebryk@novatech-eng.com]
Sent: Thursday, September 11, 2008 4:49 PM
To: glen.mcdonald@rvca.ca
Subject: Scollan Subdivision - Richmond
Contacts: Glen McDonald

Glen,

Attached are two drawings for the subject site. This site was previously looked at in the early 1990's and I believe that there is a file on it at RVCA. As discussed with you, our client, Jack Scollan, has asked us to review the floodplain implications further to Don MacIver's letter regarding same. The two drawings show the following:

1. The floodplain from RVCA mapping superimposed on the site.
2. The floodplain plotted on the site using 93.78 as the floodline with topo from previous site survey.

As you can see, there is a significant portion of the site in the floodplain, regardless of which plan is viewed. I suspect that some of the area on the northern half (lots 12 to 16 incl. and probably some of the road) were above the flood plain before stripping took place...this is the big stockpile on lots 6 to 10 and 17 to 19 incl.

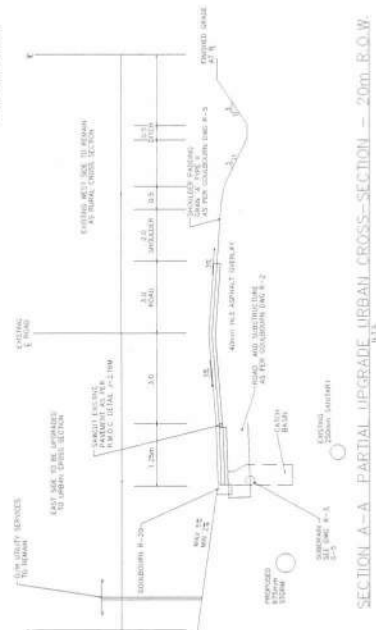
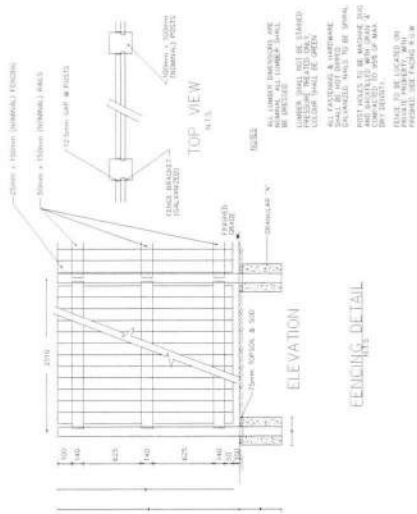
Jack and I would like to meet with you to see what can be done to facilitate the development of the site.

Regards,
Ron

Ron Cebryk
Senior Project Manager

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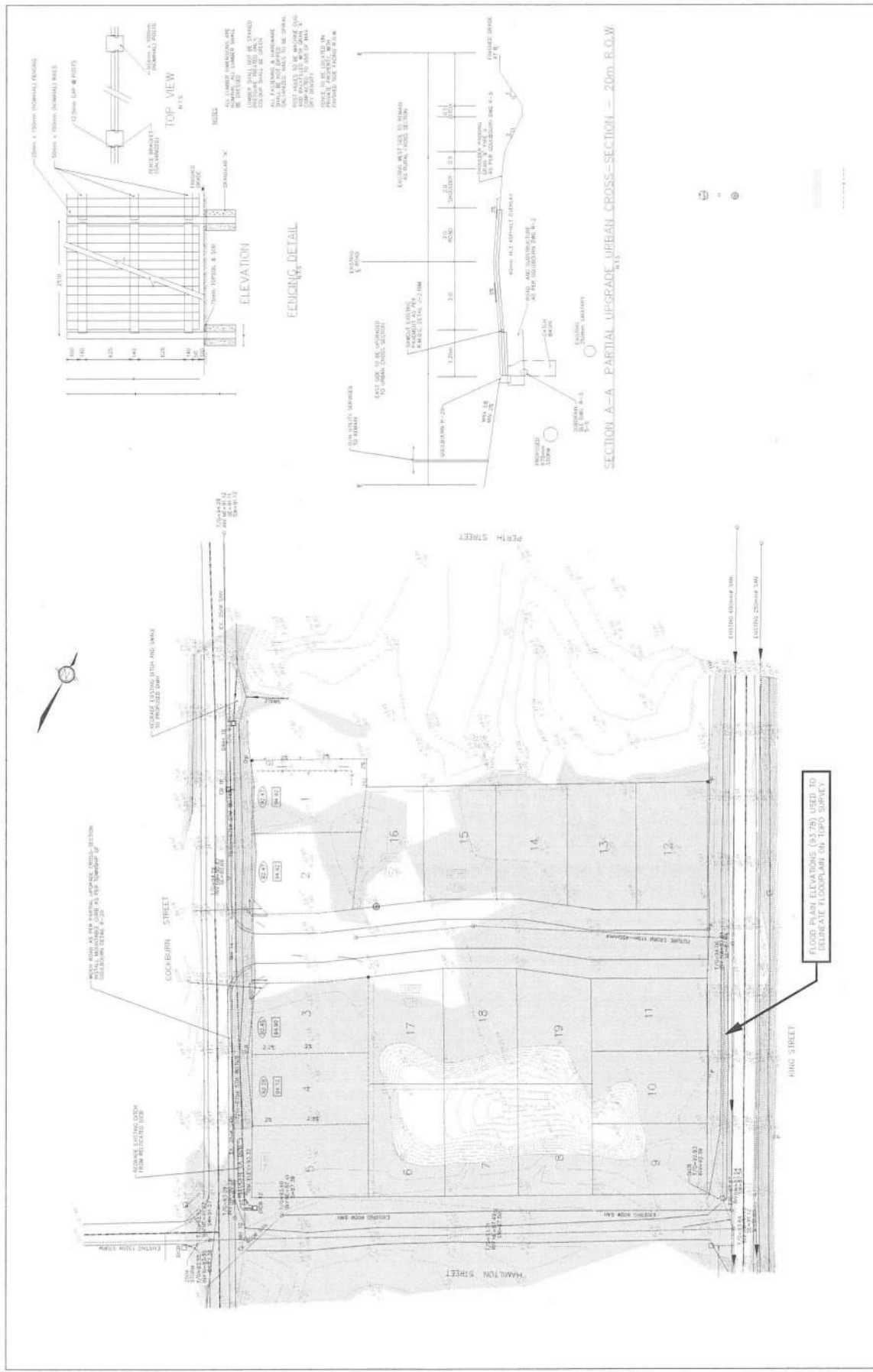
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6	AS PER TENDRUP COMMENTS	MAY 11/2014	
7	ISSUED FOR APPROVAL	APRIL 2/2014	
	APPROVAL	03/27/14	BA

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OTTAWA, ONTARIO

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NOTE: VERIFICATION OF ALL FIELD LINES, LOCATIONS, WATERWAYS, ELEVATIONS AND OTHER INFORMATION AND CONSIDERATIONS SHOWN ON THE CONTRACT DOCUMENTS AND WHERE NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION AND DATA BEFORE BEGINNING WORK. DETERMINE THE EXACT LOCATION AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.		 				TOWNSHIP OF COLEBURN VILLAGE OF RICHMOND SCOLLAN SEVERANCES		SCALE 1:200		PROJECT NO. 91070-681		
4	AS PER TENDERS COMMENTS	JUNE 10/04	DATE	31	REV	REVISION						
3	AS PER TENDERS COMMENTS	JUNE 10/04	DATE	14	REV	REVISION						
2	AS PER TENDERS COMMENTS	MAY 11/02	DATE	08	REV	REVISION						
1	ISSUED FOR APPROVAL	APR 16/02	DATE	14	REV	REVISION						

Transmittal



ATTN: Mr. Don MacIver	DATE: February 17, 2009
AT: Rideau Valley Conservation Authority P.O. Box 599 3889 Rideau Valley Drive Manotick ON, K4M 1A5	OUR FILE NO: 109027
	YOUR FILE NO:
	RE: Cut/Fill Application
FROM: Miroslav Savic	Return to Sender: Yes: No: x

Shuttle: X	Rush:	Hot Shot:	Out of Town / Overnight:	Pick-up:	Mail:	Hand Deliver: x
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COMMENTS

Mr. MacIver,

Enclosed, please find the following documents:

- Review Fee – Cheque for \$2,000.
- Cut/Fill Application Supplemental Information letter (4 copies)
- Talos Custom Homes Ltd. Agent authorization letter (4 copies)
- Cut/Fill Plan – 109027-CFP (4 copies)
- Cut/Fill Application Form (4 copies)

Please call if you require further information.

