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1.0 INTRODUCTION

McIntosh Perry has been retained by *1437137 Ontario Inc.* to complete a Conceptual Servicing Report in support of the Draft Plan Application for the subject property. This report will discuss servicing the proposed property with municipal watermains, sanitary sewers, storm sewers and the Stormwater Management options associated with the development of Rochon-Lemieux subdivision, located in Embrun, Ontario.

The intent of this report is to address how existing infrastructure within the Draft Plan Approved Cloutier subdivision will be affected with the inclusion of the Rochon-Lemieux subdivision. It should be noted that servicing provisions for the subject lands have previously been made within the overall design of the Cloutier subdivision with regard to water, sanitary and stormwater management aspects.

2.0 SITE DESCRIPTION

The subject property covers approximately 5.96ha and is located at the western limits of Lucerne Drive and Cologne Street constructed as earlier phases of the Cloutier subdivision. The legal description of the property is Part of Lot 9, Concession 8, Township of Russell, in the County of Russell. Refer to **Appendix A** for the **Location Plan**.

The site is relatively flat and drains southeast towards East York Creek. The land consists of grass, shrubs and forested areas.

The proposed Draft Plan for the Rochon-Lemieux subdivision consists of 24 single family homes, 28 semi-detached units and 71 townhouse units. Several of the proposed lots back onto East York Creek. Prior provisions have been made for a watermain and sanitary sewer crossing under the creek to service future development.

3.0 BACKGROUND STUDIES

Reports, memorandums and drawings reviewed during design of the subject lands include:

- Review of as-built drawings by McIntosh Perry;
- A Slope Stability Report, prepared by Paterson Group, file no. PGPG2541-LET.02, dated November 11, 2019;
- A topographic survey, prepared by Annis O’Sullivan Vollebakk Ltd., dated September 2019;
- Final Servicing Report – Cloutier Subdivision, prepared by McIntosh Perry, file no. P06-177, dated April 9, 2013;
- Geotechnical Investigation – Proposed Residential Development and Proposed Sanitary Forcemain Alignment, prepared by Paterson Group, file no. PG2541-1R, dated May 31, 2012, and
- Slope Stability Evaluation – Proposed Cloutier and Rochon Residential Subdivisions, prepared by Kollaard Associates Inc., file no. 070804, dated January 7, 2008.

4.0 EXISTING SERVICES

Existing watermains, sewers, utility services and their associated infrastructure have previously been designed and constructed throughout the Cloutier subdivision with the subject lands in mind. Detailed information of the existing servicing can be found in the ***Final Servicing Report – Cloutier Subdivision*** under separate cover.

4.1 Watermain

Existing watermains can be found within both Lucerne Drive and Cologne Street to connect the Rochon-Lemieux subdivision to the Cloutier subdivision. There is an existing 250mm diameter PVC watermain including hydrants and valves that extends through a portion of the subject lands, roughly 90 m north of the Lucerne Drive and Future Street intersection and crosses East York Creek to service future development. Cologne Street has an existing 200mm dia. PVC watermain capped at the Rochon-Lemieux property limit.

4.2 Sanitary Sewer

Existing sanitary sewer infrastructure can be found within both Lucerne Drive and Cologne Street. There is an existing 525mm diameter concrete sanitary sewer stub west of the intersection of Bruxelles Street and Lucerne Drive. There is a 200mm diameter PVC stub within Cologne Street. All sanitary flows will be directed to an existing pump station located at the northeast corner of the Lucerne Drive and Strasbourg Street.

4.3 Storm Sewer

Existing storm sewer infrastructure can be found within both Lucerne Drive and Cologne Street. There is an existing 675mm diameter concrete storm sewer stub west of the intersection of Bruxelles Street and Lucerne Drive. An existing 750mm diameter concrete storm sewer stub on Cologne Street directs flow towards the Stormwater Management Pond located south of Lucerne Drive, central to the Cloutier subdivision.

4.4 Utilities

Existing hydro, gas, communications and television services and infrastructure can be found within the boulevards of both Lucerne Drive and Cologne Street. These will be extended to service the proposed lands.

5.0 PROPOSED SERVICING

The servicing of the Rochon-Lemieux subdivision will closely follow the original plan from the ***Final Servicing Report – Cloutier Subdivision***. The original plan accounted for 48 single family units, 9 semi-detached units, and 39 apartment units creating a total of 96 units and a population of 284.1 people within the Rochon-Lemieux subdivision. The proposed Draft Plan now consists of 24 single units, 28 semi-detached units, and 71 townhomes creating a total of 123 units and a population of 380.9 people. Effects of the changes are outlined below. Section 5.0 of this report will detail the proposed design and determine the changes made to the servicing of the overall subdivision. A ***General Plan of Services*** can be found in ***Appendix B***.

5.1 Watermain Design

As per the original design previously reviewed by the Township of Russell, the Cloutier subdivision, including the Rochon-Lemieux subdivision, can be adequately serviced. Water servicing for the Rochon-Lemieux subdivision will be accomplished through connections to two existing watermain caps within Phases 1 and 3 of the Cloutier subdivision. The proposed watermain will be 200mm dia. throughout. Flow control valves will be installed as required and per Township standards. Fire hydrants will be located on-site as required by the Township. Hydrants will be spaced 90m to 180m apart depending upon the type of units.

5.2 Sanitary Sewer Design

The sanitary flows within the Rochon-Lemieux subdivision have been accounted for within the Sanitary Sewer Design for the Cloutier subdivision outlined in the *Final Servicing Report – Cloutier Subdivision*. Also, the flows have been accounted for within the existing pump station located within Phase 1 of the Cloutier subdivision. Further details on the pump station can be found within the *Pump Station Report*.

As per the original design previously reviewed by the Township, the sanitary system will convey flows from the entire subdivision to the pump-station. The pump-station has been designed to accommodate the flow from the final build-out of the Subdivision. Servicing of the Rochon-Lemieux subdivision will be accomplished through connections to two existing sanitary caps located on Cologne and Lucerne Street. Most of the flow will be directed to the connection on Lucerne Street with a single run of pipe directing flow along the northern end of the site to a future phase of the Cloutier subdivision on Namur Street. The prior design contributed a total flow of 6.57L/s from the Rochon-Lemieux subdivision only. The proposed Draft Plan will generate a total flow of 7.95L/s from the Rochon-Lemieux subdivision.

The additional 1.38L/s of flow being contributed to the sanitary sewer system will have a negligible impact on the downstream pipes and the daily operation of the sanitary pump station within Phase 1 of Cloutier subdivision. It should be noted that for calculations, the flow being received in from the Rochon subdivision and the lands west of St. Augustin Road have been kept equivalent to that in the original report. The proposed *Sanitary Drainage Area Plan* and *Sanitary Sewer Design Sheet* can be found in *Appendix C*.

5.3 Storm Sewer Design

As per the original design previously reviewed by the Township, the storm sewer system was designed to accommodate the 5-year storm. The flows from the Cloutier subdivision are ultimately directed to a Stormwater Management Facility designed for the entire development, including the proposed Rochon-Lemieux subdivision. Servicing will be accomplished through connections to two existing storm sewers located on Cologne Street and Lucerne Drive.

Storm drainage area "OW2" will be the contributing area to the connection on Cologne Street as it was in the original storm design. Similarly, storm drainage area "OW1" is contributing to the connection on Lucerne Drive. Due to the changes to the units and layout of the proposed Rochon-Lemieux subdivision, the composite curve numbers and areas have been updated for storm drainage areas "OW1", "OW2", "B18", "B53" and "B55". The curve numbers for storm drainage areas "B18", "B53" and "B55" have decreased however the areas have

increased in size to account for the rear-yard drainage from the unit in the Rochon-Lemieux subdivision. Storm drainage area “OW1” has decreased in size however due to the unit changes the curve number for both “OW1” and “OW2” has increased. The changes in area and curve numbers create an increased flow in all the areas noted. The overall increase in flow does not create a negative impact on the existing storm infrastructure. Refer to **Appendix D** for the **Storm Drainage Area Plan** and **Civil Storm Modelling Outputs**.

