
MSS Update MEMO

DATE: October 6, 2020

TO: Development Review Officer
Project Manager, Planning and Growth Management Development

SUBJECT: Wateridge Village – Phase 1B – Block 22 – MSS Updates

OUR FILE: DSEL Project No.17-948

ATTACHMENTS:

- **Attachment 1:** Drawing 501 from **Design Brief Wateridge Village at Rockcliffe Phase 1A**, prepared by IBI Group. – dated April 2016 (**MSS 1A**);
- **Attachment 2:** Drawing 501A from **Design Brief Wateridge Village at Rockcliffe Phase 1B**, prepared by IBI Group. – dated June 2017 (**MSS 1B**);
- **Attachment 3:** Sanitary Sewer Design Sheets from **Design Brief Wateridge Village at Rockcliffe Phase 1A**, prepared by IBI Group. – dated April 2016 (**MSS 1A**);
- **Attachment 4:** Sanitary Sewer Design Sheets from **Design Brief Wateridge Village at Rockcliffe Phase 1B**, prepared by IBI Group. – dated June 2017 (**MSS 1B**);
- **Attachment 5:** Recreated modified MSS Sanitary Design Sheet, prepared by DSEL – dated October 6, 2020;
- **Attachment 6:** Sanitary Drainage Plan, prepared by DSEL – Revision 12, dated October 6, 2020;
- **Attachment 7:** Drawing 500 from **Design Brief Wateridge Village at Rockcliffe Phase 1A**, prepared by IBI Group. – dated April 2016 (**MSS 1A**);
- **Attachment 8:** Drawing 500A from **Design Brief Wateridge Village at Rockcliffe Phase 1B**, prepared by IBI Group. – dated June 2017 (**MSS 1B**);
- **Attachment 9:** Storm Sewer Design Sheets from **Design Brief Wateridge Village at Rockcliffe Phase 1a**, prepared by IBI Group. – dated April 2016 (**MSS 1A**);
- **Attachment 10:** Storm Sewer Design Sheets from **Design Brief Wateridge Village at Rockcliffe Phase 1B**, prepared by IBI Group. – dated June 2017 (**MSS 1B**);
- **Attachment 11:** Recreated MSS Storm Design Sheet, prepared by DSEL – dated October 6, 2020.
- **Attachment 12:** Storm Drainage Plan, prepared by DSEL – Revision 12, dated October 6, 2020;

Mattamy Homes has retained DSEL to prepare a Memo describing the updates to the *Design Brief Wateridge Village at Rockcliffe Phase 1A (April 2016) (MSS 1A)* and the *Design Brief Wateridge Village at Rockcliffe Phase 1B (June 2017) (MSS 1B)* prepared by IBI Group (**MSS 1B**). Based on the detailed design of Block 22, modifications were made to the storm and sanitary services in order to meet client and project specifications. As the Block 22 area was divided to drain to sewers in Michael Stoqua Street and Moses Tennisco Street in the **MSS 1A** and **MSS 1B**, minor updates were required to both sanitary and storm sewers within Michael Stoqua Street as the City of Ottawa requested a singular connection point to existing storm and sanitary services.

Sanitary Drainage Plan Modifications:

As illustrated by the Sanitary Drainage Area Plans (**Attachment 1** and **Attachment 2**), the **MSS 1A** and **MSS 1B** contemplated to subdivide Block 22 into two drainage areas. The two drainage areas IDs are **210A** and **212A** on Sanitary Drainage Area Plan 1B (**Attachment 2**), and are tributary to Michael Stoqua Street and Moses Tennisco Street, respectively. Area IDs **210A** and **212A** each include approximately **0.23 ha** of land (half of the total 0.46 ha area) within Block 22. The projected population for Block 22 is **105 persons** (twice the amount stated in Area ID **201A**).

The proposed Block 22 servicing strategy contemplates to direct wastewater towards the local existing 250 mm sanitary sewer within Michael Stoqua Street via an internal sanitary sewer. However, service laterals for proposed Block 4, Units 1-5 are proposed to connect directly to the existing 250 mm sanitary sewer with Michael Stoqua Street. As a result, the **MSS 1A** and **MSS 1B** have been updated to reflect these modifications. Please refer to **Attachment 3** and **Attachment 4** identifying applicable sections of the Sanitary Sewer Design Sheets.

As identified by the sanitary calculation sheets included in the **Appendix**, updates to the drainage boundaries do not measurably impact the local sanitary sewer outlet located at **MH210A** or any other sewers surrounding the site. **Attachment 5** consists of updated Sanitary Sewer Design Sheets displaying relevant updated sewer segments and **Attachment 6** is the proposed Sanitary Drainage Plan.

Table 1, below summarizes the changes to the available sewer capacity, based on the updated sanitary drainage plan for Block 22 and City of Ottawa **Technical Bulletin ISDTB-2018-02**. It should be noted that the projected flows for the existing sanitary sewers on Moses Tennisco Street and Mikinak Street were also revised to reflect the current proposed conditions for Block 15 and Block 24.

Please refer to **Attachment 5** and **Attachment 6** demonstrating the proposed changes to the sanitary drainage plans and associated calculations for further details.

Table 1: Updates to Block 22 Sanitary Analysis

Street	Sewer Segment	Residential Tributary Area (ha) / Population per MSS	Residential Tributary Area (ha) / Population Detailed Design	Residual Capacity per MSS	Updated Residual Capacity
Michael Stoqua Street	MH210A-MH211A	0.40 / 52.5	0.64 / 104	98%	97%
	MH211A-MH166B	0.75 / 105	0.99 / 157	96%	96%
	MH166B-MH166A	0.75 / 105	0.99 / 157	95%	96%
Moses Tennisco Street	MH213A-MH212A	1.20 / 252	0.00 / 0	91%	100%
	MH212A-MH165A	1.55 / 304.5	1.96 / 395	86%	87%
Mikinak Road (formerly Mieshimin Road)	MH165A-MH166A	18.13 / 3338	19.87 / 3428	43%	56%
	MH166A-MH167A	19.77 / 3584	21.75 / 3756	39%	52%

It should be noted that based on the current design for Block 23 and Block 24, the existing sanitary sewer from MH213A to MH212A is constructed, but is not receiving any flow.

As demonstrated in **Table 1**, there is sufficient capacity within the surrounding sewer network to accommodate the change in sanitary drainage boundaries. With the updated City of Ottawa **Technical Bulletin ISDTB-2018-02**, the estimated available sewer capacities have been increased due to a net reduction in flow. As such, the existing infrastructure can support the proposed modifications to the Block 22 sanitary drainage area plan.

Storm Drainage Plans Modifications:

As illustrated by the Storm Drainage Area Plans (**Attachment 7** and **Attachment 8**), the **MSS 1A** and **MSS 1B** contemplated the Block 22 Area as two areas. The two areas included **LOT210** and **LOT212B** tributary to Michael Stoqua Street and Moses Tennisco Street, respectively, as seen on Storm Drainage Plan 1B (**Attachment 8**). Area IDs **LOT210** and **LOT212B** each include **0.23 ha** of land (half of the total 0.46 ha area) within Block 22.

The proposed stormwater management system proposes to direct the majority of stormwater from the Block 22 development to Michael Stoqua Street via a direct connection to the existing 375 mm diameter storm sewer. However, there are also several uncontrolled drainage areas (0.06 ha to Michael Stoqua Street, 0.03 ha to Hemlock Road and 0.04 ha to Moses Tennisco Street) draining to existing storm. These uncontrolled drainage areas are assumed to direct flows up to the 100-year storm to existing streets. As a result, the **MSS 1A** and **MSS 1B** have been updated to reflect this modification including updates to the Storm Sewer Design Sheets and Storm Area Drainage Plans. Please refer to **Attachment 9** and **Attachment 10** identifying applicable sections of the Storm Sewer Design Sheets. Relevant sewer segments have been identified, recreated and updated. **Attachment 11** consists of

updated Storm Sewer Design Sheets displaying relevant updated sewer segments and **Attachment 12** is the proposed Storm Drainage Plan.

As identified by the Storm Sewer Design Sheets included in the **Appendix**, this modification has a negligible effect on the stormwater outlet and sewers surrounding the site. The final segment does not anticipate any significant changes to flow patterns.

Table 2, below summarizes the changes to the sewer capacity based on the updated drainage plan for Block 22. Please refer to the **Attachment 11** and **Attachment 12** demonstrating the proposed changes to the storm drainage plans and associated calculations for further details.

Table 2: Updates to Block 22 Storm Drainage Areas

Street	Sewer Segment	Tributary Area per MSS (Total 2.78 AxC)	Tributary Area Detailed Design (Total 2.78 AxC)	Residual Capacity per MSS	Updated Residual Capacity
Michael Stoqua Street	MH210-MH211	0.90	1.30	36%	2%
	MH211-MH166	1.74	2.15	33%	9%
Moses Tennisco Street	MH213-MH212	2.58	0.29	26%	91%
	MH212-MH165	3.50	4.70	35%	5%
Mikinak Road (formerly Mieshimin Road)	MH165-MH166	25.82	34.79	39%	32%
	MH166-MH167	29.48	38.86	37%	30%
Hemlock Road	MH204-MH205	10.82	10.85	25%	21%
	MH205-MH206	14.59	14.54	31%	28%

As demonstrated in **Table 2**, With the increase in tributary area from Block 22, the existing 375 mm storm sewer from MH210 to MH211 on Michael Stoqua Street is shown to have 2% residual capacity. The existing downstream 600 mm storm sewers on Michael Stoqua Street from MH211 to MH166 are shown to have a minimum 9% residual capacity. All other existing storm sewers on Moses Tennisco Street, Hemlock Road and Mikinak Street are shown to have 5% residual capacity or more. As such, the existing storm system can accommodate the flow from the proposed storm sewer system for Block 22.

It should be noted that the actual 100-year flow to the existing minor system is much less than anticipated in the rational method based on PCSWMM modelling and the use of ICDs within catchbasins. The 100-year flow to MH210 is 78.3 L/s as detailed in the *Wateridge Village Phase 1B – Proposed Block 22 Stormwater Management Design* by J.F. Sabourin and Associates, dated October, 2020 (**HGL Analysis**). This is less than the 87 L/s flow that was initially considered acceptable from the development as detailed in the correspondence from IBI Group, located in Appendix D of the **HGL Analysis**. The modelled 100-year flow of 78.3 L/s is much less than the anticipated 138 L/s from the rational method and therefore, the existing pipe will have sufficient capacity for the proposed flows.

The downstream sewers have capacity to convey the controlled flow from the development before discharging to the Eastern SWM Facility.

We trust that the above is sufficient to allow for approval of the updates to the **MSS 1A** and **MSS 1B** Sanitary and Storm Drainage Plans surrounding the Block 22 Development. Should you have any questions, please contact the undersigned.

Prepared by,
David Schaeffer Engineering Ltd.



Per: Anthony Temelini, P.Eng.

Reviewed by,
David Schaeffer Engineering Ltd.

A handwritten signature in blue ink that reads "J. Ailey".

Per: Jennifer Ailey, P.Eng.