NOVATECH ENGINEERING CONSULTANTS LTD.

Miroslav Savic, P. Eng.

M:\2009\109027\DATA\TRANSMIT\20090205-DONMACIVER.DOC



Application Form For Development

Including Placing of Fill, Construction, Interference to Wetlands and Alteration to Shorelines and Watercourses

Rideau Valley Conservation Authority, Ontario Regulation 174/06
3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5

Section 28 (1) of the CA Act states that, subject to the approval of the Minister, an authority may make regulations applicable in the area under its jurisdiction, (b) prohibiting, regulating or requiring the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland or (c) prohibiting, regulating or requiring the permission of the Authority for development if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development. The information on this form is required in order to consider the granting of permission under the Regulation.

Only complete applications can be processed (please see 'complete application' guide).

Landowner Name	JACK SCOLLAN	Telephone No.	613-913-4970	Fax. No.	
Mailing Address	RR#13	Business No.			
	ONTARIO	e-mail			
Postal Code	K0A 1B0	Agent's Name:	TALOS CUSTOM HOMES LTD		
		Phone:	613-747-3993	Fax. No.	613-747-2868

Application is hereby made to:

- ☒ Place or Remove Fill
☐ Construct New Building
☐ Add, Alter or Renovate Building
☐ Install Sewage Disposal System
☐ Alter a Watercourse

- ☐ Interference with wetlands or other adjacent lands (within 120 m)
☐ Construct retaining wall, erosion control
☐ Construct Pond, Reservoir
☐ Road Crossing
☐ Other (Specify):

Purpose of work: (or use covering letter)

RE-GRADING TO ESTABLISH ORIGINAL GRADE

Description of work: (or use covering letter)

EXCAVATION AND GRADING OF FILL STOCKPILED ON SITE

Location at which development or waterway alteration is proposed:

Lot: _____ Reg. Lot No.: PTD 182, 4R5234, EXCEPT PTS 284, 4R11108
Concession: _____ Reg. Plan No.: 4R5234
Former Municipality: _____ Municipal Address (St./Rd./Ave./Cr. etc.): 10 KING ST

Existing Use of Land: (vacant, residential, etc.)

VACANT

Proposed Use of Land:

RESIDENTIAL

Proposed Start Date: 05/01/05
m d y

Proposed Finish Date: 05/05/09
m d y

Signature of Owner/Authorized Agent:

(If agent, provide letter of authorization from owner)

Letter attached

02/13/09
m d y

Entry on Property

S. 28 (20) An officer appointed by the Authority may enter on private property, other than a dwelling or building, if the entry is for the purpose of considering a request related to the property for permission under application.

Attach Required Plans and Fee — including a copy of the property survey and/or deed

Personal information contained on this form is collected under the authority of regulations made under Section 28 of the Conservation Authorities Act of Ontario as amended and may be shared with departments or agencies of local, provincial or the federal government having an interest in the same. Questions about this collection should be directed to the Conservation Authority.

Office Use Only

Date received: _____
m d y

FHA File #: _____

Fee Paid: _____
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Circulation to: _____
m d y

Application#: _____

Permit Issued: _____
m d y

Easement Ag. required: _____

Hearing: _____
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Decision: _____

Appeal: _____

Required Plans Include:

A signed application form permission to construct or reconstruct or modify or add to a building or structure shall include,

- 4 copies of a plan of the property showing the proposed location of the building or structure, its elevation and the proposed final grade plan;
- 4 copies of a complete description of the type of building or structure to be constructed, including drainage details;
- 4 copies of a statement of the dates between which the construction will be carried out; and
- 4 copies of a statement of the proposed use of the building or structure following completion of the construction.

A signed application for permission to undertake site grading or place or dump fill shall include,

- 4 copies of a plan of the property on which the fill is to be placed, showing the proposed location of filling, the depth to which it is proposed to fill and the proposed final grade of the land when filling is completed;
- 4 copies of a complete description of the type of fill proposed to be placed or dumped;
- 4 copies of a statement of the dates between which the placing or dumping will be carried out; and
- 4 copies of a statement of the proposed use of the land following completion of placing or dumping.

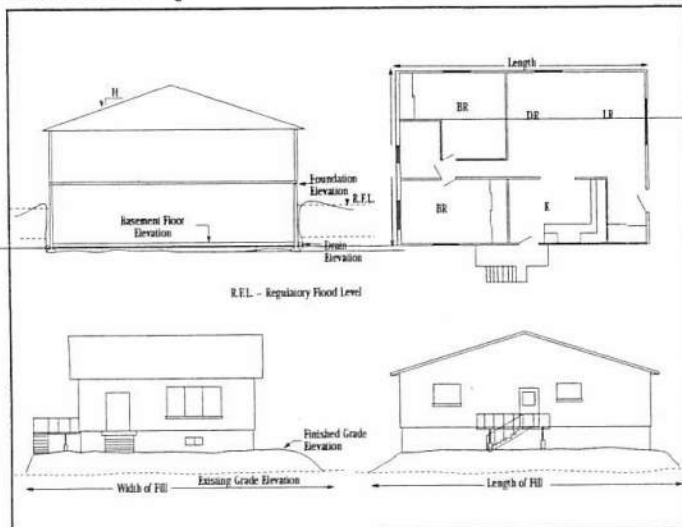
A signed application for permission to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse, shall include,

- 4 copies of a plan on which shall be shown in plan view and cross section the details of such straightening, change, diversion or interference;
- 4 copies of a description of the protective measures to be undertaken;
- 4 copies of a statement of the dates between which the straightening, changing, diverting or interfering will be carried out; and
- 4 copies of a statement of the purpose of the proposed work.
- all drawings shall be to scale.

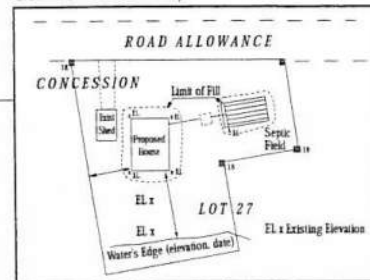
Note: The Authority may, at any time, withdraw any permission given under this Regulation, if, in the opinion of the Authority, the conditions of the permit are not complied with.

The Conservation Authority is also authorized to include in our review consideration for whether any harmful alteration, destruction or disturbance of fish habitat will occur which would contravene the provisions of Section 35 of the *Canada Fisheries Act*. It should be noted that, where impacts can not be mitigated, *only* the Minister of Fisheries and Oceans Canada may authorize such alteration, destruction or disturbance.

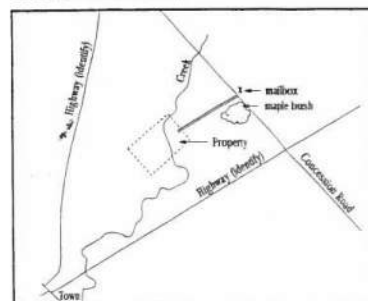
Construction Drawings



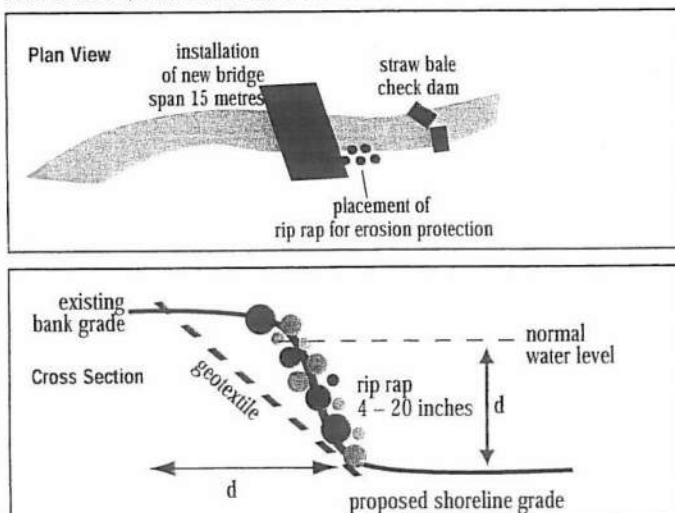
Site Plan (draw to scale or give accurate distance measurements)



Location Plan (draw to scale or give accurate distance measurements)



Channelization, Bank Stabilization, Erosion Control



These drawings are not for design purposes; they are examples to illustrate the minimum level of detail required to enable Conservation Authority staff to process the application. Please ensure that your application is complete (as per *Ontario Regulation 97/04* — copies available) so that there will be no delay in the review process.