6.0 RECOMMENDATION

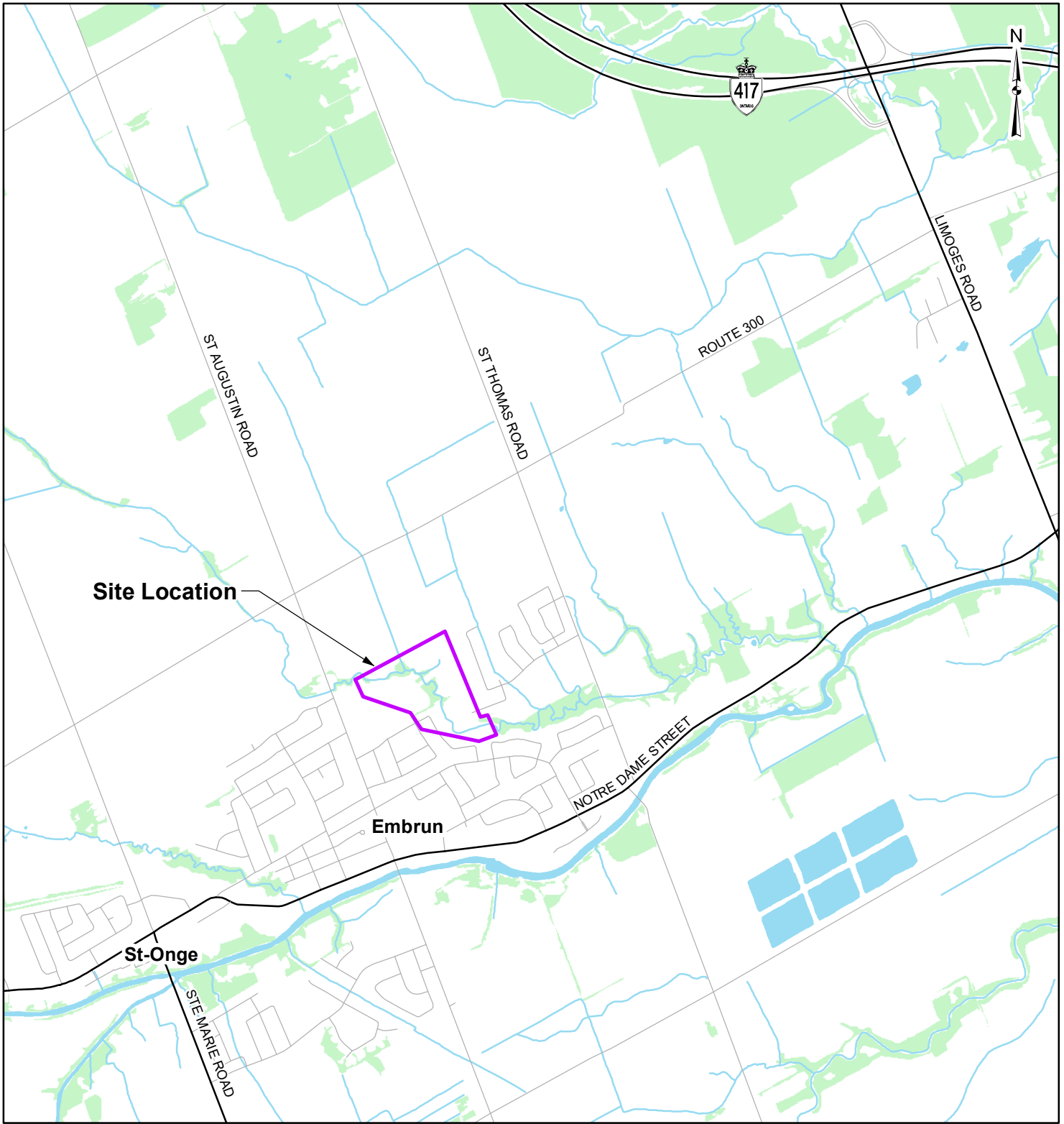
Based on the information presented in this report, we recommend that the Township of Russell accepts the information provided in this Conceptual Servicing Report in support of the Draft Plan approval for the Rochon-Lemieux subdivision.

Sincerely,



Ryan Kennedy, P.Eng.
Practice Area Lead | Land Development
613.903.5766
r.kennedy@mcintoshperry.com

APPENDIX A
LOCATION PLAN

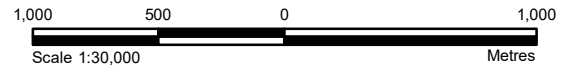


LEGEND

- Approximate Study Area
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2019.



CLIENT:		ROBERT BOURDEAU	
PROJECT:		CONCEPTUAL SERVICING REPORT	
TITLE:		SITE LOCATION	
McINTOSH PERRY <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>		PROJECT NO: CP-18-0493-06	FIGURE:
		Date	Dec., 12, 2019
		Checked By	PK
		1	

APPENDIX B
GENERAL PLAN OF SERVICES

APPENDIX C
SANITARY DRAINAGE AREA PLAN
SANITARY SEWER DESIGN SHEET

SANITARY SEWER DESIGN SHEET

PROJECT: ROCHON/LEMIEUX SUBDIVISION
 LOCATION: EMBRUN, ONTARIO
 CLIENT: 1437137 ONTARIO INC.