Z:\Projects\17-948_Wateridge_Block 22\B_Design\B3_Reports\B3-2_Servicing (DSEL)\MSS Addendum_Subm1\2020-10-06_948_MSS_memo_ajt.docx

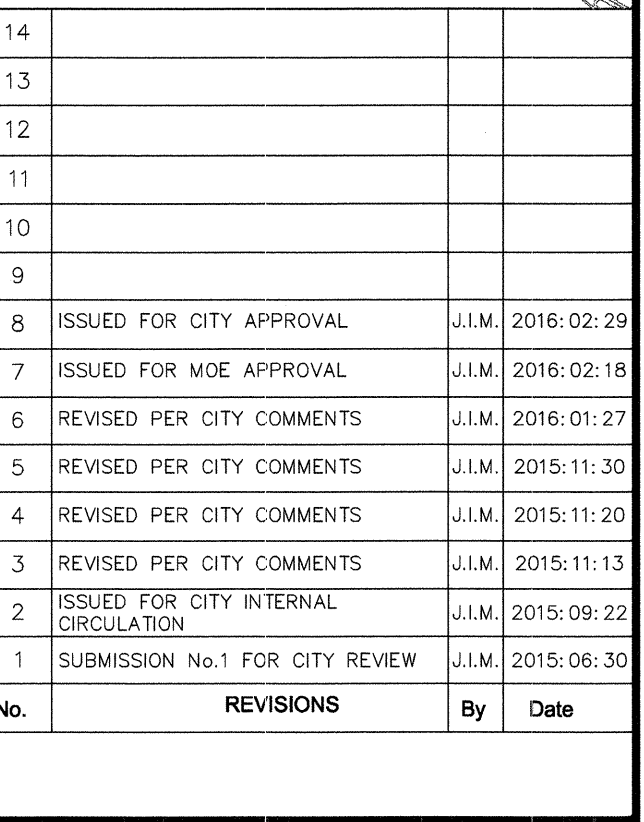
Attachment 1

Will Conrad

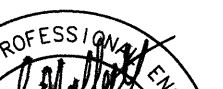
te March 8 2016

Diagram illustrating the components of a subcatchment area:

- AREA NUMBER (168)
- RUNOFF COEFFICIENT (0.80)
- AREA IN HECTARES (2010.80)



30 Metcalfe Street Suite 601
Ottawa, On K1P 5L4
613 998 7777

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The image shows two circular elements. On the left is a circular seal for the "PROFESSIONAL ENGINEER" license of the "PROVINCE OF ONTARIO". The seal contains the name "J. I. MOFFATT" and the date "16/02/29". A signature is written across the seal. On the right is a circular compass rose with a thick black line pointing towards the top-right, labeled with an "N" for North.

Abstract

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Drawn D.D. / M.M.	Checked J.I.M.
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Attachment 2

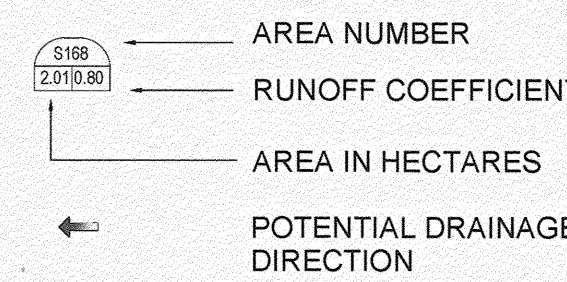
REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH

Signed Will Curry

Date June 19 2017

Plan Number 17063

LEGEND :



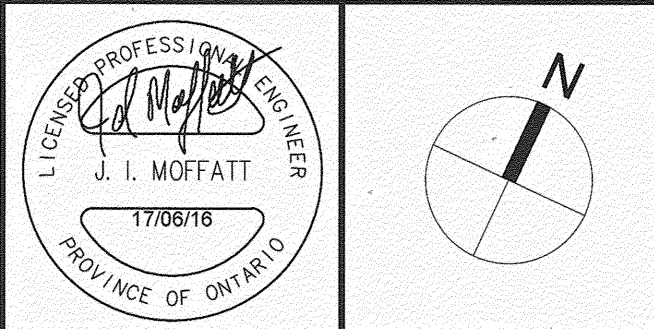
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7	REVISED PER CITY COMMENTS	J.I.M.	2017: 06:
6	REVISED PER MOECC COMMENTS	J.I.M.	2017: 06:
5	ISSUED FOR TENDER	J.I.M.	2017: 03:
4	SUBMISSION FOR MOECC APPROVAL	J.I.M.	2017: 02:
3	SUBMISSION No.3 FOR CITY REVIEW	J.I.M.	2017: 01:
2	SUBMISSION No.2 FOR CITY REVIEW	J.I.M.	2016: 11:
1	SUBMISSION No.1 FOR CITY REVIEW	J.I.M.	2016: 07:
No.	REVISIONS	By	Date



Project Title

**WATERIDGE VILLAGE
AT ROCKCLIFFE**

PHASE 1B



Drawing Title

**SANITARY DRAINAGE
AREA PLAN**

Scale 1 : 2000

Design J.I.M.	Date MAY 2016
Drawn M.M.	Checked J.I.M.
Project No. 38298	Drawing No. 501A



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Attachment 3

SANITARY SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS						INFILTRATION ALLOWANCE			FIXED FLOW (L/s)	TOTAL FLOW (L/s)	PROPOSED SEWER DESIGN							
STREET	AREA ID	FROM MH	TO MH	AREA Ph1 (Ha)	UNIT TYPES				AREA External (Ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)				PEAK FLOW (L/s)	AREA (Ha)		FLOW (L/s)	CAPACITY (L/s)			LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY			
					SF	SD	TH	APT		IND	CUM			IND	CUM	IND	CUM		IND	CUM									IND	CUM	L/s	(%)
cercle AVRO CIRCLE	100A(a)	MH100A	MH108A	0.76	14	3				55.7	55.7	4.00	0.90		0.00		0.00		0.00	0.00	0.76	0.76	0.21		1.12	39.24	93.65	250	0.40	0.774	38.12	97.16%
cercle AVRO CIRCLE	108A	MH108A	MH109A	0.74	13	3				52.3	108.0	4.00	1.75		0.00		0.00		0.00	0.00	0.74	1.50	0.42		2.17	39.24	98.01	250	0.40	0.774	37.07	94.47%
---	FRHVN	SAN EXT	MH109A						8.98	538.2	538.2	3.96	8.63		0.00		0.00		0.00	0.00	8.98	8.98	2.51		11.14	94.09	53.04	250	2.30	1.857	82.94	88.16%
voie CHENE WAY	109A	MH109A	MH117A	0.18	3					10.2	656.4	3.91	10.40		0.00		0.00		0.00	0.00	0.18	10.66	2.98		13.38	62.04	44.52	250	1.00	1.224	48.66	78.43%
	117A	MH117A	MH118A	0.15	2	1				9.5	665.9	3.91	10.54		0.00		0.00		0.00	0.00	0.15	10.81	3.03		13.57	62.04	36.30	250	1.00	1.224	48.47	78.13%
PLACE LYSANDER	102A(a)	MH102A	MH119A	0.77	12	9				65.1	65.1	4.00	1.05		0.00		0.00		0.00	0.00	0.77	0.77	0.22		1.27	48.45	103.71	250	0.61	0.956	47.18	97.38%
PLACE LYSANDER	119A	MH119A	MH118A	0.55	9	3				38.7	103.8	4.00	1.68		0.00		0.00		0.00	0.00	0.55	1.32	0.37		2.05	55.49	102.75	250	0.80	1.095	53.44	96.30%
voie CHENE WAY	118A	MH118A	MH118C	0.37	2	7				25.7	795.4	3.86	12.44		0.00		0.00		0.00	0.00	0.37	12.50	3.50		15.94	48.06	65.25	250	0.60	0.948	32.11	66.82%
voie CHENE WAY		MH118C	MH116A							0.0	795.4	3.86	12.44		0.00		0.00		0.00	0.00	0.00	12.50	3.50		15.94	48.06	14.10	250	0.60	0.948	32.11	66.82%
cercle AVRO CIRCLE	109A(b)	MH109A	Mh110A	0.27	3					10.2	10.2	4.00	0.17		0.00		0.00		0.00	0.00	0.27	0.27	0.08		0.24	80.89	72.73	250	1.70	1.596	80.65	99.70%
PLACE LYSANDER	---	Mh110A	Mh111A							0.0	10.2	4.00	0.17		0.00		0.00		0.00	0.00	0.00	0.27	0.08		0.24	67.96	9.98	250	1.20	1.341	67.72	99.65%
cercle AVRO CIRCLE	110A	MH111A	MH112A	0.16	2					6.8	17.0	4.00	0.28		0.00		0.00		0.00	0.00	0.16	0.43	0.12		0.40	67.96	26.44	250	1.20	1.341	67.56	99.42%
voie VEDETTE WAY	112A	MH112A	MH113A	0.19	3					10.2	27.2	4.00	0.44		0.00		0.00		0.00	0.00	0.19	0.62	0.17		0.61	50.02	40.55	250	0.65	0.987	49.40	98.77%
voie CHENE WAY	113A	MH113A	MH114A	0.32	5					17.0	44.2	4.00	0.72		0.00		0.00		0.00	0.00	0.32	0.94	0.26		0.98	57.20	63.75	250	0.85	1.129	56.22	98.29%
Street No. 18	114A	MH114A	MH115A	0.08	1					3.4	47.6	4.00	0.77		0.00		0.00		0.00	0.00	0.08	1.02	0.29		1.06	36.70	12.10	250	0.35	0.724	35.65	97.12%
Street No. 19	115A	MH115A	MH116A	0.35	5					17.0	64.6	4.00	1.05		0.00		0.00		0.00	0.00	0.35	1.37	0.38		1.43	36.70	82.09	250	0.35	0.724	35.27	96.10%
cercle AVRO CIRCLE	116A	MH116A	MH120A	0.21		2	4			16.2	876.2	3.84	13.62		0.00		0.00		0.00	0.00	0.21	14.08	3.94		17.56	31.02	39.22	250	0.25	0.612	13.46	43.39%
cercle AVRO CIRCLE	PARKa	BULK120AS	MH120A	0.40						0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	0.40	0.40	0.11		0.11	43.87	12.01	250	0.50	0.866	43.76	99.74%
cercle AVRO CIRCLE	120A	MH120A	MH121A	0.25		4	1			13.5	889.7	3.83	13.81		0.00		0.00		0.00	0.00	0.25	14.73	4.12		17.94	31.02	49.86	250	0.25	0.612	13.08	42.18%
cercle AVRO CIRCLE	105A(b)	MH105A	MH122A	0.43	4	6	3			37.9	37.9	4.00	0.61		0.00		0.00		0.00	0.00	0.43	0.43	0.12		0.73	62.04	61.74	250	1.00	1.224	61.30	98.82%
cercle AVRO CIRCLE	122A	MH122A	MH121A	0.45	3	8	3			39.9	77.8	4.00	1.26		0.00		0.00		0.00	0.00	0.45	0.88	0.25		1.51	55.14	61.74	250	0.79	1.088	53.63	97.27%
voie VEDETTE WAY	121A	MH121A	MH127A	0.16						0.0	967.5	3.81	14.93		0.00		0.00		0.00	0.00	0.16	15.77	4.42		19.34	31.02	90.10	250	0.25	0.612	11.67	37.64%
voie VEDETTE WAY	182A(a)	MH182A	MH128A	0.60			32			86.4	86.4	4.00	1.40		0.00		0.00		0.00	0.00	0.60	0.60	0.17		1.57	50.40	117.51	250	0.66	0.995	48.83	96.89%
voie VEDETTE WAY	INST	BULK128AE	MH128A							0.0	0.0	4.00	0.00	2.53	2.53		0.00		0.00	2.20	2.53	2.53	0.71		2.90	39.24	13.48	250	0.40	0.774	36.33	92.60%
voie VEDETTE WAY	128A	MH128A	MH127A	0.22			10			27.0	113.4	4.00	1.84		0.00		0.00		0.00	0.00	0.22	3.35	0.94		2.78	39.24	47.30	250	0.40	0.774	36.46	92.93%
hemin MIESHIMIN ROA	127A	MH127A	MH126A	0.38		4	4			21.6	1102.5	3.77	16.85		0.00		0.00		0.00	0.00	0.38	19.50	5.46		22.31	47.32	67.16	300	0.22	0.648	25.01	52.86%
hemin MIESHIMIN ROA	126A	MH126A	MH125A	0.32		4	2			16.2	1118.7	3.77	17.08		0.00		0.00		0.00	0.00	0.32	19.82	5.55		22.63	47.32	56.33	300	0.22	0.648	24.69	52.18%
cercle AVRO CIRCLE	100A(b)	MH100A	MH101A	0.22	2					6.8	6.8	4.00	0.11		0.00		0.00		0.00	0.00	0.22	0.22	0.06		0.17	43.87	9.43	250	0.50	0.866	43.70	99.61%
PLACE LYSANDER	101A	MH101A	MH102A	0.44		2	5			18.9	25.7	4.00	0.42		0.00		0.00		0.00	0.00	0.44	0.66	0.18		0.60	69.36	73.24	250	1.25	1.369	68.76	99.13%
cercle AVRO CIRCLE	102A(b)																															