It is an offence to contravene any regulation made under Section 28 of the *Conservation Authorities Act* (R.S.O. 1990) and on summary conviction the accused is liable to a fine of not more than \$10,000.00 or to a term of imprisonment of not more than three months (S.28 (16)). An order may also be issued for removal of the offending structure or material (S. 28 (17) (18) (19)). Property owners and contractors can both be held accountable.

February 17, 2009

Rideau Valley Conservation Authority
P.O. Box 599, 3889 Rideau Valley Drive
Manotick ON, K4M 1A5

Attention: Mr. Don MacIver

Dear Sir:

**Re: Cut/Fill Application
Supplemental Information
File No. 109027-0**

1. Background

- Submitted in accordance with requirements agreed to at January 14, 2009 meeting at RVCA with Bruce Reid, Glen McDonald, Ferdous Ahmed.
- Purpose of work is to restore site to elevations existing prior to stripping of site around 1990. The fill would create a site which resembled the conditions existing when the 1980 floodlines were delineated.

2. Type of Fill

- The fill is taken from a stockpile which was created when the site was stripped prior to being used as a staging/work area by the contractor constructing the sanitary sewer along Hamilton and King streets.

3. Work Schedule

- May 1 to May 15, 2009

4. Proposed Land Use

- Residential: Zoning is Village Residential (V3A and V1C) and a draft plan of subdivision will be prepared upon approval of completed work by RVCA.

NOVATECH ENGINEERING CONSULTANTS LTD.



R.S. Cebryk, P.Eng.
Senior Project Manager

20090204/CUTFILL_AP.DOC

Date: April 6, 2009
File: RV5-04/09
Contact: John Garrah

Mr. W. Scanlon
Talos Custom Homes Ltd.
5509 Canotek Road
Unit 1
Ottawa, Ontario
K1J 9J8

Mr. J. Scollan
RR 3
Ashton, Ontario
K0A 1B0

Subject: **Application pursuant to Ontario Regulation 174/06 under Section 28 of the Conservation Authorities Act to undertake development (fill placement from on-site sources) in the regulated area pertaining to Reg. Lot Pts 182, 4R5234, Except Pts 284, 4R11108, Reg. Plan No. 4R-5234, now in the City of Ottawa, being a property with the municipal identification of 10 King Street, Village of Richmond Planning Area**

Dear Sirs:

The proposed development relates to portions of lands within the block bounded by Perth, King, Hamilton and Cockburn Streets in the Village of Richmond community. The information received in the application was reviewed under Ontario Regulation 174/06 ("Development, Interference with Wetlands & Alteration to Shorelines & Watercourses") which the Conservation Authority administers and the approved "Policies Regarding the Construction of Buildings and Structures, Placing of Fill and Alterations to Waterways" (Adopted and Revised by the Board of Directors February 21, 2002 and with transition provisions April, 2006). Specifically, the area reviewed was the property with the legal description referenced above.

This project includes:

The restoration of elevations that existed prior to the stripping of the site that occurred approximately 1990. The fill will create a site with elevations that will resemble the conditions by which the 1980 floodlines were delineated. The proposed works are described on Drawing No. 109027-CFP, Rev. No. 1 February 05/09, Novatech Engineering Consultants Ltd.

The re-grading is situated in the 1:100 year floodplain limits of the Jock River as identified in the most recent (2005) floodplain mapping study. As such, the Conservation Authority's regulatory jurisdiction and mandate apply. Mr. Miroslav Savic, P. Eng. of Novatech Engineering Consultants

Ltd. has provided a supplemental information letter (File No. 109027-0) dated, February 17, 2009, on the Cut/Fill application submitted in accordance with requirements agreed to at a January 14, 2009 meeting at RVCA with Bruce Reid, Glen McDonald, Ferdous Ahmed.

The proposed work is the re-grading of a fill stockpile that was created when the site was stripped prior to being used as a staging/work area by the contractor constructing the sanitary sewer along Hamilton and King Streets. The stripping of this material had the effect of lowering the site elevations below the 1:100 flood level, whereas previously the site was marginally above flood level.

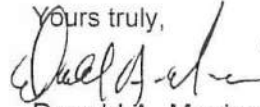
The Cut/Fill Plan-109027-CFP for Project No. 109027 received by the RVCA February 18, 2009 was reviewed by RVCA Water Resources engineering staff and is consistent with the discussions that was had on January 14th 2009 with RVCA staff. **It was noted that there will be no importing of any material on to the site and the scope of work is limited to spreading/re-grading the material in the existing stockpile only.**

By this letter the Rideau Valley Conservation Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. The work is to be restricted to the work only as described in the application, drawings 109027-CFP dated February 5, 2009, as prepared by Miroslav Savic, P. Eng. Novatech Engineering Consultants Ltd.
2. **Sediment and erosion control measures shall be in place before any excavation or construction works commence.** All approved sediment/erosion control measures are to be monitored regularly and maintained as necessary, to ensure good working order and remain in place until landscaping has been established. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.
3. The entire area is to be reseeded and/or stabilized upon completion of the works to ensure that there is no conveyance of sediment off site into the local ditches and stormsewer system or to the Jock River.
4. Any changes in the proposed construction works, including proposed changes by the contractor or project manager, must be reviewed and approved by the Rideau Valley Conservation Authority prior to implementation.
5. **The owner is ultimately responsible (contractor responsible as well) for failure to comply with any and/or all of these conditions and must take all precautions to ensure no sediment runoff from the work site into the surface waters or stormsewers during and after the construction period. Failure to comply with the approval and/or conditions of this letter may result in the approval being revoked and in the initiation of legal action to remedy the matter to the Conservation Authority's satisfaction.**
6. This permit letter is valid until April 30, 2011, noting the proposed start of work is April, 2009.
6. **A fill deposit of \$3000.00 is to be submitted to the Conservation Authority when the signed copy of this permission is returned to our office. The deposit will be returned (less 10% administration fee) upon review of the finished grading plan**

(referenced to geodetic datum) showing that the fill placement/regrading has been implemented in accordance with the approved plans and confirming that all proposed grades within the site have been achieved and not exceeded or changed.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. **This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial approvals or municipal zoning approvals and permits.** This permit is not transferable to subsequent property owners. Should you have any questions regarding this letter please contact John Garrah at our Manotick office.

Yours truly,

Donald A. Maciver MCIP, RPP
Director of Planning

cc: Miroslav Savic, P. Eng. Novatech Engineering

City of Ottawa – Infrastructure Services and Community Sustainability
Att'n: D. Herweyer

NOTE: The applicant agrees that Authority staff may visit the site before, during and after construction for the purpose of determining compliance with any conditions as set out in this letter of permission. This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking. The fill deposit must also be received.

Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O. 1990, as amended) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or can not be complied with.

Forty-eight hours written notice to the Conservation Authority General Manager is required regarding the commencement of work.

It is acknowledged that it is the sole responsibility of the proponent's project management team and the contractor to implement the sediment and erosion control plan and monitoring of same during construction.

Print Name: _____ Date: _____

Signed: _____ Date: _____

Ron Cebryk

From: John Garrah [john.garrah@rvca.ca]
Sent: Thursday, October 22, 2009 2:29 PM
To: r.cebryk@novatech-eng.com
Cc: Bruce Reid
Subject: 10 King Street-RVCA Application RV5-04/09

Ron,

Sorry for the delay on this matter.

The finished grading plan has been reviewed by RVCA staff which is satisfied that it meets the approved plan submitted by Novatech engineering Drawing No. 109027-CFP bearing the stamp of M.Savic P. Eng.

If you have any further questions please contact me.

Regards,

John Garrah

Part 8 OBC Inspector/ Development Review Officer

RideauValley Conservation Authority

3889 RideauValley Dr. Box 599

Manotick, Ontario K4M 1A5

613-692-3571 or 1-800-267-3504 extension 1115

john.garrah@rvca.ca

APPENDIX B

City of Ottawa Correspondence Pre-Consultation Meeting

Ron Cebryk

From: McWilliams, Cheryl [Cheryl.McWilliams@ottawa.ca]
Sent: Tuesday, December 29, 2009 12:55 PM
To: a.thompson@novatech-eng.com
Cc: Hall, Kevin; Kearney, Michel
Subject: RE: Richmond Square Subdivision (10 Cockburn Street, Richmond)

Adam:

Zoning By-law Amendment Submission Requirements

We have had a look at your comments on the requirement for a Hydrogeological Investigation in support of the Zoning By-law Amendment and note we will require the study. There is still a slight increase in density proposed from the current zoning and we need to ensure that there is adequate water available to this development and that will not impact others, before we can support an amendment.

The balance of the listed submission requirements is accurate.