LOCATION				RESIDENTIAL									ICI AREAS						INFILTRATION ALLOWANCE			FLOW		SEWER DATA									
1	2	3	4	UNIT TYPES				9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
STREET	AREA ID	FROM MH	TO MH	SF	SD	TH	APT	AREA (ha)	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY					
									IND	CUM			IND	CUM	IND	CUM	IND	CUM		IND	CUM							IND	CUM	L/s	(%)	L/s	(%)
ROCHON/LEMIEUX SUBDIVISION																																	
NAMUR STREET	611a	MH611A	MH610A		13			0.61	45.5	45.5	4.00	0.76					0.00	0.00	0.00	0.00	0.61	0.61	0.17	0.93	27.59	69.42	200	0.65	0.851	26.66	96.63		
	610	MH610A	MH607A		1			0.14	3.5	49.0	4.00	0.82					0.00	0.00	0.00	0.00	0.14	0.75	0.21	1.03	20.24	23.65	200	0.35	0.624	19.22	94.93		
STREET 1	609	MH609A	MH608A			4		0.17	10.8	10.8	4.00	0.18					0.00	0.00	0.00	0.00	0.17	0.17	0.05	0.23	27.59	17.23	200	0.65	0.851	27.36	99.17		
	608	MH608A	MH607A			5		0.21	13.5	24.3	4.00	0.41					0.00	0.00	0.00	0.00	0.21	0.38	0.11	0.51	27.59	35.25	200	0.65	0.851	27.07	98.15		
STREET 1	607	MH607A	MH606A			6		0.24	16.2	89.5	4.00	1.49					0.00	0.00	0.00	0.00	0.24	1.37	0.38	1.88	20.24	44.81	200	0.35	0.624	18.37	90.74		
	606	MH606A	MH605A			18		0.71	48.6	138.1	4.00	2.30					0.00	0.00	0.00	0.00	0.71	2.08	0.58	2.88	20.24	94.05	200	0.35	0.624	17.36	85.75		
	605	MH605A	MH604A			9		0.38	24.3	162.4	4.00	2.71					0.00	0.00	0.00	0.00	0.38	2.46	0.69	3.40	20.24	43.92	200	0.35	0.624	16.85	83.23		
	604	MH604A	MH603A			13		0.43	35.1	197.5	4.00	3.29					0.00	0.00	0.00	0.00	0.43	2.89	0.81	4.10	20.24	45.21	200	0.35	0.624	16.14	79.74		
SUBDIVISION WEST OF ST. AUGUSTIN				444	73	31	126	38.52	2,254.1	2,254.1	3.54	33.29						0.00	38.52	38.52	0.00	18.73	77.04	77.04	21.57	73.59							
ROCHON SUBDIVISION (WEST OF CREEK)				145			5	11.04	560.8	560.8	3.95	9.22						0.00	0.00	0.00	0.00	11.04	11.04	3.09	12.32								
CREEK CROSSING										0.0	2,814.8	3.47	40.65					0.00	38.52	38.52	0.00	18.73	0.00	88.08	24.66	84.04	167.87	40.00	525	0.14	0.751	83.84	49.94
STREET 1	603	MH603A	MH600A					0.77	41.8	3,054.1	3.44	43.72					0.00	38.52	38.52	0.00	18.73	0.77	91.74	25.69	88.13	167.87	94.00	525	0.14	0.751	79.74	47.50	
STREET 1		MH64A	BULKHEAD						0.0	0.0	4.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.36	6.30	200	0.32	0.597	19.36	100.00		
	64	BULKHEAD	MH601A					0.19	7.6	7.6	4.00	0.13					0.00	0.00	0.00	0.00	0.19	0.19	0.05	0.18	19.36	34.72	200	0.32	0.597	19.18	99.07		
	601	MH601A	MH602A					0.23	7.6	15.2	4.00	0.25					0.00	0.00	0.00	0.00	0.23	0.42	0.12	0.37	20.24	14.75	200	0.35	0.624	19.87	98.17		
	602	MH602A	MH600A					0.66	34.2	49.4	4.00	0.82					0.00	0.00	0.00	0.00	0.66	1.08	0.30	1.13	20.24	75.56	200	0.35	0.624	19.12	94.44		
LUCERNE DRIVE	600	MH600A	MH701A					0.30	11.4	3,114.9	3.43	44.50					0.00	38.52	38.52	0.00	18.73	0.30	93.12	26.07	89.30	167.87	85.50	525	0.14	0.751	78.58	46.81	
CLOUTIER SUBDIVISION																																	
NAMUR STREET	611b	MH611A	MH706A		1	14		0.77	52.8	52.8	4.00	0.88					0.00	0.00	0.00	0.00	0.77	0.77	0.22	1.10	27.59	96.27	200	0.65	0.851	26.49	96.03		
	706	MH706A	MH705A					0.20	7.6	60.4	4.00	1.01					0.00	0.00	0.00	0.00	0.20	0.97	0.27	1.28	20.24	12.50	200	0.35	0.624	18.96	93.69		
	705	MH705A	MH704A					0.18	11.4	71.8	4.00	1.20					0.00	0.00	0.00	0.00	0.18	1.15	0.32	1.52	20.24	18.00	200	0.35	0.624	18.72	92.50		
	704	MH704A	MH703A					0.52	34.2	106.0	4.00	1.77					0.00	0.00	0.00	0.00	0.52	1.67	0.47	2.23	20.24	69.30	200	0.35	0.624	18.01	88.96		
AVIGNON STREET	708	MH708A	MH707A			16		0.53	43.2	43.2	4.00	0.72					0.00	0.00	0.00	0.00	0.53	0.53	0.15	0.87	27.59	57.44	200	0.65	0.851	26.72	96.85		
	707	MH707A	MH703A					0.00	0.0	43.2	4.00	0.72					0.00	0.00	0.00	0.00	0.07	0.60	0.17	0.89	27.59	43.43	200	0.65	0.851	26.70	96.78		
NAMUR STREET	703	MH703A	MH702A					0.86	57.0	206.2	4.00	3.44					0.00	0.00	0.00	0.00	0.86	3.13	0.88	4.31	20.24	115.03	200	0.35	0.624	15.93	78.69		
	702	MH702A	MH701A					0.92	57.0	263.2	4.00	4.39					0.00	0.00	0.00	0.00	0.92	4.05	1.13	5.52	20.24	115.03	200	0.35	0.624	14.72	72.73		
LUCERNE DRIVE	701	MH701A	BULKHEAD					0.40	19.0	3,397.1	3.40	48.07					0.00	38.52	38.52	0.00	18.73	0.40	97.57	27.32	94.11	167.87	54.71	525	0.14	0.751	73.76	43.94	
		BULKHEAD	MH60A						0.0	3,397.1	3.40	48.07					0.00	38.52	38.52	0.00	18.73	0.00	97.57	27.32	94.11	167.87	26.30	525	0.14	0.751	73.76	43.94	

Design Parameters:	
Residential	ICI Areas
SF 3.8 p/p/u	Peak Factor
SD 3.5 p/p/u	INST 50,000 L/Ha/day
TH 2.7 p/p/u	COM 28,000 L/Ha/day
APT 1.8 p/p/u	IND 35,000 L/Ha/day
Other 180 p/p/Ha	MOE Chart

Notes:
 1. Mannings coefficient (n) = 0.013
 2. Demand (per capita): 360 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:	P.G.K.
Checked:	R.P.K.
Project No.:	CP-19-0493-06