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Attachment 3

SANITARY SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)	TOTAL FLOW (L/s)	PROPOSED SEWER DESIGN						
STREET	AREA ID	FROM MH	TO MH	AREA Ph1 (Ha)	UNIT TYPES				AREA External (Ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	INSTITUTIONAL		AREA (Ha)		INDUSTRIAL		PEAK FLOW (L/s)	AREA (Ha)		FLOW (L/s)	CAPACITY (L/s)			LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY		
					SF	SD	TH	APT		IND	CUM			IND	CUM	IND	CUM	IND	CUM		IND	CUM									L/s	(%)	L/s
chemin WANAKI ROAD	COM 2	BULK153AN	MH153A							0.0	0.0	4.00	0.00		0.00	1.96	1.96		0.00	1.70	1.96	1.96	0.55		2.25	51.91	20.13	250	0.70	1.024	49.66	95.66%	
chemin WANAKI ROAD	153A(b), COM 1a	MH153A	MH151A	0.21						0.0	0.0	4.00	0.00		0.00	0.88	2.84		0.00	2.47	1.09	3.05	0.85		3.32	36.70	85.04	250	0.35	0.724	33.38	90.96%	
chemin WANAKI ROAD	151A, COM 1b	MH151A	MH150A	0.11						0.0	0.0	4.00	0.00		0.00	0.45	3.29		0.00	2.86	0.56	3.61	1.01		3.87	36.70	40.97	250	0.35	0.724	32.84	89.46%	
chemin WANAKI ROAD	150A, COM 1c	MH150A	MH149A	0.11						0.0	0.0	4.00	0.00		0.00	0.95	4.24		0.00	3.68	1.06	4.67	1.31		4.99	36.70	41.34	250	0.35	0.724	31.71	86.41%	
chemin WANAKI ROAD	149A	MH149A	MH148A	0.10						0.0	0.0	4.00	0.00		0.00		4.24		0.00	3.68	0.10	4.77	1.34		5.02	36.70	40.04	250	0.35	0.724	31.69	86.33%	
chemin WANAKI ROAD	148A	MH148A	MH157A	0.04						0.0	0.0	4.00	0.00		0.00		4.24		0.00	3.68	0.04	4.81	1.35		5.03	36.70	20.58	250	0.35	0.724	31.68	86.30%	
chemin WANAKI ROAD	EXT1	BULK148AW	MH157A						5.41	973.2	973.2	3.81	15.01		0.00		0.00		0.00	0.00	5.41	5.41	1.51		16.53	62.04	8.00	250	1.00	1.224	45.51	73.36%	
chemin WANAKI ROAD	157A	MH157A	MH158A	0.05						0.0	973.2	3.81	15.01		0.00		4.24		0.00	3.68	0.05	10.27	2.88		21.57	31.02	26.39	250	0.25	0.612	9.45	30.47%	
chemin WANAKI ROAD	158A	MH158A	MH154A	0.22						0.0	973.2	3.81	15.01		0.00		4.24		0.00	3.68	0.22	10.49	2.94		21.63	31.02	67.81	250	0.25	0.612	9.39	30.27%	
Pond	INST 1	BULK154AN	MH154A							0.0	0.0	4.00	0.00	2.62	2.62		0.00		0.00	2.27	2.62	2.62	0.73		3.01	39.24	15.10	250	0.40	0.774	36.23	92.33%	
hemin MIESHIMIN ROA	THORN	MH169B	MH169A						5.55	1574.0	1574.0	3.66	23.36		0.00		0.00		0.00	0.00	5.55	5.55	1.55		24.92	43.87	45.68	250	0.50	0.866	18.95	43.20%	
Street No. 2	EXT 6	MH169A	MH165A						3.70	431.1	2978.3	3.45	41.56		2.62		0.00		0.00	2.27	3.70	17.28	4.84		48.68	63.80	27.00	300	0.40	0.874	15.13	23.71%	
hemin MIESHIMIN ROA	165A	MH165A	MH166A	0.22						0.0	3338.3	3.40	46.01		5.11		0.00		0.00	4.44	0.22	23.24	6.51		56.96	100.18	90.00	375	0.30	0.879	43.23	43.15%	
Street No. 8	EXT 7	BULK166AN	MH166A						0.75	73.8	73.8	4.00	1.20		0.00		0.00		0.00	0.00	0.75	0.75	0.21		1.41	39.24	21.10	250	0.40	0.774	37.83	96.42%	
hemin MIESHIMIN ROA	166A, EXT 8	MH166A	MH167A	0.28					0.61	171.9	3584.0	3.38	49.01		5.11		0.00		0.00	4.44	0.89	24.88	6.97		60.41	98.50	112.00	375	0.29	0.864	38.09	38.67%	
Street No. 9	EXT 9	BULK167AN	MH167A						1.37	317.6	317.6	4.00	5.15		0.00		0.00		0.00	0.00	1.37	1.37	0.38		5.53	39.24	20.43	250	0.40	0.774	33.71	85.91%	
hemin MIESHIMIN ROA	167A, EXT 15	MH167A	MH168A	0.36					0.31	97.6	3999.2	3.33	54.00		5.11		0.00		0.00	4.44	0.67	26.92	7.54		65.98	115.68	120.00	375	0.40	1.015	49.71	42.97%	
hemin MIESHIMIN ROA	---	MH168A	MH141A							0.0	3999.2	3.33	54.00		5.11		0.00		0.00	4.44	0.00	26.92	7.54		65.98	155.21	24.54	375	0.72	1.361	89.23	57.49%	
Codd's Road	130A	MH130A	MH131A						0.32	6.8	6.8	4.00	0.11		0.00		0.00		0.00	0.00	0.32	0.32	0.09		0.20	33.98	80.74	250	0.30	0.671	33.78	99.41%	
Codd's Road	131A	MH131A	MH132A						0.46	6.8	13.6	4.00	0.22		0.00		0.00		0.00	0.00	0.46	0.78	0.22		0.44	33.98	42.98	250	0.30	0.671	33.54	98.71%	
Codd's Road	132A	MH132A	MH133A						0.43	6.8	20.4	4.00	0.33		0.00		0.00		0.00	0.00	0.43	1.21	0.34		0.67	113.38	40.68	250	3.34	2.238	112.71	99.41%	
Codd's Road	133A	MH133A	MH134A						0.43	6.8	27.2	4.00	0.44		0.00		0.00		0.00	0.00	0.43	1.64	0.46		0.90	114.39	39.75	250	3.40	2.258	113.49	99.21%	
Codd's Road	134A	MH134A	MH135A						0.34	6.8	34.0	4.00	0.55		0.00		0.00		0.00	0.00	0.34	1.98	0.55		1.11	114.39	36.55	250	3.40	2.258	113.29	99.03%	
Codd's Road	135A	MH135A	MH136A	0.13						0.0	34.0	4.00	0.55		0.00		0.00		0.00	0.00	0.13	2.11	0.59		1.14	114.39	45.41	250	3.40	2.258	113.25	99.00%	
Codd's Road	136A	MH136A	MH137A	0.18			3			8.1	42.1	4.00	0.68		0.00		0.00		0.00	0.00	0.18	2.29	0.64		1.32	114.39	44.68	250	3.40	2.258	113.07	98.84%	
Codd's Road	137A	MH137A	MH138A	0.40			10			27.0	69.1	4.00	1.12		0.00		0.00		0.00	0.00	0.40	2.69	0.75		1.87	65.07	74.12	250	1.10	1.284	63.19	97.12%	
Codd's Road	138A	MH138A	MH139A	0.44			12			32.4	101.5	4.00	1.64		0.00		0.00		0.00	0.00	0.44	3.13	0.88		2.52	43.87	72.60	250	0.50	0.866	41.35	94.25%	
Codd's Road	EXT 17	BULK139AE	MH139A						5.46	0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	5.46	5.46	1.53		1.53	48.06	14.60	250	0.60	0.948	46.53	96.82%	
Codd's Road	139A	MH139A	MH140A	0.11						0.0	101.5	4.00	1.64		0.00		0.00		0.0.														