Subdivision Submission Requirements

I have pulled the old subdivision file and apparently there is a development agreement registered against four lots on Cockburn Street, but the subdivision itself never received draft approval. The agreement will have to be removed prior to registering the subdivision agreement. Nothing has happened on the old subdivision file since April 1991 when it was put in storage. I only have the old RMOC file and cannot find the Goulbourn file which might be more enlightening.

There are no reports filed with existing application, and we will need to discuss - internally - whether the old file should be closed or if we can continue under that file. Unfortunately this week I am the only one in the office. I will get back to you next week and let you know the status of the old file and any requirements for new application or submission required under the old file. There is probably not a need to set up another meeting at this point.

Thanks,

Cheryl McWilliams, MCIP, RPP
Planner
Development Review - Rural
Planning and Growth Management
City of Ottawa
110 Laurier Ave W
580-2424 ext 30234
fax 580-2576

-----Original Message-----

From: Adam Thompson [mailto:a.thompson@novatech-eng.com]
Sent: December 21, 2009 1:52 PM
To: McWilliams, Cheryl
Cc: Ron Cebryk; Murray Chown; Kearney, Michel; Hall, Kevin
Subject: Richmond Square Subdivision (10 Cockburn Street, Richmond)

Cheryl,

2/19/2010

Thank you for our pre-consultation meeting on Wednesday, December 16, 2009 regarding a proposed subdivision for the lands at 10 Cockburn Street in Richmond. Further to this meeting and our subsequent conversation, it is our understanding that the supporting documentation required for a Zoning By-law Amendment application includes the following:

- Planning Rationale
- Phase 1 and 2 Environmental Site Assessment
- Concept Plan showing the proposed lotting, units and streets
- Conceptual Servicing Study that reviews stormwater, sanitary and water services

We also understand that the City is requesting a Hydrogeological Investigation in support of the Zoning By-law Amendment application. In our meeting, we explained that, in our opinion, a Hydrogeological Investigation should not be required in support of the Zoning By-law Amendment, but rather as support for the subsequent Draft Plan of Subdivision application.

We continue to be of the opinion that a Hydrogeological Investigation should not be required for the Zoning By-law Amendment. The current zoning on the subject property would permit the development of up to 22 townhouse units and 13 single family dwellings for a total of 35 units. The proposed zoning would allow semi-detached dwellings with the potential for up to 40 units. The difference between the existing permitted unit count and the proposed is minimal and is not significant enough in terms of water usage to justify a delay in processing the Zoning application.

It is understood that a Hydrogeological Investigation is required in support of the Draft Plan of Subdivision. We note that the Subdivision application is expected to be filed within two months of filing the Zoning By-law Amendment application. Should the City still be concerned with the number of units and how it relates to the zoning amendment, there will be sufficient time to review the results of the Hydrogeological Investigation in advance to bringing a Staff Report to ARAC on the Zoning application.

A Draft Plan of Subdivision application will follow shortly after submission of the Zoning By-law Amendment. It is our understanding that the following supporting documentation will be required for the Subdivision application:

- Proposed Draft Plan of Subdivision
- Record of Site Condition
- Hydrogeological Investigation
- Conceptual Servicing Study
- Conceptual Stormwater Management Plan

We note that a Tree Preservation Report was not going to be required, however one is available and would be provided with the application.

As discussed in our meeting, and upon further review of the City of Ottawa Transportation Report Guidelines, a Traffic Impact Study will not be required for this subdivision. The proposed 40 unit subdivision is less than the 75 units that would trigger the need for a Traffic Brief. We also understand that the City will consider whether or not a Noise Assessment will need to be completed with respect to noise generated from Perth Street.

You suggested that another meeting would be required to finalize the draft plan submission requirements. We suggest that this occur early in the new year. Please advise if you feel there is anything we have missed with respect to the requirements of these applications.

Thank you,

Adam Thompson MCIP RPP
Planner

Novatech Engineering Consultants Ltd.

Suite 200, 240 Michael Cowpland Drive

Kanata . Ontario . Canada . K2M 1P6

Tel: (613) 254-9643 x270

Fax: (613) 254-5867

Email: a.thompson@novatech-eng.com

Web: <http://www.novatech-eng.com>

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APPENDIX C

Master Servicing Study Information

4.6 PREFERRED WATER SERVICING SOLUTION

The preferred solution for providing potable water to Richmond includes the following:

- Existing, infill and “rounding out” areas to be serviced by private wells until connection to communal system is warranted (“rounding out” is not specifically defined, although the intent is that this represents relatively minor development areas located throughout the village)
- Larger scale future growth areas to be serviced by communal system(s) with at-grade storage as required to meet balancing, fire and emergency needs
- Communal system(s) are to be designed to allow for expansion/integration to service all existing and future development areas within the Village of Richmond with the intent of ultimately creating a single communal well system (one primary storage/pumping facility with several individual well sites) for the entire Village.

This solution allows for existing residences, as well as institutional, commercial and industrial establishments to remain connected to private wells and allows for limited infill development and “rounding out” development to be serviced by new private wells in the short to medium terms. To provide potable water and fire protection for new large scale developments, a new communal well system will be constructed west of the Jock River within the Western Development Lands. This new system will be designed to current City of Ottawa standards and will consist of multiple deep wells, disinfection (and further treatment if required), at-grade storage, a high lift pumping station and a network of distribution watermain. This communal system will be designed for future expansion to service existing and other growth within the Village of Richmond. As well, an expansion and/or extension of the City of Ottawa’s existing King’s Park Communal Well System will be considered for servicing new development and/or existing areas east of the Jock River. A piped connection between these communal well systems is recommended when feasible to improve reliability for all serviced areas within the Village.

8.3 FUNCTIONAL DESIGN OF THE RECOMMENDED WASTEWATER DESIGN CONCEPT

The preferred wastewater design concept for the Village of Richmond is to upgrade the gravity collection system, repair the existing forcemain, construct a new 600mm diameter forcemain and expand the existing Richmond pump station to service all existing and planned development within the Village boundary. As it is anticipated that the growth projections will continue to evolve over time as more detailed development information becomes available, prior to the undertaking the detailed design of the recommended design concept, it recommended that the population projections, wastewater flows and functional design be revisited.

8.3.1 Sanitary Flows

As discussed in **section 8.1** the inflow and infiltration rates in the Village's wastewater collection exceed the City's sewer design guidelines, with a monitored I/I rate of 0.70L/s/ha being measured during the September 9, 2004 event. As the City will be implementing I/I reduction strategies in the Village as part of a long term objective to reduce the extraneous flows to something more line with the City guideline of 0.28L/s/ha, the City directed the design team to assume that the existing pump station, with a capacity of 160L/s, is adequate to service all existing and infill development within the Village in conjunction with the continued use of the lagoons for storage during snowmelt and extreme wet weather events and to upgrade the station to convey the peak wet weather flow of 200L/s from the future growth areas. Therefore, the pump station will be designed to convey a maximum of 360L/s to the Glen Cairn Collector, but must be capable of pumping the total peak wet weather flow of 460L/s to the lagoon under emergency conditions. Regardless of the pump station operation/design, the gravity collection system will be sized to handle the total peak WWF of 460L/s.

Table 8-7 and **Table 8-8** summarize the range of sanitary flows expected to enter the Richmond Pump Station.

Table 8-7: High Growth Scenario Wastewater Flows – Operational and Design Parameters (L/s)			
	Average DWF ^A	Peak DWF ^A	Peak WWF ^B
Existing, Infill & Future Growth	97	213	456

Notes:

A. Flows include GWI and 6L/s from Munster Pump Station.

B. Peak WWF do not include flows from Munster. During extreme wet weather events the Munster flows are stored on-site and pumped after the event has passed.

Table 8-8: Flows from the Richmond Pump Station				
	Normal and Extreme WWF Operation ^A			Emergency Operation
Scenario	Peak WWF Flow into the Richmond PS (L/s)	Peak Flow into the Glen Cairn Collector (L/s)	Peak WWF into Lagoon Cell C (L/s)	Peak WWF Flow into Lagoon Cell C (L/s)
Existing, Infill & Future Growth	456	360	96	456

Notes:

A. Peak WWFs do not include flows from Munster Pump Station. During extreme wet weather events the Munster flows are stored on-site and pumped after the event has passed.