No.	Revision	Date
1.	ISSUED FOR DRAFT PLAN APPROVAL	DEC. 13, 2019

Sheet No:
1 of 1

APPENDIX D
STORM DRAINAGE AREA PLAN
STORM MODELLING OUTPUT

CLOUTIER SUBDIVISION STORM SEWER DESIGN SHEET RESULTS: IMPORTED FROM CIVILSTORM VIA *.CSV FILE

Table D-3																		
CivilStorm Input							5-Year 4-hour SCS				5-Year 12-hour SCS				5-Year 24-hour SCS			
Conduit ID (From Structure # - To Structure #)	Upstream Invert (m)	Downstream Invert (m)	Conduit Length (m)	Diameter (mm)	Material Type	Slope (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)
MH1- MH2	65.83	65.43	87.85	300.0	PVC	0.46	15.70	0.7	65.25	24.1	14.4	0.71	65.25	22.0	9.3	0.61	65.25	14.2
MH1- MH8	65.84	65.55	84.85	375.0	PVC	0.34	95.37	1.1	102.50	93.0	90.1	1.06	102.5	87.9	59.5	0.96	102.5	58.1
MH2- MH3	65.39	65.33	14.14	300.0	PVC	0.42	37.68	0.7	62.99	59.8	35.0	0.69	62.99	55.6	22.8	0.69	62.99	36.2
MH3- MH4	65.29	65.05	111.57	450.0	Concrete	0.22	87.25	0.9	132.23	66.0	86.1	0.85	132.23	65.1	58.0	0.79	132.23	43.8
MH4- MH5	65.03	64.90	73.45	525.0	Concrete	0.18	168.53	1.1	180.93	93.1	160.2	1.08	180.93	88.5	106.7	0.96	180.93	59.0
MH5- MH6	64.86	64.66	57.80	525.0	Concrete	0.35	222.88	1.4	252.98	88.1	217.7	1.41	252.98	86.1	146.3	1.25	252.98	57.8
MH6- MH7	64.62	64.57	12.50	525.0	Concrete	0.40	222.58	1.4	272.00	81.8	217.7	1.39	272	80.0	146.3	1.36	272	53.8
MH7- MH18	64.53	64.28	71.67	525.0	Concrete	0.35	231.11	1.3	254.00	91.0	227.0	1.24	254	89.4	152.6	1.18	254	60.1
MH8- MH9	65.51	65.45	15.82	450.0	PVC	0.38	103.20	0.9	175.58	58.8	97.3	0.89	175.58	55.4	64.5	0.91	175.58	36.7
MH9- MH10	65.42	65.15	75.37	450.0	PVC	0.36	165.82	1.3	170.64	97.2	160.2	1.27	170.64	93.9	106.9	1.15	170.64	62.6
MH10- MH11	65.13	64.86	89.01	525.0	Concrete	0.30	198.24	1.3	236.86	83.7	196.5	1.26	236.86	82.9	133.2	1.14	236.86	56.2
MH10- MH13	66.1	65.26	89.37	300.0	PVC	0.94	33.61	1.2	93.75	35.9	34.9	1.20	93.75	37.2	23.7	1.07	93.75	25.3
MH11- MH12	64.84	64.58	86.50	600.0	Concrete	0.30	238.06	1.3	336.63	70.7	243.1	1.34	336.63	72.2	166.3	1.20	336.63	49.4
MH12- MH18	64.52	64.28	68.62	600.0	Concrete	0.35	260.52	1.4	363.13	71.7	268.9	1.37	363.13	74.1	184.5	1.29	363.13	50.8
MH13- MH14	65.22	65.18	12.65	300.0	PVC	0.32	35.69	0.9	54.38	65.6	37.4	0.94	54.38	68.8	25.6	0.82	54.38	47.1
MH14- MH15	65.14	65.03	37.29	300.0	PVC	0.30	35.62	0.7	52.52	67.8	37.1	0.69	52.52	70.7	25.6	0.68	52.52	48.7
MH15- MH16	65.01	64.80	58.55	375.0	PVC	0.36	91.51	1.1	105.00	87.2	98.0	1.14	105	93.3	68.2	1.03	105	65.0
MH16- MH17	64.77	64.62	35.98	375.0	PVC	0.42	99.61	1.2	113.21	88.0	108.7	1.26	113.21	96.0	75.9	1.13	113.21	67.1
MH17- MH18	64.59	64.44	32.83	375.0	PVC	0.46	99.23	1.2	118.51	83.7	108.5	1.22	118.51	91.6	75.8	1.16	118.51	63.9
MH18- MH19	64.22	63.96	57.50	750.0	Concrete	0.45	606.53	2.0	748.61	81.0	623.5	1.97	748.61	83.3	428.8	1.76	748.61	57.3
MH19- MH20	63.9	63.36	120.00	750.0	Concrete	0.45	638.56	1.9	746.81	85.5	659.1	1.95	746.81	88.3	456.6	1.78	746.81	61.1
MH20- MH38	63.34	63.20	31.99	750.0	Concrete	0.44	654.70	1.9	736.48	88.9	675.4	1.77	736.48	91.7	468.7	1.64	736.48	63.6
MH21- MH22	65.81	65.46	71.50	300.0	PVC	0.49	9.71	0.7	67.66	14.4	11.1	0.70	67.66	16.3	8.0	0.56	67.66	11.8
MH21- MH56	65.99	65.64	83.27	250.0	PVC	0.42	18.80	0.8	38.55	48.8	21.3	0.78	38.55	55.3	15.2	0.71	38.55	39.5
MH21- MH61	63.56	63.51	42.02	1200.0	Concrete	0.12	890.54	1.6	1344.87	66.2	1303.9	1.84	1344.87	97.0	1275.4	1.83	1344.87	94.8
MH22- MH23	65.44	65.05	77.49	375.0	PVC	0.50	75.55	1.2	124.38	60.7	79.8	1.18	124.38	64.1	55.3	1.08	124.38	44.5
MH23- MH24	65.01	64.94	13.76	375.0	PVC	0.51	75.65	1.2	125.05	60.5	79.9	1.23	125.05	63.9	55.3	1.10	125.05	44.2
MH24- MH25	64.9	64.52	74.87	375.0	PVC	0.51	90.85	1.2	124.91	72.7	99.4	1.25	124.91	79.6	69.6	1.15	124.91	55.8
MH25- MH26	64.5	64.31	37.42	450.0	Concrete	0.51	125.91	1.4	203.16	62.0	135.6	1.38	203.16	66.8	94.4	1.25	203.16	46.5
MH25- MH39	65.3	64.92	76.47	300.0	PVC	0.50	25.11	0.9	68.17	36.8	28.4	0.90	68.17	41.6	20.3	0.81	68.17	29.7
MH26- MH27	64.27	63.86	82.48	450.0	Concrete	0.50	156.45	1.4	201.01	77.8	173.9	1.42	201.01	86.5	122.3	1.32	201.01	60.8
MH27- MH38	63.82	63.22	120.00	525.0	Concrete	0.50	233.77	1.4	304.10	76.9	259.5	1.30	304.1	85.3	184.4	1.40	304.1	60.6
MH28- MH34	65.94	65.72	63.55	300.0	PVC	0.35	35.95	0.8	56.90	63.2	41.9	0.88	56.9	73.6	30.3	0.80	56.9	53.2
MH28- MH29	65.91	65.85	12.41	300.0	PVC	0.48	0.00	0.0	67.24	0.0	0.0	0.00	67.24	0.0	0.0	0.00	67.24	0.0
MH29- MH31	65.81	65.59	43.07	300.0	PVC	0.51	0.00	0.0	69.11	0.0	0.0	0.00	69.11	0.0	0.0	0.00	69.11	0.0
MH30- MH31	65.91	65.61	88.89	300.0	PVC	0.34	20.27	0.7	56.18	36.1	22.0	0.72	56.18	39.2	15.4	0.65	56.18	27.5
MH30- MH261	65.85	65.09	116.23	250.0	PVC	0.65	23.20	0.9	48.09	48.2	30.5	1.01	48.09	63.5	23.2	0.94	48.09	48.3
MH31- MH32	65.57	64.95	96.02	300.0	PVC	0.65	48.37	1.1	77.70	62.3	51.5	1.16	77.7	66.3	35.7	1.05	77.7	45.9
MH32- MH33	64.91	64.57	37.90	300.0	PVC	0.90	102.23	1.9	119.07	85.9	108.1	1.89	119.07	90.8	74.8	1.76	119.07	62.8
MH33- MH37	64.49	64.15	53.80	375.0	Concrete	0.63	114.60	1.4	139.38	82.2	121.0	1.32	139.38	86.8	83.6	1.28	139.38	60.0
MH34- MH35	65.68	65.64	14.49	375.0	PVC	0.28	46.04	0.7	92.12	50.0	52.7	0.70	92.12	57.2	37.8	0.70	92.12	41.1