IBI GROUP
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Attachment 4

SANITARY SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)	TOTAL FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PROPOSED SEWER DESIGN			
STREET	AREA ID	FROM MH	TO MH	AREA Phase 1B (Ha)	UNIT TYPES				AREA EXTERNAL (Ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		PEAK FLOW (L/s)	AREA (Ha)		FLOW (L/s)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY									
					SF	SD	TH	APT		IND	CUM			IND	CUM		IND	CUM					IND	CUM					L/s	(%)	L/s	(%)
Phase 1B																																
Hemlock Road	201A	MH201A	MH202A	0.31						0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	0.31	0.31	0.09	0.00	0.09	50.02	87.06	250	0.65	0.987	49.93	99.83%
Future Street No. 6	EX202A	BULK202AN	MH202A						2.08	358.5	358.5	4.00	5.81		0.00		0.00		0.00	0.00	2.08	2.08	0.58	0.00	6.39	31.02	21.00	250	0.25	0.612	24.63	79.40%
Hemlock Road	202A	MH202A	MH203A	0.21						0.0	358.5	4.00	5.81		0.00		0.00		0.00	0.00	0.21	2.60	0.73	0.00	6.54	75.98	86.00	250	1.50	1.500	69.44	91.40%
Future Street No. 5	EX203A	BULK203AN	MH203A						1.40	160.5	160.5	4.00	2.60		0.00		0.00		0.00	0.00	1.40	1.40	0.39	0.00	2.99	83.23	21.00	250	1.80	1.643	80.24	96.40%
Hemlock Road	203A, EXPARK2	MH203A	MH204A	0.20					0.44	0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	0.64	0.64	0.18	0.00	0.18	82.07	86.00	250	1.75	1.620	81.89	99.78%
rue Moses Tennisco Street	EX204A	BULK204AN	MH204A						1.39	153.5	153.5	4.00	2.49		0.00		0.00		0.00	0.00	1.39	1.39	0.39	0.00	2.88	83.23	21.00	250	1.80	1.643	80.36	96.54%
Hemlock Road	204A	MH204A	MH205A	0.21						0.0	153.5	4.00	2.49		0.00		0.00		0.00	0.00	0.21	1.60	0.45	0.00	2.94	67.96	90.00	250	1.20	1.341	65.02	95.68%
rue Michael Stoqua Street	EX205A	BULK205AN	MH205A						1.38	241.5	241.5	4.00	3.91		0.00		0.00		0.00	0.00	1.38	1.38	0.39	0.00	4.30	67.96	21.00	250	1.20	1.341	63.66	93.67%
Hemlock Road	205A	MH205A	MH206A	0.25						0.0	395.0	4.00	6.40		0.00		0.00		0.00	0.00	0.25	3.23	0.90	0.00	7.30	31.02	112.00	250	0.25	0.612	23.71	76.45%
rue Bareille-Snow Street	EX206A-B	BULK206AN	MH206A						9.61	1755.0	1755.0	3.63	25.80		0.00		0.00		0.00	0.00	9.61	9.61	2.69	0.00	28.49	87.74	21.00	250	2.00	1.731	59.24	67.52%
Hemlock Road	206A	MH206A	MH207A	0.20						0.0	2150.0	3.56	31.02		0.00		0.00		0.00	0.00	0.20	13.04	3.65	0.00	34.67	55.26	89.33	300	0.30	0.757	20.59	37.26%
Block 20	PARK1	MH207AN	MH207A	0.32						0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	0.32	0.32	0.09	0.00	0.09	39.24	14.00	250	0.40	0.774	39.15	99.77%
Hemlock Road	PARK1, 207A	MH207A	BULK176AE	0.12						0.0	2150.0	3.56	31.02		0.00		0.00		0.00	0.00	0.12	13.48	3.77	0.00	34.79	65.38	33.16	300	0.42	0.896	30.59	46.79%
Phase 1A																																
Hemlock Road		BULK176AE	MH176A							0.0	2150.0	3.56	31.02		0.00		0.00		0.00	0.00	0.00	13.48	3.77	0.00	34.79	65.38	21.97	300	0.42	0.896	30.59	46.79%
Phase 1B																																
chemin Wanaki Road	200A, COM1	MH200A	MH214A	0.25						0.0	0.0	4.00	0.00		0.00	0.90	0.90		0.00	0.78	1.15	1.15	0.32	0.00	1.10	73.41	98.28	250	1.40	1.449	72.30	98.50%
chemin Wanaki Road	214A, COM2	MH214A	BULK153AN	0.16						0.0	0.0	4.00	0.00		0.00	0.65	1.55		0.00	1.35	0.81	1.96	0.55	0.00	1.89	51.91	44.22	250	0.70	1.024	50.01	96.35%
Phase 1B																																
chemin Wanaki Road	143B	BULK143AE	MH143A	0.31						104.0	104.0	4.00	1.69		0.00		0.00		0.00	0.00	0.31	0.31	0.09	0.00	1.77	43.87	21.50	250	0.50	0.866	42.10	95.96%
chemin Wanaki Road	143A	MH143A	MH144A	0.27						0.0	104.0	4.00	1.69		0.00		0.00		0.00	0.00	0.27	0.58	0.16	0.00	1.85	87.74	47.73	250	2.00	1.731	85.89	97.89%
chemin Wanaki Road	144A, 144B	MH144A	MH145A	0.72						0.0	104.0	4.00	1.69		0.00		0.00		0.00	0.00	0.72	1.30	0.36	0.00	2.05	87.74	40.57	250	2.00	1.731	85.69	97.66%
chemin Wanaki Road	145A, 145B, 145C	MH145A	MH146A	2.77						835.6	939.6	3.82	14.53		0.00		0.00		0.00	0.00	2.77	4.07	1.14	0.00	15.67	107.45	53.01	250	3.00	2.121	91.79	85.42%
chemin Wanaki Road	146A	MH146A	MH147A	0.14						0.0	939.6	3.82	14.53		0.00		0.00		0.00	0.00	0.14	4.21	1.18	0.00	15.71	43.54	37.48	250	1.00	1.224	27.83	63.92%
chemin Wanaki Road	PARK2	BLK147AE	MH147A	0.55						0.0	0.0	4.00	0.00		0.00		0.00		0.00	0.00	0.55	0.55	0.15	0.00	0.15	39.24	17.66	250	0.40	0.774	39.08	99.61%
chemin Wanaki Road	147C	BLK147AW	MH147A	0.10						33.6	33.6	4.00	0.54		0.00		0.00		0.00	0.00	0.10	0.10	0.03	0.00	0.57	43.87	17.33	250	0.50	0.866	43.30	98.70%
chemin Wanaki Road	147A	MH147A	MH170A	0.03						0.0	973.2	3.81	15.01		0.00		0.00		0.00	0.00	0.03	4.89	1.37	0.00	16.38	31.02	10.23	250	0.25	0.612	14.64	47.19%
chemin Wanaki Road	147B	MH107A	MH147C	0.16						0.0	973.2	3.81	15.01		0.00		0.00		0.00	0.00	0.16	5.05	1.41	0.00	16.42	31.02	39.00	250	0.25	0.612	14.59	47.05%
chemin Wanaki Road		MH147C	BLK148AW							0.0	973.2	3.81	15.01		0.00		0.00		0.00	0.00	0.00	5.05	1.41	0.00	16.42	31.02	11.77	250	0.25	0.612	14.59	47.05%
Phase 1B																																
Block 9	154A	MH158A	MH217A	0.19						0.0	973.2	3.81	15.01		2.62		3.83		0.00	5.60	0.19	12.94	3.62	0.00	24.23	53.37	171.95	250	0.74	1.053	29.13	54.59%
croissant Squadron Crescent	215Aa-b	MH215A	MH216A	0.79	3	4				117.8	117.8	4.00	1.91		0.00		0.00		0.00	0.00	0.79	0.79	0.22	0.00	2.13	50.02	80.00	250	0.65	0.987	47.89	95.74%
croissant Squadron Crescent	216Aa-b	MH216A	MH217A	0.67	2	6				94.5	212.3	4.00	3.44		0.00		0.00															



Attachment 4

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

Design Parameters:							Notes: 1. Mannings coefficient (n) = 0.013 2. Demand (per capita): 350 L/day 300 L/day 3. Infiltration allowance: 0.28 L/s/Ha 4. Residential Peaking Factor: Harmon Formula = 1+(14/(4+P^0.5)) where P = population in thousands				Designed: WY		Revision		Date	
Residential		ICI Areas				Peak Factor					1.	City submission No. 1		7/8/2016		
F	3.4	p/p/u	INST	50,000	L/Ha/day						2.	City submission No. 2		11/4/2016		
SD	2.7	p/p/u	COM	50,000	L/Ha/day	1.5					3.	City submission No. 3		1/25/2017		
PT	1.8	p/p/u	IND	35,000	L/Ha/day	1.5										
ner	60	p/p/Ha		17000	L/Ha/day	MOE Chart										

Manning's $n=0.013$



45.65 112.0 375 0.29

LICENSED PROFESSIONAL ENGINEER

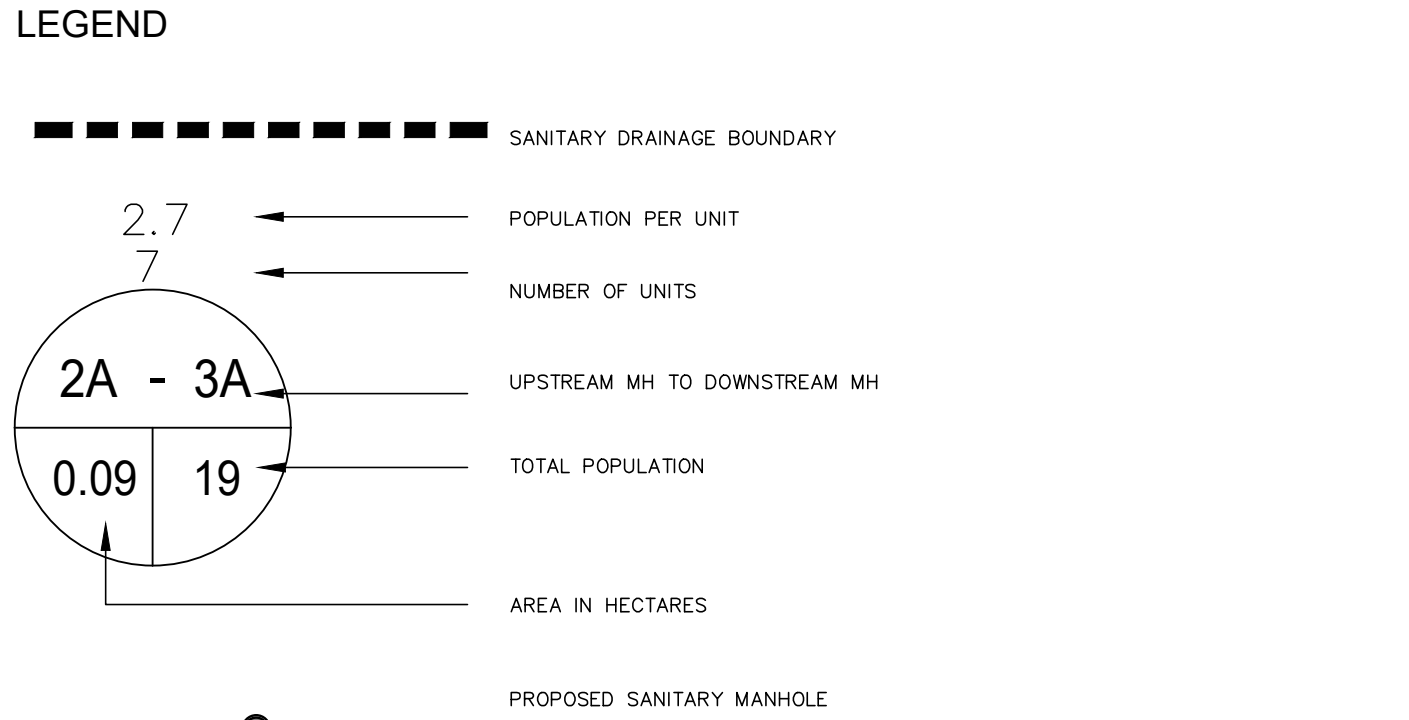
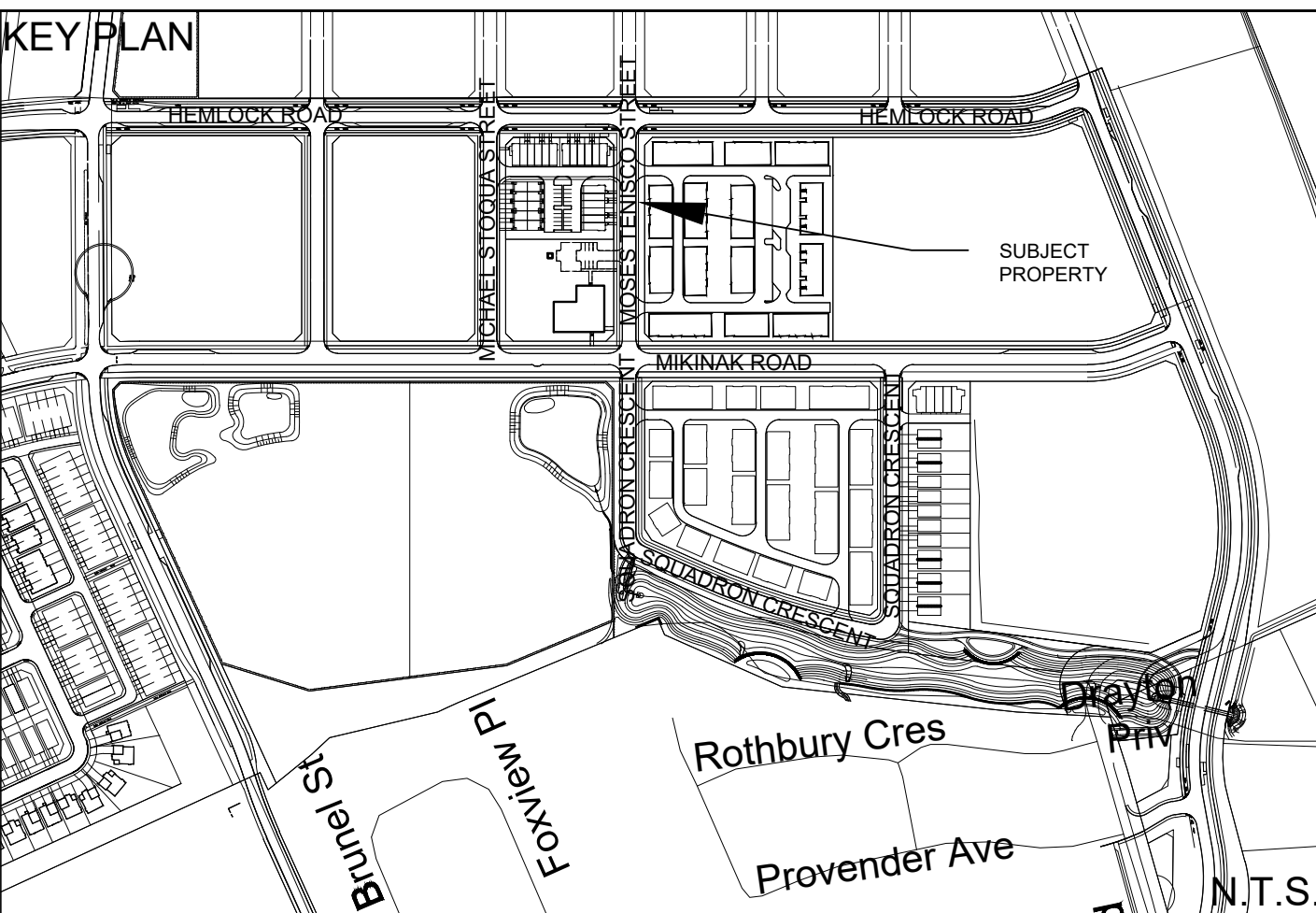
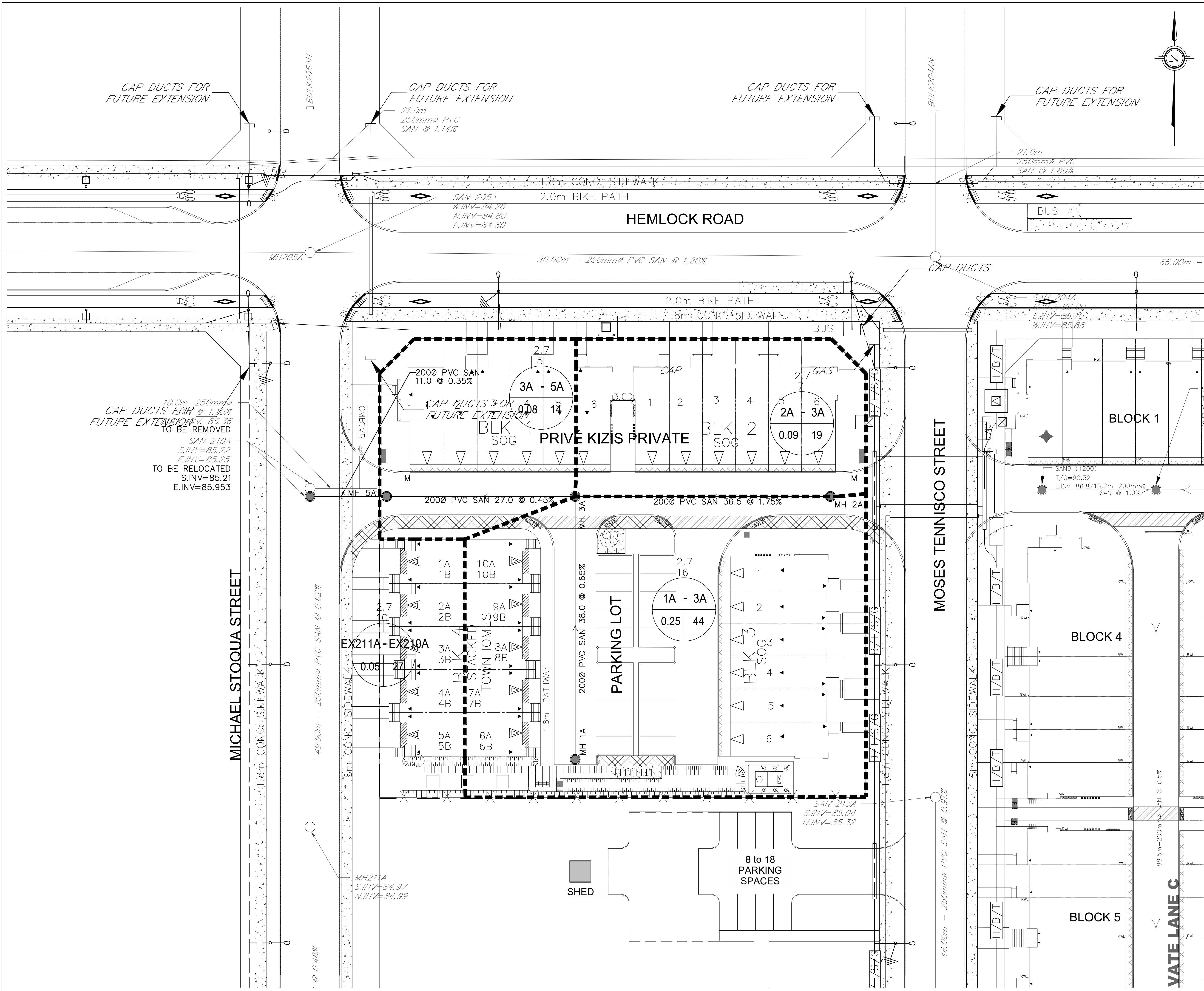
S. L. Merrick