8.3.2 Gravity Sewer Design

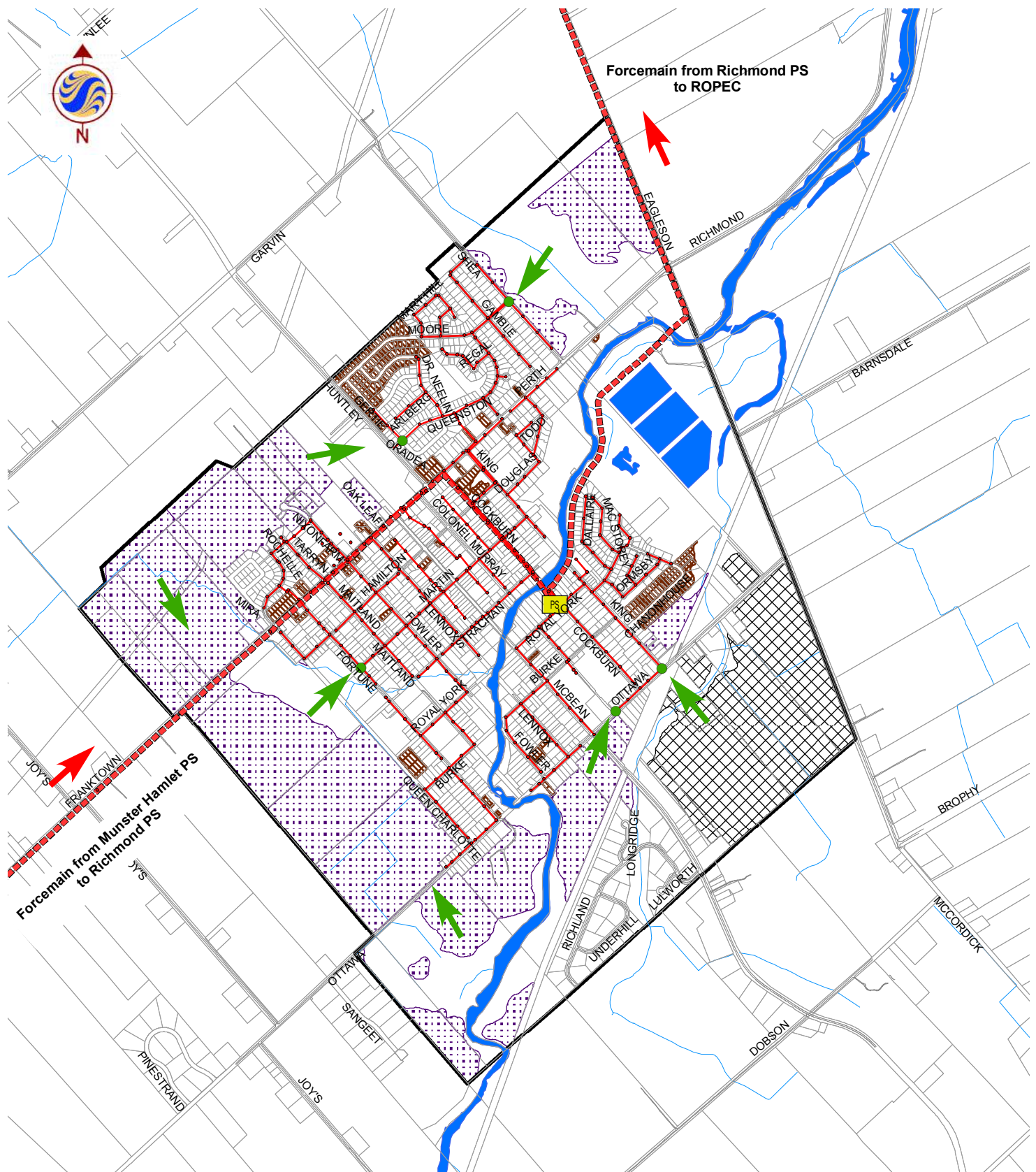
The gravity collection system was designed to convey a peak WWF of 460L/s from all existing development, as well as the planned infill and future growth areas within the Village boundary. In general, the existing collection system has sufficient capacity to convey the future peak wet weather flows except along sections of Martin Street, Cockburn, King and Royal York which are under capacity. The collection system upgrades described below, are illustrated in **Figure 8-6** and **Figure 8-7** with the supporting design calculations provided in **Appendix J**. The existing connection elevation of the gravity sewer into the wet well is unchanged at 86.0m, with revisions being made to the sizes and slopes of the upstream sewers to ensure gravity servicing for all, but a small pocket, of the future development area.

Figure 8-8 identifies where the future growth areas were assumed to contribute and the servicing assumptions in the individual areas.

North of Jock River

- Martin (Fortune to Fowler) - 287m – 525mm dia @ 0.15%
- Martin (Fowler to McBean) - 326m – 525mm dia @ 0.25%
- Martin (McBean to Cockburn) - 283m – 600mm dia @ 0.15%
- Cockburn (Martin to Richmond PS) – 307m – 675mm dia @ 0.2-0.25%

Note: A more detailed servicing investigation of the low lying area west of Fortune and south of Ottawa, where the ground elevation is less than 96m, is needed to confirm if gravity servicing is or is not feasible.



Legend

PS

WWPS

Future Dev. Loadings



Sanitary MH

 Sanitary Collector

 Sanitary Forcemain

11

Village of Richmond Boundary

Client/Project

CITY OF OTTAWA
VILLAGE OF RICHMOND
MASTER SERVICING STUDY

Figure No.

5.4

Title **Connection Locations
to the Central Collection System**

January 2009

APPENDIX D

Sanitary Servicing Information

Ron Cebryk

From: Ron Cebryk [r.cebryk@novatech-eng.com]
Sent: Thursday, February 18, 2010 5:09 PM
To: 'joseph.zagorski@ottawa.ca'
Subject: 10 Cockburn Street Sanitary Area - Proposed Richmond Square Subdivision

Joe,

Further to our telephone conversation regarding the proposed 40 unit residential development, the following information is provided to assist you in incorporating the development area in the work being done to update the Stantec Study for the Water and Sanitary Master Servicing Study.

1. The site (see attached aerial photo) is zoned for low and medium density development with about 35 units.
2. The site is proposed, through rezoning, to be 40 units of semi-detached residential (see attached draft plan of subdivision).
3. The site was included in Stantec's study with a development area as shown on Figure 5.4 in Stantec's report (copy attached). This development area reflected the floodlines that are shown on the regulatory floodplain mapping.
4. This past spring we proposed to RVCA that the site was in the floodplain as a result of site stripping which occurred between the original floodplain mapping and the latest mapping. The stripping was left in a stockpile on site and is shown by the isolated area in the south of the site on Stantec Figure 5.4. In light of this, we proposed that the site should not be encumbered by the latest floodplain mapping and that the entire site should be considered outside the floodplain as per the original elevations prior to stripping. In order to accomplish this, it was proposed that the stripping, which had been stockpiled on the site, be spread over the site. This was agreed to and the work was done.
5. As-built surveys were completed and submitted to RVCA for approval. This approval was granted and a copy of this is attached.

I trust that the information provided above is sufficient for you to have the entire development incorporated in the report update. As I indicated to you, the impact of going from 35 to 40 units results in a very small increase in design flow of 0.1 L/s.

If you have any questions, please contact me.

Regards,
Ron

Ron Cebryk
Senior Project Manager

Novatech Engineering Consultants Ltd.
Suite 200, 240 Michael Cowpland Drive
Kanata . Ontario . Canada . K2M 1P6
Tel: (613) 254-9643 x220
Fax: (613) 254-5867
Email: r.cebryk@novatech-eng.com
Web: <http://www.novatech-eng.com>

'The information contained in this email message is confidential and is for exclusive use of the addressee.'



SUBJECT TO THE CONDITIONS, IF ANY,
SET FORTH IN OUR LETTER DATED
_____, 20____.