CLOUTIER SUBDIVISION STORM SEWER DESIGN SHEET RESULTS: IMPORTED FROM CIVILSTORM VIA *.CSV FILE

CivilStorm Input							5-Year 4-hour SCS				5-Year 12-hour SCS				5-Year 24-hour SCS			
Conduit ID (From Structure # - To Structure #)	Upstream Invert (m)	Downstream Invert (m)	Conduit Length (m)	Diameter (mm)	Material Type	Slope (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)	Peak Flow (L/s)	Actual Velocity (m/s)	Pipe Full Capacity (L/s)	Full Flow (%)
MH35- MH36	65.62	65.39	92.36	375.0	PVC	0.25	64.13	0.9	87.49	73.3	77.1	0.91	87.49	88.1	56.1	0.85	87.49	64.1
MH36- MH37	65.35	65.16	94.88	450.0	Concrete	0.20	97.28	0.9	127.58	76.3	113.2	0.99	127.58	88.7	81.4	0.89	127.58	63.8
MH37- MH38	64.13	63.64	54.64	450.0	Concrete	0.90	224.63	1.9	269.99	83.2	248.7	1.92	269.99	92.1	176.3	1.80	269.99	65.3
MH38- MH47	63.16	62.83	88.01	975.0	Concrete	0.38	1093.97	2.1	1372.28	79.7	1197.6	2.17	1372.28	87.3	839.9	1.96	1372.28	61.2
MH39- MH40	64.88	64.83	11.91	300.0	PVC	0.42	32.98	0.9	62.66	52.6	38.8	0.99	62.66	61.9	28.1	0.89	62.66	44.9
MH40- MH41	64.79	63.89	113.42	375.0	PVC	0.79	88.83	1.5	156.18	56.9	101.0	1.49	156.18	64.7	72.0	1.37	156.18	46.1
MH41- MH42	63.85	63.42	70.61	450.0	Concrete	0.61	130.83	1.5	222.49	58.8	147.2	1.49	222.49	66.1	104.2	1.37	222.49	46.8
MH42- MH47	63.4	62.91	69.90	450.0	Concrete	0.70	152.15	1.2	238.71	63.7	170.4	1.08	238.71	71.4	120.8	1.14	238.71	50.6
MH45- MH46	64.52	63.95	76.40	450.0	Concrete	0.75	161.79	1.6	246.26	65.7	184.2	1.69	246.26	74.8	132.2	1.57	246.26	53.7
MH46- MH47	63.93	63.53	73.71	450.0	Concrete	0.54	167.83	1.5	210.03	79.9	193.2	1.52	210.03	92.0	138.4	1.41	210.03	65.9
MH47- MH48	62.81	62.48	73.85	1050.0	Concrete	0.45	1291.10	2.3	1825.41	70.7	1559.3	2.42	1825.41	85.4	1097.9	2.19	1825.41	60.1
MH48-North Inlet	62.42	62.25	37.43	1050.0	Concrete	0.45	1255.04	1.9	1840.32	68.2	1584.9	2.48	1840.32	86.1	1093.4	2.01	1840.32	59.4
MH49- MH50	65.6	65.53	29.24	375.0	PVC	0.24	46.86	1.0	85.79	54.6	52.2	1.02	85.79	60.9	36.5	0.87	85.79	42.6
MH50- MH51	65.47	65.43	15.21	375.0	PVC	0.26	51.16	0.9	89.91	56.9	57.1	0.88	89.91	63.5	40.0	0.90	89.91	44.5
MH51- MH52	65.39	65.18	85.97	450.0	PVC	0.24	90.34	1.0	140.91	64.1	96.8	0.94	140.91	68.7	67.3	0.88	140.91	47.7
MH52- MH53	65.16	64.95	110.05	525.0	Concrete	0.19	145.62	1.0	187.87	77.5	153.3	0.96	187.87	81.6	106.2	0.90	187.87	56.5
MH53- MH55	64.93	64.74	120.00	600.0	Concrete	0.16	217.35	1.1	244.32	89.0	229.7	1.10	244.32	94.0	158.8	0.99	244.32	65.0
MH54- MH55	65.29	65.17	34.04	300.0	PVC	0.35	12.52	0.6	57.42	21.8	14.9	0.66	57.42	26.0	10.9	0.59	57.42	18.9
MH55- MH60	64.68	64.57	85.00	675.0	Concrete	0.13	266.05	1.2	302.39	88.0	286.8	1.21	302.39	94.8	200.0	1.06	302.39	66.1
MH56- MH57	65.58	65.32	37.84	300.0	PVC	0.69	33.60	1.1	80.16	41.9	39.7	1.08	80.16	49.6	28.9	1.02	80.16	36.0
MH57- MH58	65.28	64.78	100.72	450.0	PVC	0.50	115.33	1.3	200.88	57.4	128.3	1.33	200.88	63.9	90.7	1.22	200.88	45.2
MH58- MH59	64.76	64.15	100.34	450.0	Concrete	0.61	178.94	1.6	222.30	80.5	199.3	1.58	222.3	89.7	140.9	1.47	222.3	63.4
MH59- MH60	64.13	63.29	103.93	525.0	Concrete	0.81	246.42	1.9	386.63	63.7	271.1	1.93	386.63	70.1	190.9	1.77	386.63	49.4
MH60- MH65	63.23	62.94	84.00	750.0	Concrete	0.35	531.37	1.7	654.13	81.2	577.2	1.78	654.13	88.2	408.2	1.44	654.13	62.4
MH61- MH62	63.48	63.36	107.18	1350.0	Concrete	0.11	901.03	1.5	1785.93	50.5	1315.5	1.75	1785.93	73.7	1286.7	1.74	1785.93	72.0
MH62-MH63	63.16	63.04	104.18	1350.0	Concrete	0.12	901.55	1.6	1811.46	49.8	1314.7	1.75	1811.46	72.6	1287.1	1.74	1811.46	71.1
MH63- MH65	63.02	62.90	104.15	1350.0	Concrete	0.12	917.07	1.6	1811.72	50.6	1333.7	1.80	1811.72	73.6	1306.8	1.78	1811.72	72.1
MH64- MH65	65.9	65.74	46.99	300.0	PVC	0.34	24.21	0.8	56.43	42.9	27.9	0.79	56.43	49.4	19.8	0.71	56.43	35.1
MH65- MH66	62.88	62.69	76.74	1350.0	Concrete	0.25	1053.83	1.9	2655.80	39.7	1528.4	2.07	2655.8	57.6	1466.6	2.05	2655.8	55.2
MH66- MH67	62.66	62.62	13.18	1350.0	Concrete	0.30	1056.29	2.0	2940.37	35.9	1527.2	2.11	2940.37	51.9	1467.2	1.85	2940.37	49.9
MH67- MH70	62.59	62.56	11.57	1350.0	Concrete	0.26	1057.01	1.9	2717.84	38.9	1526.8	1.96	2717.84	56.2	1467.1	1.73	2717.84	54.0
MH68- MH69	64.46	64.36	93.03	750.0	Concrete	0.11	284.78	1.2	365.00	78.0	296.8	1.13	365	81.3	202.5	0.99	365	55.5
MH69- MH70	64.34	64.26	82.19	750.0	Concrete	0.10	323.74	1.3	347.33	93.2	340.2	1.29	347.33	97.9	234.6	1.10	347.33	67.5
MH70-MH96	62.5	62.35	60.91	1350.0	Concrete	0.25	1128.65	2.0	2648.69	42.6	1630.3	1.81	2648.69	61.6	1585.2	2.14	2648.69	59.8
MH96-West Inlet	62.29	62.25	28.20	1350.0	Concrete	0.14	1128.20	1.7	2659.22	42.4	1626.8	1.55	2659.22	61.2	1580.8	1.84	2659.22	59.4
MH261-CBMH139	65.02	64.70	66.69	375.0	PVC	0.48	95.15	1.2	121.45	78.3	112.2	1.27	121.45	92.3	81.7	1.18	121.45	67.2
MH-OW02 - MH68	64.52	64.48	43.15	750.0	PVC	0.09	256.10	1.2	338.96	75.6	263.3	1.12	338.96	77.7	178.4	1.00	338.96	52.6
Outlet Pipe	62.25	61.95	10.00	1350.0	Concrete	3.00	528.73	3.4	9244.65	5.7	887.3	4.04	9244.65	9.6	1011.9	4.16	9244.66	10.9