S. L. MERRICK
100786523

2020-10-06

PROVINCE OF ONTARIO

JOD# 17-948



NOT FOR CONSTRUCTION

12	A.W.T.	20-10-06	ISSUED FOR SITE PLAN AMENDMENT-SUBMISSION 6
11	G.G.G.	20-06-23	UPDATED HGL INFORMATION
10	S.L.M.	20-05-28	ISSUED FOR SITE PLAN AMENDMENT
9	S.L.M.	18-07-19	ISSUED FOR MUNICIPAL APPROVAL

No.	BY	DATE	DESCRIPTION
TOPOGRAPHIC INFORMATION			
TOPOGRAPHIC INFORMATION PROVIDED BY IBI GROUP			
PROJ. NO. 38298			
DATED NOVEMBER 13, 2017			
SITE SERVICING AND STORMWATER MANAGEMENT STUDY			
SERVICING AND STORMWATER MANAGEMENT			
RECOMMENDATIONS PROVIDED BY DSEL			
PROJ. NO. 17-948			
DATED OCTOBER 2020			
BENCH MARK			
ELEVATIONS ARE GEODETIC, REFERRED TO CITY OF OTTAWA VERTICAL BENCHMARK NO. 396			
ELEV= 95.06 METERS			
SITE PLAN INFORMATION		SITE PLAN PROVIDED BY KORSIAK URBAN PLANNING	
		DATED SEPTEMBER 25, 2020	
GEOTECHNICAL STUDY		GEOTECHNICAL	
		RECOMMENDATIONS PROVIDED BY PATTERSON GROUP INC.	
		PROJECT NO. PCS345-1	
		REVISION 1, DATED SEPTEMBER 10, 2020	

MATTAMY HOMES

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PHASE 1B

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Ottawa, Ontario, K1P 1J1
Tel. (613) 580-2400
www.Ottawa.ca

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SANITARY DRAINAGE PLAN

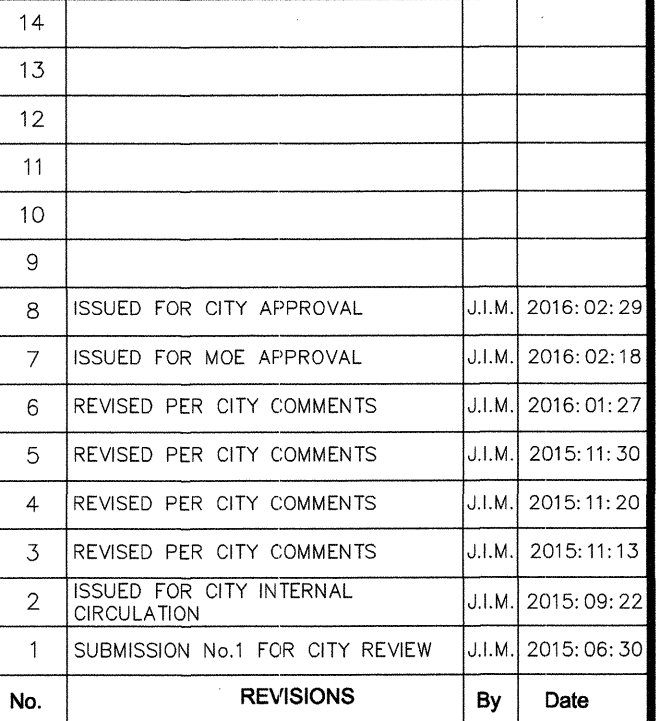
DRAWN BY:	A.W.T.	CHECKED BY:	S.L.M.	PROJECT No.	
DESIGNED BY:	S.L.M.	CHECKED BY:	A.D.F.		17-948
SCALE:	1:250			SHEET No.	10

Attachment 7

Signed Will Curry
 Date March 8 2016
 Plan Number 17063

Diagram illustrating the components of a catchment area:

- AREA NUMBER (S168)
- RUNOFF COEFFICIENT (2.01)
- AREA IN HECTARES (0.80)



The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, it says "J. I. MOFFATT" and "16/02/28". A north arrow is located to the right of the seal, pointing towards the top right.

Scale 1 : 2000

Design J.I.M./M.B.	Date JUNE 2015
Drawn D.D. / M.M.	Checked J.I.M.
Project No. 38298	Drawing No. 500

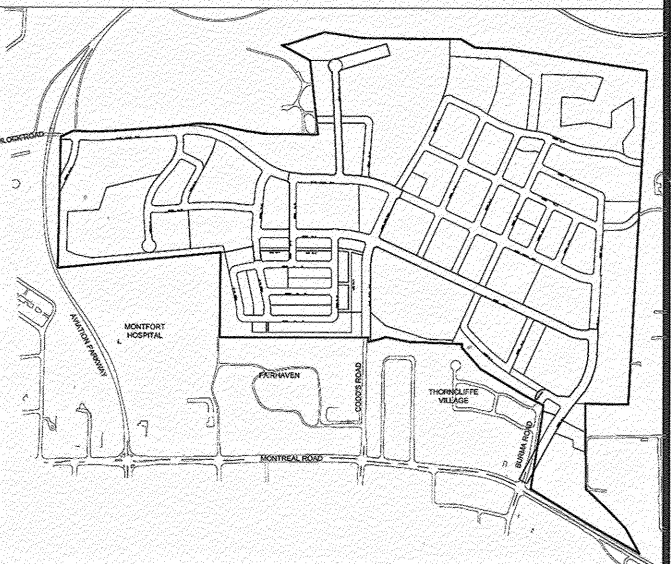
#17063

Attachment 8



REVIEWED BY
DEVELOPMENT REVIEW SERVICES BRANCH
Signed *Will Cunniff*
Date *June 19* 2017
Plan Number *17063*

LEGEND:
— AREA NUMBER
— RUNOFF COEFFICIENT
— AREA IN HECTARES
← POTENTIAL DRAINAGE DIRECTION

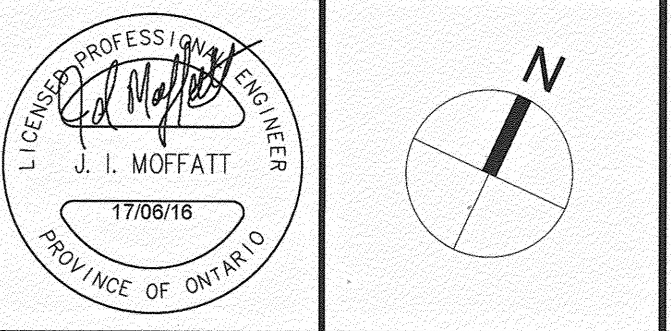


14		
13		
12		
11		
10		
9		
8		
7	REVISED PER CITY COMMENTS	J.I.M. 2017:06:16
6	REVISED PER MOECC COMMENTS	J.I.M. 2017:06:07
5	ISSUED FOR TENDER	J.I.M. 2017:03:23
4	SUBMISSION FOR MOECC APPROVAL	J.I.M. 2017:02:16
3	SUBMISSION No.3 FOR CITY REVIEW	J.I.M. 2017:01:25
2	SUBMISSION No.2 FOR CITY REVIEW	J.I.M. 2016:11:04
1	SUBMISSION No.1 FOR CITY REVIEW	J.I.M. 2016:07:08
No.	REVISIONS	By Date

CANADA LANDS COMPANY
SOCIÉTÉ IMMOBILIÈRE DU CANADA
30 Metcalfe Street Suite 601
Ottawa, On K1P 5L4
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ibigroup.com

Project Title
**WATERIDGE VILLAGE
AT ROCKCLIFFE
PHASE 1B**



Drawing Title
**STORM DRAINAGE
AREA PLAN**

Scale
1 : 2000

Design
J.I.M.
Date
MAY 2016

Drawn
M.M.
Checked
J.I.M.