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

MICHAEL WILDMAN, MANAGER
DEVELOPMENT REVIEW, RURAL SERVICES BRANCH
PLANNING AND GROWTH MANAGEMENT DEPARTMENT
INFRASTRUCTURE SERVICES AND COMMUNITY SUSTAINABILITY
CITY OF OTTAWA



1-5509 CANOTEK ROAD, OTTAWA, ON K1J 9J8
TEL: 747-3993 FAX: 747-2868

DRAFT
PLAN OF SUBDIVISION OF
UNIT 59 AND PART OF UNIT 56
INDEX PLAN D-13
Geographic Township of Goulbourn
CITY OF OTTAWA
STANTEC GEOMATICS LTD.
2009

SCALE 1:500 METRES
0 10 20 30 40 50 60 METRES

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

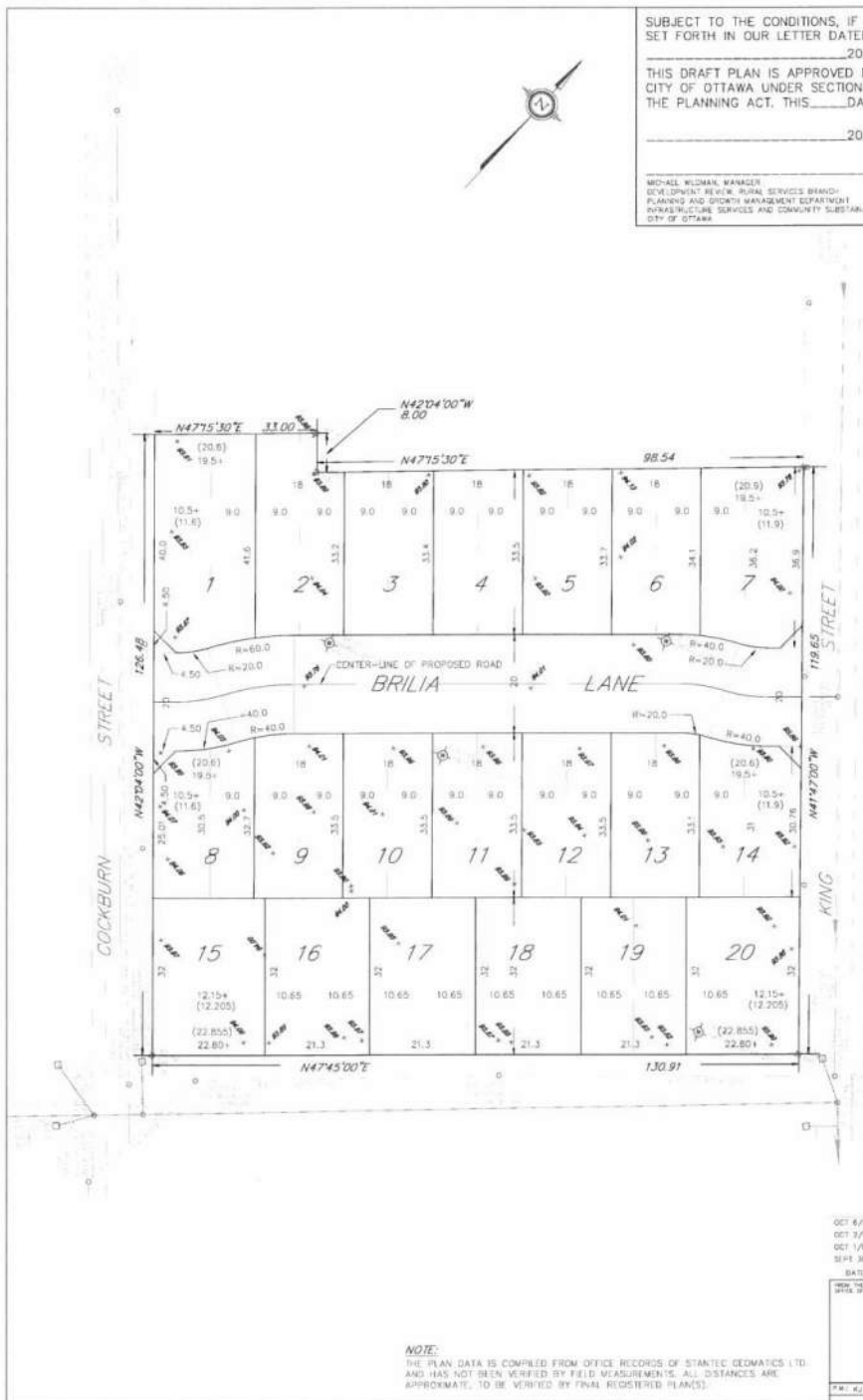
SURVEYOR'S CERTIFICATE :
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND
THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND
CORRECTLY SHOWN.

DATE : _____
BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR


OWNER'S CERTIFICATE :
I HEREBY AUTHORIZE THIS DRAFT PLAN OF SUBDIVISION TO BE
SUBMITTED ON MY BEHALF.

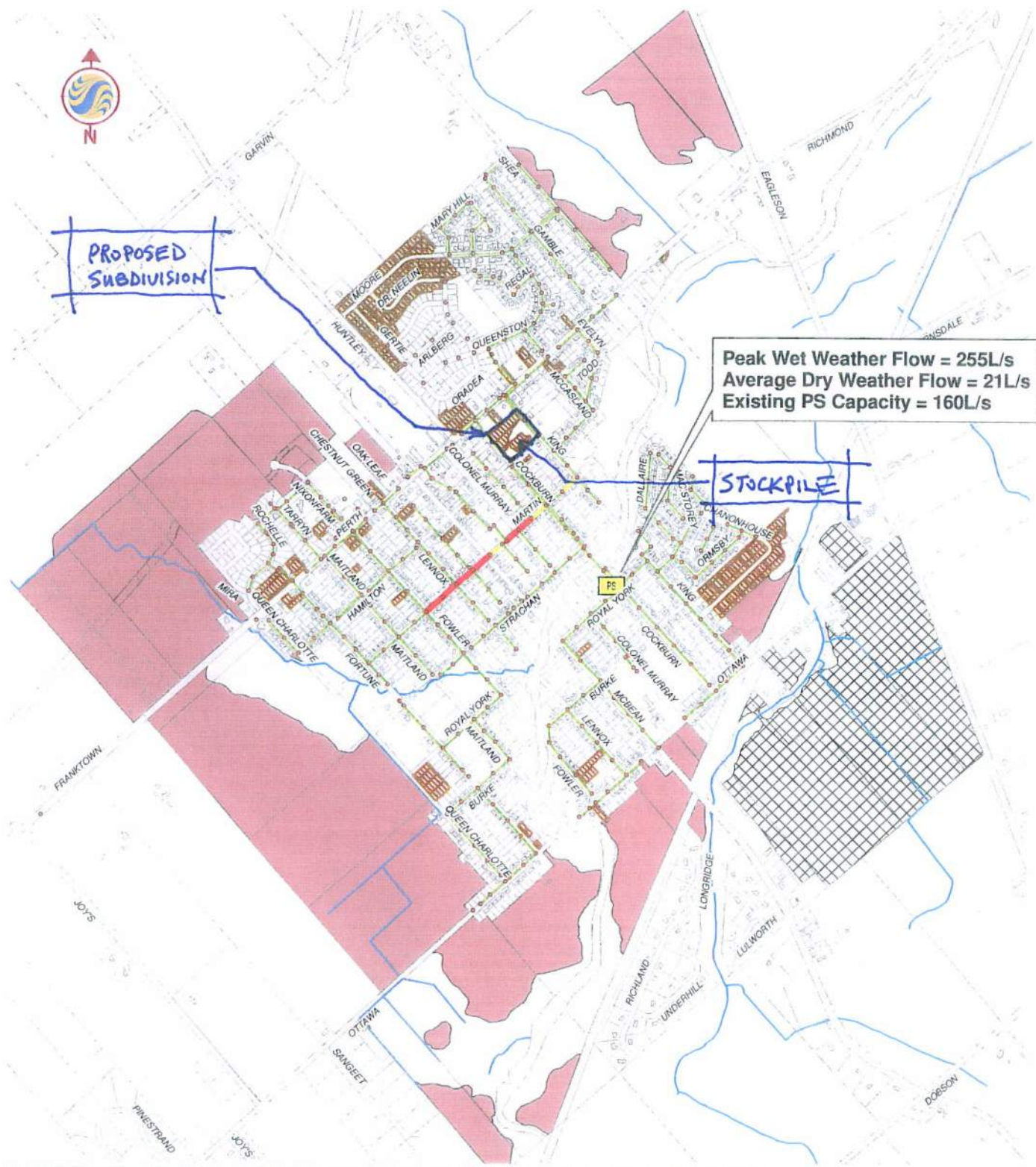
DATE : _____

ADDITIONAL INFORMATION :
1) RESIDENTIAL
2) CITY WATER AVAILABLE
3) SET. SOL. REPORT
4) SET. TOPOGRAPHICAL INFORMATION
5) ALL CITY SERVICES AVAILABLE
6) NONE KNOWN



NOTE:
THE PLAN DATA IS COMPILED FROM OFFICE RECORDS OF STANTEC GEOMATICS LTD.
AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENTS. ALL DISTANCES ARE
APPROXIMATE, TO BE VERIFIED BY FINAL REGISTERED PLANS.