CLOUTIER SUBDIVISION DRAINAGE AREA RESULTS: IMPORTED FROM CIVILSTORM VIA *.CSV FILE

Table D-2														
CivilStorm Input Parameters					CivilStorm Results									
Drainage Area ID	Area (ha)	Composite Curve Number (CN _c)	Time of Concentration (T _c)	Outflow ID	4-Hour Chicago Storm				12-Hour SCS Storm			24-Hour SCS Storm		
					25 mm Event	2-Year Event	5-Year Event	100-Year Event	2-Year Event	5-Year Event	100-Year Event	2-Year Event	5-Year Event	100-Year Event
					Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)	Peak Flow (L/s)
<i>Post-Development</i>														
A1	40.01	75	72.3	CS-1	34.3	146.1	403.7	1554.5	245.4	583.6	1927.9	264.9	570.7	1819.6
A2	51.07	75	63.96	DICB1	41.0	185.2	529.9	2099.3	316.8	772.4	2604.6	343.6	754.9	2433.4
B1	0.11	79	20	RYCB221	0.4	1.3	3.3	11.8	2.1	4.5	12.3	1.9	3.4	8.7
B2	0.12	86	20	MH49	1.6	3.8	7.4	20.0	4.7	8.0	17.8	3.6	5.5	11.8
B3	0.04	86	20	MH49	0.5	1.3	2.6	7.1	1.7	2.8	6.4	1.3	2.0	4.3
B4	0.09	82	20	RYCB222	0.6	1.7	3.8	11.9	2.5	4.7	11.6	2.0	3.4	8.0
B5	0.18	90	20	CB143	4.8	9.3	16.3	38.4	10.0	15.6	31.8	7.0	10.3	20.4
B6	0.08	86	20	MH50	1.0	2.3	4.6	12.5	2.9	5.0	11.3	2.2	3.5	7.5
B7	0.27	79	20	RYCB229	0.8	3.1	8.2	29.6	5.3	11.2	30.9	4.8	8.6	22.0
B8	0.12	82	20	RYCB228	0.7	2.1	4.7	15.0	3.1	5.9	14.8	2.6	4.3	10.3
B9	0.12	81	20	RYCB188	0.5	1.8	4.2	14.1	2.8	5.4	14.1	2.4	4.1	9.9
B10	0.08	88	20	CB109	1.5	3.2	5.8	14.7	3.7	5.9	12.6	2.7	4.0	8.2
B11	0.11	87	20	MH56	1.7	3.9	7.3	19.3	4.7	7.7	17.0	3.5	5.3	11.2
B12	0.31	89	20	CB153	7.1	14.2	25.4	61.6	15.7	24.9	51.8	11.2	16.6	33.4
B13	0.32	89	20	CB152	6.8	14.1	25.4	62.7	15.8	25.3	53.2	11.4	17.0	34.5
B14	0.18	83	20	RYCB231	1.3	3.7	8.1	24.6	5.3	9.7	23.6	4.3	7.0	16.2
B15	0.20	90	20	CB144	4.9	9.6	17.1	40.9	10.5	16.6	34.2	7.5	11.0	22.0
B16	0.06	87	20	CB145A	0.8	1.8	3.6	9.6	2.3	3.8	8.6	1.7	2.7	5.7
B17	0.06	86	20	CB145B	0.8	1.9	3.7	10.1	2.4	4.0	9.1	1.8	2.8	6.0
B18	0.21	82	20	RYCB223	1.2	3.8	8.6	27.4	5.6	10.7	26.9	4.7	7.9	18.6
B19	0.25	90	20	CB146	6.2	12.1	21.4	50.8	13.1	20.6	42.3	9.3	13.6	27.2
B20	0.17	83	20	RYCB233	1.3	3.7	8.0	24.4	5.2	9.6	23.3	4.2	6.9	15.9
B21	0.17	83	20	RYCB232	1.2	3.4	7.6	23.6	5.0	9.3	22.8	4.1	6.7	15.7
B22	0.37	88	20	CB159	6.8	14.6	26.9	68.9	17.0	27.6	59.6	12.5	18.8	38.9
B23	0.21	82	20	RYCB230	1.3	3.9	8.9	28.1	5.8	11.0	27.5	4.8	8.1	19.0
B24	0.39	87	20	CB160	6.0	13.5	25.7	68.0	16.3	27.2	60.0	12.2	18.7	39.6
B25	0.24	80	20	RYCB208	0.9	3.2	7.9	27.7	5.2	10.6	28.5	4.6	8.0	20.1
B26	0.36	88	20	CB111	6.9	14.6	26.9	68.3	16.9	27.4	58.8	12.4	18.6	38.4
B27	0.11	82	20	RYCB189	0.6	1.9	4.4	14.2	2.9	5.5	14.1	2.4	4.1	9.8
B28	0.49	88	20	CB110	8.9	19.1	35.4	91.0	22.4	36.5	78.8	16.4	24.8	51.6
B29	0.14	77	20	RYCB190	0.3	1.1	3.4	13.6	2.1	4.9	14.9	2.1	4.0	10.8
B30	0.23	91	20	MH2	7.0	13.1	22.6	51.2	13.6	20.9	41.5	9.4	13.6	26.4
B31	0.16	92	20	RYCB175	5.2	9.5	15.9	35.2	9.5	14.5	28.2	6.5	9.3	17.9
B32	0.27	91	20	CB80	8.2	15.2	26.0	58.7	15.6	24.0	47.6	10.8	15.6	30.3
B33	0.22	89	20	CB81	4.5	9.4	17.0	42.1	10.6	17.0	35.8	7.7	11.4	23.3
B34	0.27	83	20	RYCB191	2.0	5.6	12.3	37.7	8.0	14.8	36.2	6.5	10.7	24.8
B35	0.23	82	20	RYCB207	1.3	3.9	9.1	29.5	6.0	11.5	29.3	5.0	8.5	20.4
B36	0.24	88	20	CB130	4.1	8.9	16.8	43.6	10.6	17.5	38.1	7.9	11.9	25.0
B37	0.28	88	20	CB112	5.0	10.8	20.1	51.9	12.7	20.8	45.0	9.4	14.2	29.5
B38	0.21	88	20	CB113	4.1	8.7	15.9	40.1	10.0	16.1	34.4	7.3	10.9	22.4
B39	0.34	88	20	CB114	6.3	13.6	25.1	64.2	15.8	25.8	55.5	11.6	17.5	36.3
B40	0.16	82	20	RYCB193	0.9	2.7	6.3	20.4	4.1	7.9	20.3	3.5	5.9	14.1
B41	0.23	88	20	RYCB132	4.2	9.1	16.7	42.6	10.5	17.1	36.8	7.7	11.6	24.0
B42	0.34	87	20	CB131	5.4	12.0	22.8	59.8	14.5	23.9	52.6	10.8	16.4	34.6
B43	0.22	82	20	RYCB209	1.2	3.8	8.7	28.1	5.7	11.0	27.8	4.8	8.1	19.4
B44	0.23	81	20	RYCB210	1.1	3.6	8.5	28.0	5.6	10.9	28.0	4.7	8.1	19.5
B45	0.21	81	20	RYCB211	0.9	3.1	7.5	25.5	4.9	9.8	25.9	4.3	7.4	18.2
B46	0.27	87	20	CB162	4.2	9.5	18.2	48.0	11.6	19.2	42.4	8.6	13.2	28.0
B47	0.29	89	20	CB161	6.0	12.6	22.8	56.8	14.3	22.9	48.4	10.3	15.4	31.5
B48	0.18	83	20	RYCB234	1.3	3.7	8.1	24.6	5.3	9.7	23.6	4.3	7.0	16.2
B49	0.20	89	20	CB155	4.4	9.1	16.3	40.2	10.2	16.2	34.1	7.3	10.9	22.1
B50	0.20	89	20	CB154	4.4	9.0	16.3	40.0	10.1	16.2	33.9	7.3	10.8	22.0
B51	0.17	83	20	RYCB235	1.3	3.7	8.0	24.4	5.2	9.6	23.3	4.2	6.9	15.9
B52	0.28	90	20	CB147	6.7	13.3	23.6	56.4	14.5	22.9	47.1	10.3	15.1	30.4
B53	0.28	83	20	RYCB224	2.5	6.6	14.1	41.4	9.1	16.4	39.0	7.2	11.7	26.4
B54	0.30	90	20	CB148	7.3	14.4	25.5	61.1	15.7	24.8	51.1	11.2	16.4	32.9
B55	0.27	81	20	RYCB225	1.3	4.2	9.9	33.0	6.5	12.8	33.2	5.6	9.5	23.2
B56	0.03	84	20	MH54	0.3	0.7	1.6	4.5	1.0	1.8	4.2	0.8	1.3	2.9
B57	0.04	88	20	MH54	0.8	1.6	3.0	7.8	1.9	3.1	6.8	1.4	2.1	4.4
B58	0.16	88	20	MH68	2.9	6.3	11.7	29.9	7.4	12.0	25.8	5.4	8.1	16.9