Project No.
38298
Drawing No.
500A



STORM SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

J:\38298-CFBRockville\5.7 Calculations\5.7.1 Sewers & Grading\Submission No. 3 (2016-01-27)\38298-CCS_slorm(2016-01-27) - WY



STORM SEWER DESIGN SHEET

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J:\38298-CFBRockville\5.7 Calculations\5.7.1 Sewers & Grading\Submission No. 3 (2016-01-27)\38298-CCS_storm(2016-01-27) - WY



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Attachment 9

STORM SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Canada Lands Company

LOCATION				RATIONAL DESIGN FLOW																				SEWER DATA										
STREET	AREA ID	FROM	TO	C=0.20	C=0.30	C=0.50	C=0.45	C=0.56	C=0.67	C=0.73	C=0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)		
																											DIA	W	H					
Temp Ditch	---	DICB 2	PIPE141																				3,270.00	3,270.00	3,402.95	18.95	1200			0.70	2.915	132.95	3.91%	
Codd's Road	S141A,B, EX141	MH141	MH142							0.31	0.96	2.76	46.08	19.33	0.63	19.96	71.75	83.97	122.53	3,306.18				8,884.00	12,190.18	14,807.43	76.59	3000			0.10	2.029	2617.25	17.68%
Park Block 141	P141	CBMH142W	MH142		0.86							0.72	0.72	10.00	0.22	10.22	104.19	122.14	178.56	74.73				74.73	129.34	15.00	375			0.50	1.134	54.61	42.22%	
Codd's Road	S142	MH142	MH176							0.18		0.37	47.16	19.96	0.65	20.61	70.34	82.31	120.10	3,317.10				8,884.00	12,201.10	14,807.43	79.32	3000			0.10	2.029	2606.33	17.60%
Future Hemlock Rd E	S176C, EX176A	BULK176E	MH176							0.05	8.78	19.63	19.63	16.59	0.27	16.86	78.75	92.20	134.60	1,545.70				1,545.70	2,156.55	24.06	1350			0.15	1.460	610.85	28.33%	
Future Codd's Road N	EX176B	BULK176N	MH176								1.78	3.96	3.96	10.78	0.15	10.93	100.25	117.49	171.73	396.84				396.84	572.93	18.21	600			0.80	1.963	176.09	30.73%	
Hemlock Road	S176D,E	MH176	BEND177							0.22		0.45	71.19	20.61	0.31	20.92	68.93	80.66	117.68	4,907.69				8,884.00	13,791.69	18,135.33	46.25	3000			0.15	2.485	4343.64	23.95%
Hemlock Road	---	BEND177	MH178									0.00	71.19	20.92	0.31	21.23	68.29	79.90	116.57	4,861.72				8,884.00	13,745.72	18,135.33	45.59	3000			0.15	2.485	4389.61	24.20%
Hemlock Road	---	MH178	BEND179									0.00	71.19	21.23	0.28	21.51	67.66	79.17	115.49	4,817.33				8,884.00	13,701.33	18,135.33	42.27	3000			0.15	2.485	4434.00	24.45%
Hemlock Road	---	BEND179	MH180									0.00	71.19	21.51	0.21	21.72	67.10	78.51	114.52	4,776.97				8,884.00	13,660.97	18,135.33	30.68	3000			0.15	2.485	4474.36	24.67%
Future Street No. 19	S180, EX180	MH180	MH190							0.16	0.54	1.53	99.46	21.72	0.43	22.14	66.69	78.03	113.82	6,633.26				8,884.00	15,517.26	18,135.33	63.40	3000			0.15	2.485	2618.06	14.44%
	EX190B	MH190	MH191								1.08	2.40	101.86	22.14	0.76	22.90	65.87	77.07	112.41	6,709.96				8,884.00	15,593.96	18,135.33	112.71	3000			0.15	2.485	2541.37	14.01%
Future Street No. 18	EX190A	BULK191E	MH191								2.01	4.47	4.47	12.26	0.10	12.36	93.60	109.67	160.24	418.41				418.41	640.56	13.71	600			1.00	2.195	222.15	34.68%	
	EX191B-C	MH191	MH192		0.82						0.90	2.69	109.02	22.90	0.77	23.67	64.47	75.42	110.00	7,028.34				8,884.00	15,912.34	18,135.33	115.55	3000			0.15	2.485	2222.98	12.26%
	EX192	MH192	MH193								0.47	1.05	110.06	23.67	0.27	23.94	63.10	73.81	107.64	6,944.82				8,884.00	15,828.82	18,730.09	41.34	3000			0.16	2.567	2901.27	15.49%
Future Park Block 36	P193	MH193	MH 194		1.94							1.62	111.68	23.94	0.64	24.59	62.64	73.27	106.84	6,995.54				8,884.00	15,879.54	20,940.87	110.85	3000			0.20	2.870	5061.33	24.17%
Temp Ditch	---	DICB 3	PIPE193																				1,560.00	1,560.00	1,956.07	2.67	975			0.70	2.538	396.07	20.25%	
	---	MH 194	OUTLET									0.00	111.68	24.59	0.02	24.60	61.56	72.01	105.00	6,875.66				8,884.00	15,759.66	20,940.87	3.00	3000			0.20	2.870	5181.21	24.74%
From MSS Document	---	BULK195E	OUTLET									34.91	34.91	22.83	0.08	22.91	64.59	75.57	110.21	2,255.01					2,255.01	4,754.27	10.00	1650			0.25	2.154	2499.26	52.57%
chemin WANAKI ROAD	S152, EX152A-B	MH152	MH151							0.23	0.92	2.51	2.51	10.00	1.10	11.10	104.19	122.14	178.56	261.82					261.82	438.47	78.40	675			0.25	1.187	176.65	40.29%
chemin WANAKI ROAD	S151, EX151	MH151	MH150							0.02	0.41	0.95	3.47	11.10	0.58	11.68	98.72	115.69	169.09	342.08					342.08	438.47	41.34	675			0.25	1.187	96.39	21.98%
chemin WANAKI ROAD	S150, EX150	MH150	MH149							0.18	0.96	2.50	5.97	11.68	0.44	12.12	96.08	112.59	164.52	573.17					573.17	748.75	35.95	825			0.25	1.357	175.58	23.45%
chemin WANAKI ROAD	S149	MH149	MH148							0.15		0.30	6.27	12.12	0.55	12.68	94.17	110.34	161.23	590.47					590.47	748.75	45.17	825			0.25	1.357	158.28	21.14%
Burma Road	S148	MH148	MH157							0.12		0.24	6.21	12.12	0.63	12.76	94.17	110.34	161.23	584.74					584.74	865.46	50.00	900			0.21	1.318	280.72	32.44%
Burma Road	---	MH157	MH154									0.00	6.27	12.68	0.85	13.53	91.90	107.66	157.30	576.20					576.20	844.60	65.50	900			0.20	1.286	268.41	31.78%
Block 71	EXSC154	BULK154N	MH154								2.62	5.83	5.83	12.00	0.20	12.20	94.70	110.96	162.13	551.78					551.78	687.10	17.90	750			0.35	1.507	135.32	19.69%
SW Swale	---	BULK SWL	EX MH																				1704.00	1,704.00	1,707.41	80.70	825	1.25			1.30	3.094	3.41	0.20%
Definitions: Q = 2.78CiA, where: Q = Peak Flow in Litres per Second (L/s) A = Area in Hectares (Ha) i = Rainfall intensity in millimeters per hour (mm/hr) [i = 998.071 / (TC+6.053)^0.814] 5 YEAR [i = 1174.184 / (TC+6.014)^0.816] 10 YEAR [i = 1735.688 / (TC+6.014)^0.820] 100 YEAR				Notes: 1. Mannings coefficient (n) = 0.013								Designed: MB, WY				No.		Revision					Date											
																1.	Submission No. 1 for City Review					2015-06-30												
																2.	Submission No. 2 for City Review					2015-11-30												
																3.	Submission No. 3 for City Review					2016-01-27												
												Dwg. Reference: 38298-500				File Reference: 38298.5.7.1		Date: 2015-06-30					Sheet No: 3 of 3											



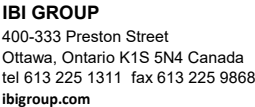
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Attachment 10

STORM SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Name of Client/Developer