OCT 6/09	Revisions to center-line, re-plot 7 and 14, put to WCS for review	Rev'd.dwg	CS
OCT 7/09	Insert (as built) grass/flags from re-plot November 09 file, put to WCS for review	Rev'd.dwg	CS
OCT 1/09	Revisions per WCS meeting, put Concept Oct 1-09 to WCS for preliminary review	Rev'd.dwg	CS
SEP 30/08	Prep Concept Sept 30-08-A per DT/NGS for re-plot Sept 29-08	Rev'd.dwg	CS
DATE	REVISED		BY
DATE			
		STANTEC GEOMATICS LTD. Ottawa Land Services OTTAWA - ONTARIO (613) 722-4420 FAX (613) 722-0188 TOLL-FREE: 1-800-387-2868 Email: ottawa@stantec.com www.stantec.com	
DRW: MJ	DRWN: CS	FILED	CHANGED
JOB No.		16161859-132	
JOB: 1-12-16161859-132, Town of Richmond, Box 2 - 116, AGO			



W:\active\1634_00808_Richmond_Water_Sanitary\planning\drawing\GIS Data\Master Plan Figures\Figure 5-4-richmond_wastewater_SS_Results_Info_Only_portrait_m20090130.mxd

Legend

Flow / Pipe Capacity

- 0.00-0.90
- 0.90-1.10
- +1.10

- Future Development
- Future Infill
- Future Industrial



Stanec

Client/Project

CITY OF OTTAWA
VILLAGE OF RICHMOND
SANITARY MASTER SERVICING STUDY

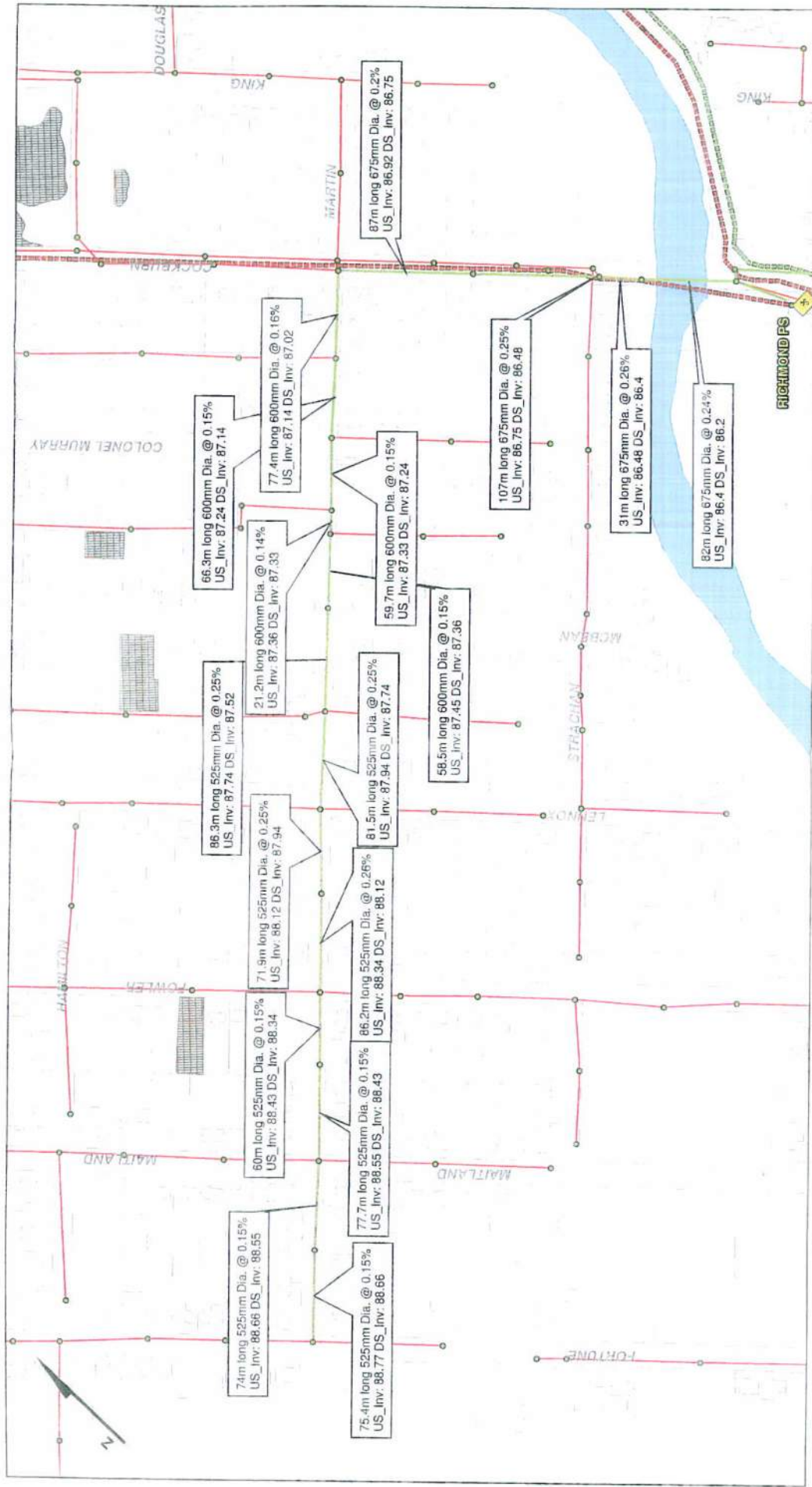
Figure No.

5.4

Title

**Existing and Infill Area
Gravity Collection System
Bottlenecks**

March 2009
1634-00808



May 2010
1621-0008

CITY OF OTTAWA
VILLAGE OF RICHMOND
SANITARY MASTER SERVICING STUDY

Figure No. 7.5

Scale

Functional Sanitary Sewer Design
North of the Jock River

Scale
0 25 50 100 150 200
Meters

1:3,000

Legend

Sanitary Sewer Options A, B, C
Sanitary Foremain Upgrades
Existing Sanitary Sewer
Existing Sanitary Foremain

Future Infill
Future Development
Sanitary Manhole



Ron Cebryk

From: John Garrah [john.garrah@rvca.ca]
Sent: Thursday, October 22, 2009 2:29 PM
To: r.cebryk@novatech-eng.com
Cc: Bruce Reid
Subject: 10 King Street-RVCA Application RV5-04/09

Ron,

Sorry for the delay on this matter.

The finished grading plan has been reviewed by RVCA staff which is satisfied that it meets the approved plan submitted by Novatech engineering Drawing No. 109027-CFP bearing the stamp of M.Savic P. Eng.

If you have any further questions please contact me.