B59	0.17	88	20	MH68	2.9	6.3	11.9	30.9	7.5	12.4	27.0	5.6	8.5	17.7
B60	0.11	81	20	RYCB242	0.6	1.8	4.3	14.0	2.8	5.5	14.0	2.4	4.1	9.8
B61	0.11	81	20	RYCB243	0.6	1.8	4.3	14.0	2.8	5.5	14.0	2.4	4.1	9.8
B62	0.11	81	20	RYCB244	0.6	1.8	4.3	14.0	2.8	5.5	14.0	2.4	4.1	9.8
B63	3.08	89	20	Stormwater Managment Pond	66.8	137.0	246.9	607.5	153.5	245.3	514.7	110.5	164.0	333.5
B64	0.33	87	20	CB165	5.1	11.5	22.0	58.5	14.0	23.4	51.7	10.5	16.1	34.1
B65	0.29	87	20	CB167	4.5	10.1	19.4	51.2	12.3	20.5	45.2	9.2	14.1	29.8
B66	0.29	87	20	CB166	4.5	10.1	19.4	51.2	12.3	20.5	45.2	9.2	14.1	29.8
B67	0.20	82	20	RYCB226	1.2	3.6	8.2	26.2	5.3	10.2	25.8	4.5	7.5	17.9
B68	0.20	82	20	RYCB227	1.2	3.6	8.1	26.0	5.3	10.2	25.7	4.4	7.5	17.8
B69	0.21	81	20	RYCB240	0.9	3.1	7.4	25.3	4.9	9.7	25.7	4.2	7.3	18.0
B70	0.26	84	20	CB164	2.3	6.1	13.0	38.2	8.4	15.1	35.9	6.7	10.8	24.3
B71	0.38	87	20	CB151	6.3	13.9	26.2	68.4	16.6	27.4	59.9	12.3	18.7	39.4
B72	0.11	85	20	CB150	1.2	2.9	5.9	16.8	3.8	6.7	15.5	3.0	4.7	10.4
B73	0.28	91	20	CB149	8.2	15.4	26.6	60.5	16.0	24.7	49.2	11.1	16.1	31.4
B74	0.20	83	20	RYCB238	1.5	4.1	9.1	27.7	5.9	10.9	26.6	4.8	7.9	18.2
B75	0.37	88	20	CB157	6.8	14.5	26.8	68.7	16.9	27.6	59.4	12.4	18.7	38.8
B76	0.22	87	20	CB158	3.4	7.5	14.4	38.0	9.1	15.2	33.5	6.8	10.4	22.1
B77	0.20	83	20	RYCB239	1.3	3.9	8.6	26.9	5.6	10.6	26.2	4.6	7.7	18.0
B78	0.31	89	20	CB156	6.8	13.9	25.0	61.5	15.5	24.8	52.1	11.2	16.6	33.8
B79	0.17	83	20	RY237	1.3	3.7	8.0	24.4	5.2	9.6	23.3	4.2	6.9	15.9
B80	0.22	83	20	CB236	1.5	4.3	9.5	29.6	6.2	11.6	28.7	5.1	8.4	19.7
B81	0.66	89	20	MH63	14.3	29.3	52.8	129.8	32.8	52.4	110.0	23.6	35.1	71.3
B82	0.10	82	20	RYCB212	0.5	1.6	3.8	12.4	2.5	4.8	12.3	2.1	3.6	8.6
B83	0.13	89	20	CB135	2.7	5.6	10.1	25.2	6.3	10.2	21.5	4.6	6.8	14.0
B84	0.25	85	20	CB163	2.7	6.7	13.8	39.0	8.9	15.5	35.9	6.9	10.9	24.1
B85	0.22	84	20	MH64	1.9	5.1	10.8	31.9	7.0	12.6	30.1	5.6	9.0	20.4
B86	0.24	89	20	CB141	4.7	9.9	18.0	45.3	11.3	18.2	38.8	8.2	12.3	25.2
B87	0.24	89	20	CB142	4.9	10.2	18.5	46.3	11.6	18.6	39.5	8.4	12.5	25.7
B88	0.31	86	20	CB140	4.3	10.0	19.5	52.6	12.4	21.0	47.0	9.4	14.5	31.2
B89	0.11	82	20	RYCB218	0.6	1.8	4.2	13.5	2.7	5.2	13.4	2.3	3.9	9.3
B90	0.18	79	20	RYCB216	0.5	1.9	5.0	18.8	3.2	7.0	19.9	3.0	5.5	14.2
B91	0.17	79	20	RYCB214	0.5	1.9	5.0	18.3	3.2	6.9	19.3	2.9	5.3	13.7
B92	0.44	84	20	MH261	4.0	10.6	22.5	66.0	14.6	26.1	61.9	11.5	18.6	41.9
B93	0.09	78	20	RYCB213	0.2	0.8	2.3	8.7	1.5	3.2	9.3	1.4	2.5	6.7
B94	0.08	85	20	CB136	0.9	2.1	4.3	12.1	2.8	4.8	11.1	2.1	3.4	7.4
B95	0.27	88	20	CB137	4.9	10.6	19.5	50.0	12.3	20.1	43.3	9.0	13.6	28.3
B96	0.12	82	20	RYCB198	0.7	2.0	4.7	15.1	3.1	5.9	15.0	2.6	4.4	10.4
B97	0.19	81	20	RYCB215	1.0	3.1	7.3	23.7	4.7	9.2	23.6	4.0	6.8	16.5
B98	0.25	80	20	RYCB217	1.0	3.5	8.5	29.3	5.6	11.3	29.9	4.9	8.5	21.0
B99	0.37	87	20	CB139	5.3	12.1	23.6	63.5	15.1	25.4	56.6	11.3	17.5	37.5
B100	0.25	81	20	RYCB219	1.1	3.7	9.0	30.2	5.9	11.7	30.5	5.1	8.7	21.4
B101	0.53	88	20	CB120	9.1	19.9	37.3	96.8	23.6	38.8	84.4	17.4	26.5	55.4
B102	0.18	82	20	RYCB220	1.0	3.2	7.3	23.3	4.7	9.1	23.0	4.0	6.7	16.0
B103	0.13	84	20	CB129	1.2	3.1	6.7	19.7	4.3	7.8	18.6	3.4	5.6	12.6
B104	0.14	85	20	CB128	1.4	3.6	7.6	21.8	4.9	8.6	20.3	3.8	6.1	13.7
B105	0.18	82	20	RYCB197	1.0	3.2	7.3	23.3	4.7	9.1	23.0	4.0	6.7	16.0
B106	0.27	87	20	CB133	4.3	9.6	18.1	47.7	11.5	19.1	41.9	8.6	13.1	27.6
B107	0.24	88	20	CB134	4.4	9.5	17.5	44.7	11.1	17.9	38.6	8.1	12.2	25.2
B108	0.23	81	20	RYCB195	1.1	3.7	8.7	28.7	5.7	11.1	28.8	4.8	8.3	20.1
B109	0.32	88	20	CB115	5.4	11.9	22.2	57.5	14.1	23.1	50.1	10.4	15.7	32.9
B110	0.19	82	20	RYCB194	1.1	3.5	7.9	25.2	5.2	9.8	24.7	4.3	7.2	17.1
B111	0.27	83	20	RYCB192	1.9	5.4	11.9	36.8	7.8	14.4	35.6	6.3	10.5	24.5
B112	0.28	94	20	CB82	13.6	22.7	35.4	71.4	20.5	29.6	54.4	13.4	18.5	33.8
B113	0.29	95	20	CB83	15.3	25.0	38.4	76.1	22.1	31.6	57.3	14.3	19.6	35.5
B114	0.29	83	20	RYCB177	2.0	5.8	12.7	39.3	8.3	15.4	37.9	6.8	11.2	26.0
B115	0.04	85	20	CB102	0.5	1.2	2.4	6.8	1.6	2.7	6.3	1.2	1.9	4.2
B116	0.24	81	20	RYCB176	1.2	3.8	8.9	29.2	5.8	11.3	29.3	4.9	8.4	20.4
B117	0.31	95	20	CB87	17.7	28.2	42.7	82.8	24.4	34.4	61.7	15.6	21.2	38.0
B118	0.15	92	20	RYCB181	5.4	9.7	16.2	35.2	9.6	14.5	28.0	6.5	9.3	17.7
B119	0.54	90	20	MH9	13.4	26.4	46.8	111.6	28.7	45.3	93.0	20.4	29.9	59.9
B120	0.08	93	20	CB89	3.1	5.5	8.9	18.9	5.3	7.8	14.8	3.5	5.0	9.3
B121	0.16	87	20	CB90	2.4	5.4	10.3	27.4	6.6	11.0	24.2	4.9	7.5	16.0
B122	0.31	89	20	CB88	6.2	12.9	23.5	58.8	14.7	23.7	50.2	10.7	15.9	32.7
B123	0.36	82	20	RYCB180	2.1	6.4	14.7	46.7	9.6	18.2	45.9	8.0	13.4	31.8
B124	0.10	88	20	CB91	1.8	4.0	7.4	19.1	4.7	7.7	16.6	3.4	5.2	10.9
B125	0.03	87	20	ST. THOMAS DITCH OUTLET 1	0.4	0.8	1.6	4.3	1.0	1.7	3.8	0.8	1.2	2.5
B126	0.07	80	20	ST. THOMAS DITCH OUTLET 1	0.3	0.9	2.1	7.5	1.4	2.9	7.7	1.2	2.2	5.4
B127	0.06	86	20	CB92	0.9	2.0	3.9	10.5	2.5	4.2	9.4	1.9	2.9	6.3
B128	0.26	88	20	CB100	4.6	9.9	18.5	47.7	11.7	19.1	41.5	8.6	13.0	27.2
B129	0.22	88	20	CB101	3.8	8.2	15.3	39.5	9.7	15.8	34.3	7.1	10.8	22.5