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW										SEWER DATA												
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.45	C= 0.50	C= 0.56	C= 0.60	C= 0.65	C= 0.70	C= 0.73	C= 0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)		
																													DIA	W	H			(L/s)	(%)	
Phase 1B																																				
Hemlock Road	S201A-B, EX201	MH201	MH202								0.31		0.56	1.85	1.85	10.00	1.17	11.17	104.19	122.14	178.56	192.62				192.62	210.32	90.18	450				0.50	1.281	17.70	8.41%
Future Street No. 6	EX202A	BULK202N	MH202										0.90	2.00	2.00	12.23	0.27	12.50	93.72	109.82	160.45	187.60				187.60	286.47	16.00	600				0.20	0.982	98.87	34.51%
Hemlock Road	S202A, EX202B-C	MH202	MH203								0.10		0.55	1.42	5.27	12.50	0.53	13.03	92.61	108.50	158.52	487.86				487.86	784.52	86.00	600				1.50	2.688	296.66	37.81%
Future Street No. 5	S203B, EX203	BULK203N	203								0.09		0.73	1.80	1.80	10.88	0.12	11.00	99.76	116.92	170.90	179.44				179.44	351.93	16.00	450				1.40	2.144	172.49	49.01%
Hemlock Road	S203A, EXP203	MH203	MH204		0.44						0.16			0.68	7.75	13.03	0.49	13.53	90.49	106.01	154.87	700.89				700.89	847.38	86.00	600				1.75	2.903	146.49	17.29%
rue Moses Tennisco Street	S204B, EX204A	BULK204N	MH204								0.08		0.72	1.76	1.76	10.89	0.11	11.00	99.72	116.87	170.81	175.20				175.20	399.05	16.00	450				1.80	2.431	223.85	56.10%
Hemlock Road	S204A, EX204B	MH204	MH205								0.14		0.47	1.32	10.82	13.53	0.54	14.07	88.63	103.82	151.66	958.99				958.99	1,272.26	90.00	750				1.20	2.790	313.27	24.62%
rue Michael Stogua Street	S205A, EX205A	BULK205N	MH205								0.08		0.81	1.96	1.96	11.15	0.15	11.30	98.49	115.42	168.69	192.75				192.75	297.43	16.01	450				1.00	1.812	104.68	35.20%
Hemlock Road	S205B-C, EX205B	MH205	MH206								0.17		0.63	1.73	14.51	14.07	1.20	15.26	86.70	101.55	148.32	1,257.92				1,257.92	1,818.95	112.01	1200				0.20	1.558	561.03	30.84%
Temp Ditch	FUTURE PHASE	DI 10	BULK206N		7.68									6.41	6.41	59.66	0.16	59.82	33.08	38.61	56.13	211.89				211.89	297.43	17.03	450				1.00	1.812	85.54	28.76%
rue Bareille-Snow Street	S206A, EX206A	BULK206N	MH206								0.06		1.02	2.39	2.39	10.85	0.15	11.00	99.91	117.09	171.14	238.30				238.30	448.66	17.50	525				1.00	2.008	210.35	46.89%
Hemlock Road	S206B, EX206B	MH206	MH207								0.03		0.46	1.08	17.98	15.26	0.78	16.04	82.71	96.86	141.44	1,486.80				1,486.80	2,227.75	89.33	1200				0.30	1.908	740.96	33.26%
Block 20	P207	CBMH207N	MH207		0.32									0.27	0.27	10.00	0.27	10.27	104.19	122.14	178.56	27.81				27.81	63.80	14.00	300				0.40	0.874	36.00	56.42%
Hemlock Road	S207	MH207	BULK176E								0.22			0.43	18.67	16.04	0.37	16.42	80.33	94.05	137.32	1,499.75				1,499.75	2,156.55	32.62	1350				0.15	1.460	656.80	30.46%
Phase 1A																																				
Ex. Hemlock Road	S176C	BULK176E	MH176								0.02			0.04	18.71	16.42	0.27	16.69	79.24	92.78	135.45	1,482.57				1,482.57	2,156.55	24.06	1350				0.15	1.460	673.98	31.25%
Phase 1B																																				
Codd's Road	S230, LOT230A-B	230	231								0.16		0.70	1.87	1.87	10.00	0.63	10.63	104.19	122.14	178.56	194.65				194.65	364.28	84.30	450				1.50	2.219	169.63	46.57%
Codd's Road	S231, LOT231	231	BULK176N								0.12		0.30	0.90	2.77	10.63	0.36	11.00	100.96	118.34	172.97	279.55				279.55	549.49	53.76	525				1.50	2.459	269.94	49.12%
Phase 1A																																				
Ex. Codd's Road	---	BULK176N	MH176											0.00	2.95	11.77	0.29	12.06	95.69	112.12	163.84	281.96				281.96	339.63	18.21	525				1.50	0.919	57.67	16.98%
Phase 1B																																				
chemin Wanaki Road	S200, LOT200	MH200	MH214								0.20		0.91	2.41	2.41	10.00	0.78	10.78	104.19	122.14	178.56	251.42				251.42	351.93	99.75	450				1.40	2.144	100.51	28.56%
chemin Wanaki Road	S214, LOT214	MH214	BULK152N								0.19		0.84	2.24	4.65	10.78	0.42	11.20	100.27	117.52	171.77	466.34				466.34	535.93	46.51	600				0.70	1.836	69.59	12.99%
Phase 1B																																				
chemin Wanaki Road	EX143	BULK143E	MH143										0.33	0.73	0.73	10.00	0.29	10.29	104.19	122.14	178.56	76.47				76.47	129.34	20.00	375				0.50	1.134	52.87	40.88%
chemin Wanaki Road		MH143	MH144											0.00	0.73	10.29	0.37	10.66	102.67	120.34	175.92	75.35				75.35	258.68	50.50	375				2.00	2.269	183.33	70.87%
chemin Wanaki Road	S144, EX144	MH144	MH145		0.55						0.18			0.81	1.54	10.66	0.30	10.97	100.81	118.15	172.70	155.54				155.54	258.68	41.15	375				2.00	2.269	103.14	39.87%
chemin Wanaki Road	S145, EX145	MH145	MH146								0.15		2.74	6.39	7.93	10.97	0.28	11.24	99.35	116.44	170.18	787.69				787.69	1,324.21	48.01	750				1.30	2.904	536.53	40.52%
chemin Wanaki Road		MH146	MH147											0.00	7.93	11.24	0.25	11.49	98.06	114.92	167.95	777.46				777.46	2,296.77	38.53	1050				0.65	2.570	1519.32	66.15%
chemin Wanaki Road	S147C	BULK147E																																		



STORM SEWER DESIGN SHEET

Former CFB Rockcliffe
City of Ottawa
Name of Client/Developer

J:\38298-CFBRockville\5.7 Calculations\5.7.1 Sewers & Grading\Phase 1B\38298-1B-CCS storm 2017-01-20

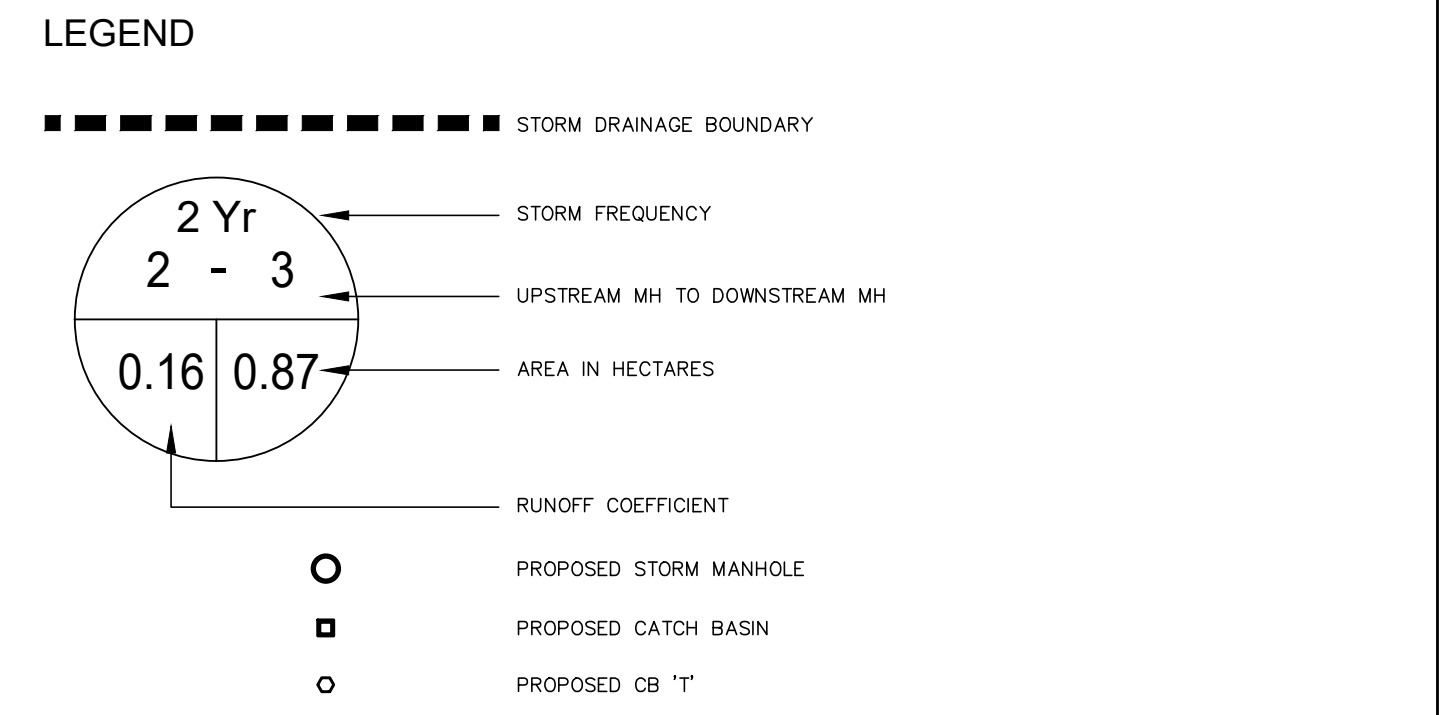
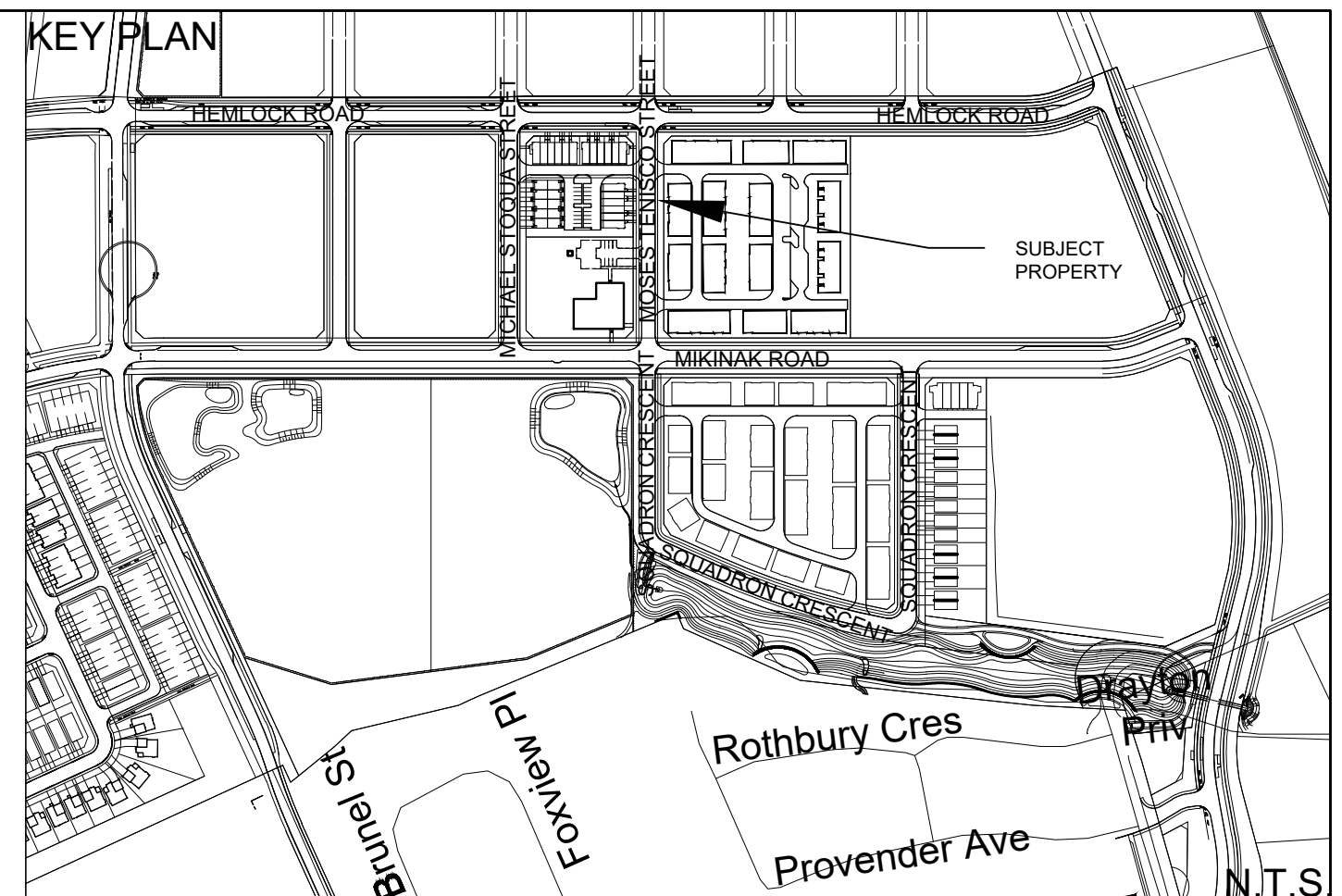
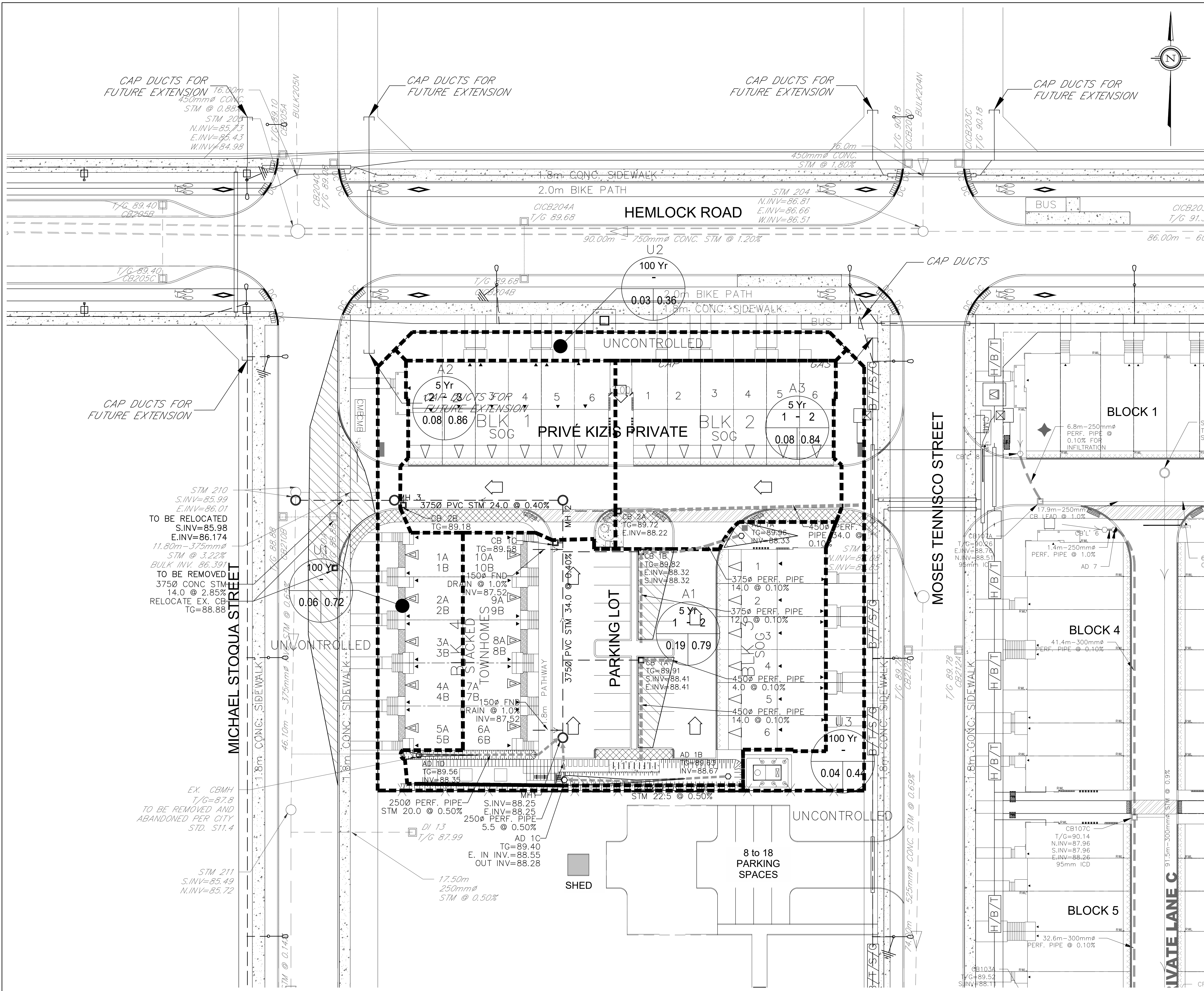
STORM SEWER CALCULATION SHEET (RATIONAL METHOD)



Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

LOCATION			AREA (Ha)																FLOW						SEWER DATA										
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO		
Location	From Node	To Node	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	AREA (Ha)	R	Indiv. 2.78 AC	Accum. 2.78 AC	Conc. (min)	2 Year (mm/h)	5 Year (mm/h)	10 Year (mm/h)	100 Year (mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min)	Q/Q full		
PARKING LOT																																			
	1	2			0.00	0.00	0.08	0.84	0.19	0.19																									
To PRIVÉ KIZIS PRIVATE, Pipe 2 - 3					0.00					0.60								0.00	0.00	10.00	76.81	104.19	122.14	178.56	63	375	375	PVC	0.40	34.0	110.89	1.00	0.56	0.57	
PRIVÉ KIZIS PRIVATE																																			
Contribution From PARKING LOT, Pipe 1 - 2					0.00					0.60								0.00	0.00	10.56															
	2	3			0.00	0.00	0.08	0.86	0.19	0.80							0.00	0.00	10.56	74.70	101.30	118.74	173.56	81	375	375	PVC	0.40	24.0	110.89	1.00	0.40	0.73		
	3	210			0.00	0.00			0.00	0.80							0.00	0.00	10.96	73.30	99.37	116.46	170.21	79	375	375	PVC	2.85	14.0	295.99	2.68	0.09	0.27		
To RUE MICHAEL STOQUA STREET, Pipe 210-211					0.00					0.80								0.00	0.00	10.96															
BLOCK 22 UNATTENUATED AREA U1																																			
U1					0.00	0.00			0.00	0.00					0.06	0.72	0.12	0.12	10.00	76.81	104.19	122.14	178.56	21											
To RUE MICHAEL STOQUA STREET, Pipe 210-211						0.00				0.00								0.12	0.12	10.00															
RUE MICHAEL STOQUA STREET																																			
Contribution From BLOCK 22 UNATTENUATED AREA U1					0.00					0.00								0.12	0.00	10.00															
Contribution From PRIVÉ KIZIS PRIVATE, Pipe 3 - 210					0.00					0.80								0.00	0.00	10.96															
S210	210	211			0.00	0.00	0.20	0.70	0.39	1.18					0.00	0.00	0.00	0.12	10.96	73.30	99.37	116.46	170.21	138	375	375	PVC	0.65	44.6	141.36	1.28	0.58	0.98		
LOT 211					0.00	0.00	0.23	0.80	0.51	0.51					0.00	0.00	0.00	0.12	11.54	71.35	96.69	113.31	165.58	69											
S211	211	166N			0.00	0.00	0.17	0.70	0.33	2.03					0.00	0.00	0.00	0.12	11.54	71.35	96.69	113.31	165.58	216	600	600	CONC	0.15	55.7	237.81	0.84	1.10	0.91		
	166N	166			0.00	0.00			0.00	2.03					0.00	0.00	0.00	0.12	12.65	67.94	92.02	107.81	157.51	205	600	600	CONC	0.15	16.1	237.81	0.84	0.32	0.86		
To RUE MIKINAK ROAD, Pipe 166-167						0.00				2.03								0.12	0.00	12.97															
BLOCK 22 UNATTENUATED AREA U3																																			
U3					0.00	0.00			0.00	0.00					0.04	0.44	0.05	0.05	0.00	76.81	104.19	122.14	178.56	9											
To RUE MOSES TENNISCO STREET, Pipe 212-213						0.00				0.00								0.05	0.00																
RUE MOSES TENNISCO STREET																																			
Contribution From BLOCK 22 UNATTENUATED AREA U3					0.00					0.00								0.05	0.00																
S210	213	212			0.00	0.00	0.15	0.70	0.29	0.29					0.00	0.00	0.00	0.00	10.00	76.81	104.19	122.14	178.56	30	525	525	CONC	0.65	63.8	346.73	1.60	0.66	0.09		
From Block 24 - DSEL Job#17-948							1.42	0.81	3.20	3.49					0.00	0.00	0.00	0.00	10.00	76.81	104.19	122.14	178.56	364											
LOT 213					0.00	0.00	0.23	0.80	0.51	0.51					0.00	0.00	0.00	0.00	10.66	74.35	100.81	118.16	172.71	52											
S211	212	165N			0.00	0.00	0.21	0.70	0.41	4.70					0.00	0.00	0.00	0.00	10.66	74.35	100.81	118.16	172.71	474	750	750	CONC	0.20	55.7	497.87	1.13	0.82	0.95		
	165N	165			0.00	0.00			0.00	4.70					0.00	0.00	0.00	0.00	11.49	71.53	96.94	113.60	166.01	456	750	750	CONC	0.20	16.1	497.87	1.13	0.24	0.92		
To RUE MIKINAK ROAD, Pipe 165-166						0.00				4.70								0.00	0.00	11.73															
FLOW FROM SQUADRON CRESCENT																																			
From Block 15 - DSEL Job#17-946					0.00	0.00			0.00	1.63					0.00	0.00	0.00	0.00	51.05	27.62	37.09	43.31	62.99	60											
SQUADRON CRES.					0.00	0.00			0.00	19.70					0.00	0.00	0.00	0.00	17.43	56.57	76.45	89.49	130.63	1506											
To RUE MIKINAK ROAD, Pipe 165-166						0.00				21.33								0.00	0.00	17.43															
RUE MIKINAK ROAD																																			
Contribution From FLOW FROM SQUADRON CRESCENT					0.00					21.33					0.00			0.00	17.43																
Contribution From MOSES TENNISCO, Pipe 165N-165					0.00					4.70					0.00			0.00	11.73																
FIXED FLOW PER PHASE 1A																								8884.00											
EX165B	165S	165			0.00	0.00			0.00	8.43					0.00	0.00	0.00	0.00	17.19	57.04	77.09	90.25	131.74	650											
S165	165	166			0.00	0.00	0.16	0.73	0.32	34.79					0.00	0.00	0.00	0.00	17.43	56.57	76.45	89.49	130.63	11544	2700	2700	CONC	0.25	89.6	16945.20	2.96	0.50	0.68		
Contribution From MICHAEL STOQUA, Pipe 166N-166					0.00					2.03								0.12	0.00	12.97															
S166					0.00	0.00	0.28	0.73	0.57	0.57					0.00	0.00	0.00	0.00	13.61	65.26	88.33	103.47	151.14	60											
EX165B	166	167			0.00	0.00	0.61	0.80	1.36	38.74					0.00	0.00	0.00	0.12	17.93	55.61	75.14	87.95	118.09	1200	2700	2700	CONC	0.25	112.0	16945.20	2.96	0.63	0.70		
RUE HEMLOCK ROAD																																			
U2					0.00	0.00			0.00	0.00					0.03	0.36	0.03	0.03	10.00	76.81	104.19	122.14	178.56	60											
	204-205	211			0.00	0.00			0.00	10.82					0.00	0.00	0.00	0.03	13.53	65.47	88.63	105.82	151.85	963	750	750	CONC	1.20	90.0	1219.53	2.76	0.54	0.79		
	204-205	211			0.00	0.00			0.00	14.51					0.00	0.00	0.00	0.03	14.07	64.04	86.68	105.52	148.28	1262	1200	1200	CONC	0.20	112.0	1743.57	1.54	1.21	0.72		



NOT FOR CONSTRUCTION

12	A.W.T.	20-10-06	ISSUED FOR SITE PLAN AMENDMENT-SUBMISSION 6
11	G.G.G.	20-06-23	UPDATED HGL INFORMATION
10	S.L.M.	20-05-28	ISSUED FOR SITE PLAN AMENDMENT
9	S.L.M.	18-07-19	ISSUED FOR MUNICIPAL APPROVAL

No.	BY	DATE	DESCRIPTION
TOPOGRAPHIC INFORMATION			
TOPOGRAPHIC INFORMATION PROVIDED BY IBI GROUP			
PROJ. NO. 38298			
DATED NOVEMBER 13, 2017			
SITE PLAN INFORMATION			
SITE PLAN PROVIDED BY KORSIAK URBAN PLANNING			
DATED SEPTEMBER 25, 2020			

SITE SERVICING AND STORMWATER MANAGEMENT STUDY		GEOTECHNICAL STUDY	
SERVICING AND STORMWATER MANAGEMENT RECOMMENDATIONS PROVIDED BY DSEL		GEOTECHNICAL RECOMMENDATIONS PROVIDED BY PATTERSON GROUP INC.	
PROJ. NO. 17-948		PROJECT NO. PCS345-1	
DATED OCTOBER 2020		REVISION 1, DATED SEPTEMBER 10, 2020	

BENCH MARK	
ELEVATIONS ARE GEODETIC, REFERRED TO CITY OF OTTAWA VERTICAL BENCHMARK NO. 396	
ELEV= 95.06 METERS	

MATTAMY HOMES	WATERIDGE - BLOCK 22 PHASE 1B
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2020-10-09
PROVINCE OF ONTARIO



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Ottawa, Ontario, K1P 1J1
Tel. (613) 580-2400
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STORM DRAINAGE PLAN			
DRAWN BY:	A.W.T.	CHECKED BY:	S.L.M.
DESIGNED BY:	S.L.M.	CHECKED BY:	A.D.F.
SCALE:	1:250	PROJECT No.	17-948
		SHEET No.	11