Regards,

John Garrah

Part 8 OBC Inspector/ Development Review Officer

RideauValley Conservation Authority

3889 RideauValley Dr. Box 599

Manotick, Ontario K4M 1A5

613-692-3571 or 1-800-267-3504 extension 1115

john.garrah@rvca.ca



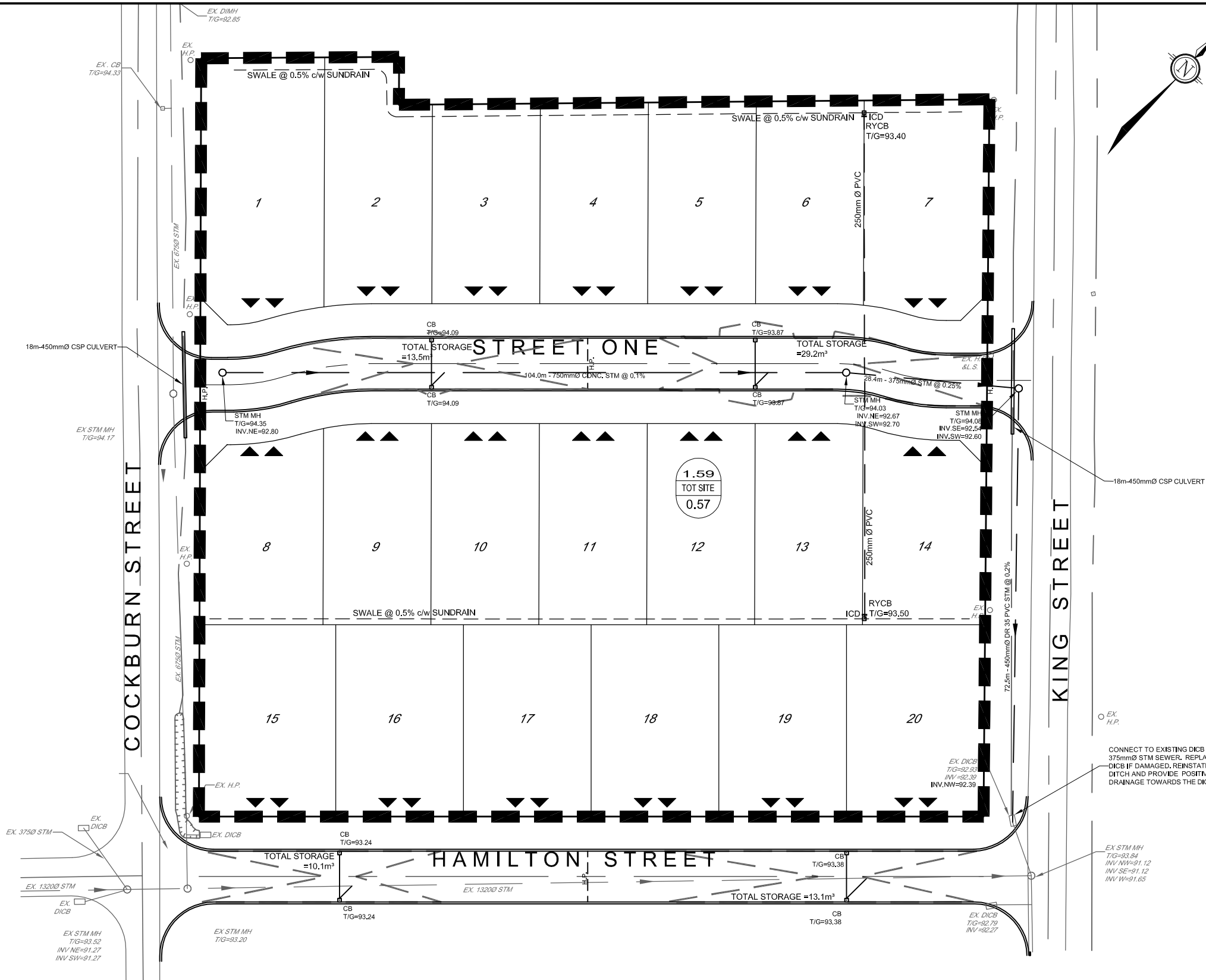
DATE: 01-Feb-10
REV.:

P = Population Exist Zoning = 35 units (13sf & 22 Towns) @ 3.4 persons & 2.7 persons/unit respectively
P = Population Rezoning = 40 units (semi-detached) @ 2.7 persons/unit
q = Average per capita flow = 350 L/cap/day
M = Harmon Formula (maximum of 4.0)
Min pipe size 200mm @ min. slope 0.4%
250 min slope 0.28%

APPENDIX E

Stormwater Management Calculations

M:\2009\109222\CAD\Design\109222-SWM-1\AREA.dwg, 11x17 landscape, Apr 15, 2016 - 2:12pm, mhrehorjak



LEGEND

---	PROPOSED STORM SEWER
○	PROPOSED STORM MH
■	PROPOSED CATCHBASIN
▶	PROPOSED SEWER FLOW DIRECTION
□	EXISTING DITCH INLET CB
▶	EXISTING SEWER FLOW DIRECTION
○	EXISTING STORM MH
---	PROPOSED SURFACE PONDING LIMITS
■	STORM DRAINAGE AREAS
0.275	DRAINAGE AREA (ha)
A-4	AREA IDENTIFIER
0.58	RUNOFF COEFFICIENT



Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

VILLAGE OF RICHMOND

CONCEPTUAL SWM PLAN

SCALE 1 : 750

DATE MAR 2016 JOB 109222 FIGURE A2

CUT 11x17 DWG 270mm V132mm

TABLE 1A: Pre-development Runoff Coefficient "C"

Area	Surface	Ha	"C"	C _{avg}
Total	Hard	0.000	0.90	0.20
1.590	Soft	1.590	0.20	

Runoff Coefficient Equation

$$C = (A_{\text{hard}} \times 0.9 + A_{\text{soft}} \times 0.2) / A_{\text{Tot}}$$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00

TABLE 1B: Allowable Flows

Outlet Options	Area (ha)	C _{avg}	Tc (min)	Q _{2 Year} (L/s)
Jock River	1.590	0.20	10	67.9

Time of Concentration Tc= 10 min
 Intensity (2 Year Event) I₂= 76.81 mm/hr

TABLE 2A: Post-Development Runoff Coefficient "C" -TOTAL SITE

Area	C _{avg}	*C ₁₀₀
Total	0.57	0.65
1.590		

TABLE 2B: 2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - TOTAL SITE

1.590 =Area (ha)
 0.57 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m ³)
2 YEAR	5	103.57	260.95	67.9	193.05	57.91
	10	76.81	193.51	67.9	125.61	75.37
	15	61.77	155.62	67.9	87.72	78.95
	20	52.03	131.09	67.9	63.19	75.83
	25	45.17	113.80	67.9	45.90	68.85

TABLE 2C: 5 YEAR EVENT QUANTITY STORAGE REQUIREMENT - TOTAL SITE

1.59 =Area (ha)
 0.57 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m ³)
5 YEAR	10	104.19	262.52	67.9	194.62	116.77
	15	83.56	210.52	67.9	142.62	128.36
	20	70.25	177.00	67.9	109.10	130.92
	25	60.90	153.43	67.9	85.53	128.29
	30	53.93	135.87	67.9	67.97	122.35

TABLE 2D: 100 YEAR EVENT QUANTITY STORAGE REQUIREMENT - TOTAL SITE

1.59 =Area (ha)
 0.65 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m ³)
100 YEAR	25	103.85	298.37	67.9	230.47	345.70
	30	91.87	263.95	67.9	196.05	352.89
	35	82.58	237.26	67.9	169.36	355.65
	40	75.15	215.90	67.9	148.00	355.21
	45	69.05	198.39	67.9	130.49	352.33

Equations:

Flow Equation

$$Q = 2.78 \times C \times I \times A$$

Where:

C is the runoff coefficient

I is the rainfall intensity, City of Ottawa IDF

A is the total drainage area

Runoff Coefficient Equation

$$C_5 = (A_{\text{hard}} \times 0.9 + A_{\text{soft}} \times 0.2) / A_{\text{Tot}}$$

$$C_{100} = (A_{\text{hard}} \times 1.0 + A_{\text{soft}} \times 0.25) / A_{\text{Tot}}$$

TABLE 2E: STORAGE PROVIDED - TOTAL SITE

	Surface (Road)	Pipe	Structures	Surface (Swale)	Rear Yard Subdrain	* Total Storage
Storage Volume (m ³)	65.9	47.4	8.2	22.3	88.6	232.4

APPENDIX F

Development Servicing Study Checklist

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

- ☒ Executive Summary (for larger reports only).
- ☐ Date and revision number of the report.
- ☒ Location map and plan showing municipal address, boundary, and layout of proposed development. **FIGS. 1 & 2**
- ☒ Plan showing the site and location of all existing services. **FIG. 3**
- ☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
- ☒ Summary of Pre-consultation Meetings with City and other approval agencies.
- ☒ 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 defensible design criteria.
- ☒ Statement of objectives and servicing criteria.
- ☒ Identification of existing and proposed infrastructure available in the immediate area.
- ☒ 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).

- ☒ 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.
- ☒ 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. **HYDROGEO REPORT**
- N/A** Proposed phasing of the development, if applicable.
- ☒ Reference to geotechnical studies and recommendations concerning servicing.
- ☒ 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

4.2 Development Servicing Report: Water

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

- ☒ 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
- ☒ 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.
- ☒ Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- ☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- ☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

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).
- ☒ Confirm consistency with Master Servicing Study and/or justifications for deviations.
- ☒ 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.
- ☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- ☒ 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)
- ☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.
- ☒ Description of proposed sewer network including sewers, pumping stations, and forcemains.

- ☒ 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).
- ☒ 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.
- ☒ 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.

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)
- ☒ Analysis of available capacity in existing public infrastructure.
- ☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern. **REFERENCE MADE TO MCMANUS REPORT**
- ☒ 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.
- ☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- ☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- ☒ ~~N/A~~ Set-back from private sewage disposal systems.
- ☒ ~~N/A~~ Watercourse and hazard lands setbacks.
- ☒ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- ☒ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- ☒ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ 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. *McManus Report*
- ☒ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- ☒ 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.
- ☒ Identification of potential impacts to receiving watercourses
- ☒ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.
- ☒ Inclusion of hydraulic analysis including hydraulic grade line elevations. *REFER TO McMANUS STUDY*
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☒ 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.
- ☒ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

- ☒ 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 Act. 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.
- ☒ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- ☒ Changes to Municipal Drains.
- ☒ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- ☒ Clearly stated conclusions and recommendations
- ☒ 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