B130	0.36	88	20	CB103	6.4	13.8	25.7	66.3	16.3	26.6	57.6	12.0	18.1	37.7
B131	0.27	81	20	RYCB186	1.2	4.1	9.8	32.8	6.4	12.7	33.2	5.5	9.5	23.2
B132	0.19	86	20	CB93	2.4	5.7	11.3	30.8	7.2	12.3	27.8	5.5	8.6	18.5
B133	0.22	87	20	CB94	3.2	7.2	14.0	37.6	9.0	15.0	33.5	6.7	10.4	22.2
B134	0.14	80	20	RYCB182	0.5	1.8	4.6	16.1	3.0	6.1	16.6	2.6	4.7	11.7
B135	0.14	80	20	RYCB183	0.5	1.8	4.6	16.0	3.0	6.1	16.4	2.6	4.6	11.6
B136	0.20	86	20	CB95	2.5	6.0	12.0	33.0	7.7	13.1	29.8	5.9	9.2	19.9
B137	0.22	81	20	RYCB187	1.1	3.6	8.4	27.5	5.5	10.7	27.5	4.7	7.9	19.2
B138	0.31	87	20	CB104	5.0	11.1	21.1	55.5	13.4	22.2	48.8	10.0	15.2	32.1
B139	0.26	83	20	RYCB178	1.7	4.9	11.1	34.5	7.2	13.5	33.5	5.9	9.9	23.1
B140	0.23	88	20	CB85	4.2	9.1	16.7	42.6	10.5	17.1	36.8	7.7	11.6	24.0
B141	0.36	89	20	CB84	7.1	14.9	27.1	68.1	17.0	27.4	58.3	12.4	18.5	37.9
B142	0.23	82	20	RYCB196	1.4	4.3	9.8	30.8	6.4	12.0	30.1	5.3	8.8	20.8
B143	0.22	87	20	CB116	3.2	7.2	14.0	37.6	9.0	15.0	33.5	6.7	10.4	22.2
B144	0.18	82	20	RYCB179	0.9	2.9	6.8	22.2	4.5	8.6	22.1	3.8	6.4	15.4
B145	0.11	86	20	CB107	1.3	3.1	6.2	17.2	4.0	6.9	15.6	3.1	4.8	10.4
B146	0.17	89	20	CB105	3.9	7.8	14.0	34.3	8.7	13.9	28.9	6.2	9.2	18.7
B147	0.13	88	20	CB86	2.3	5.0	9.4	24.2	5.9	9.7	21.1	4.4	6.6	13.8
B148	0.15	87	20	CB98	2.5	5.4	10.3	26.9	6.5	10.8	23.6	4.8	7.4	15.5
B149	0.24	86	20	CB96	3.1	7.3	14.6	40.2	9.4	16.0	36.4	7.1	11.2	24.3
B150	0.14	79	20	RYCB184	0.4	1.4	3.9	14.4	2.5	5.4	15.2	2.3	4.2	10.9
B151	0.06	82	20	ST THOMAS DITCH OUTLET 2	0.3	0.9	2.1	6.9	1.4	2.7	6.9	1.2	2.0	4.8
B152	0.15	80	20	RYCB185	0.6	2.0	5.0	17.3	3.3	6.6	17.7	2.9	5.0	12.5
B153	0.11	84	20	CB97	1.0	2.5	5.4	15.8	3.5	6.3	14.9	2.8	4.5	10.1
B154	0.12	89	20	CB99	2.6	5.3	9.6	23.6	6.0	9.6	20.0	4.3	6.4	13.0
B155	0.08	88	20	CB106	1.3	2.8	5.2	13.6	3.3	5.5	11.9	2.5	3.7	7.8
B156	0.21	85	20	CB108	2.2	5.5	11.5	32.7	7.4	13.0	30.1	5.8	9.1	20.3
B157	0.22	79	20	RYCB201	0.6	2.3	6.2	23.2	4.0	8.7	24.4	3.7	6.7	17.4
B158	0.05	83	20	ST THOMAS DITCH OUTLET 2	0.3	1.0	2.1	6.6	1.4	2.6	6.4	1.1	1.9	4.4
B159	0.16	87	20	CB124	2.3	5.3	10.3	27.6	6.6	11.0	24.6	4.9	7.6	16.3
B160	0.19	88	20	CB125	3.6	7.7	14.1	35.9	8.9	14.4	30.9	6.5	9.8	20.2
B161	0.10	82	20	RYCB203	0.6	1.9	4.2	13.3	2.8	5.2	13.1	2.3	3.8	9.0
B162	0.12	81	20	RYCB205	0.6	1.8	4.4	14.6	2.9	5.6	14.7	2.5	4.2	10.3
B163	0.26	85	20	CB127B	2.8	7.0	14.5	41.0	9.3	16.3	37.8	7.2	11.5	25.4
B164	0.17	88	20	CB127A	3.3	7.0	12.9	32.7	8.1	13.1	28.1	5.9	8.9	18.4
B165	0.15	84	20	RYCB206	1.2	3.3	7.0	21.1	4.6	8.3	20.1	3.7	6.0	13.7
B166	0.27	87	20	CB121	4.1	9.2	17.6	47.0	11.2	18.8	41.6	8.4	12.9	27.5
B167	0.15	82	20	RYCB204	0.9	2.7	6.2	19.7	4.0	7.7	19.4	3.4	5.7	13.4
B168	0.19	88	20	CB126	3.7	7.9	14.5	36.6	9.1	14.7	31.5	6.6	10.0	20.5
B169	0.20	84	20	CB122	1.8	4.8	10.2	30.0	6.6	11.9	28.3	5.3	8.5	19.2
B170	0.17	82	20	RYCB202	0.9	2.9	6.8	22.0	4.4	8.6	21.8	3.7	6.3	15.2
B171	0.31	86	20	CB123	3.8	9.0	18.3	50.8	11.7	20.2	46.3	9.0	14.2	31.0
B172	0.23	80	20	RYCB199	0.9	3.2	7.8	26.9	5.1	10.3	27.5	4.5	7.8	19.3
B173	0.22	89	20	CB118	4.6	9.5	17.3	43.0	10.8	17.3	36.7	7.8	11.7	23.8
B174	0.22	88	20	CB117	3.9	8.5	15.8	40.8	10.0	16.4	35.4	7.4	11.1	23.2
B175	0.19	86	20	CB119	2.5	5.9	11.6	31.7	7.4	12.6	28.5	5.6	8.8	19.0
B176	0.08	86	20	CB245	1.0	2.4	4.8	13.2	3.1	5.3	12.0	2.3	3.7	8.0
B177	0.11	90	20	CB247	2.6	5.2	9.2	22.3	5.7	9.0	18.7	4.1	6.0	12.0
B178	0.17	85	20	CB246	2.0	4.7	9.6	26.7	6.2	10.6	24.4	4.7	7.5	16.3
B179	0.08	86	20	CB247	1.1	2.4	4.7	12.8	3.0	5.1	11.4	2.3	3.5	7.6
B180	0.13	89	20	CB248	2.7	5.6	10.1	25.2	6.3	10.1	21.4	4.6	6.8	13.9
B181	0.13	82	20	RYCB249	0.8	2.3	5.3	17.0	3.5	6.6	16.7	2.9	4.9	11.5
B182	0.06	85	20	CB246	0.7	1.6	3.3	9.4	2.1	3.7	8.7	1.7	2.6	5.8
B183	0.09	81	20	RYCB241	0.5	1.5	3.5	11.5	2.3	4.5	11.6	1.9	3.3	8.1
OW01	0.56	87	20	MH49	7.3	17.2	34.1	93.4	21.9	37.2	84.2	16.6	25.9	56.0
OW02	3.52	88	20	MH-OW02	64.6	139.0	256.6	657.0	162.1	263.7	568.2	118.7	179.0	371.4