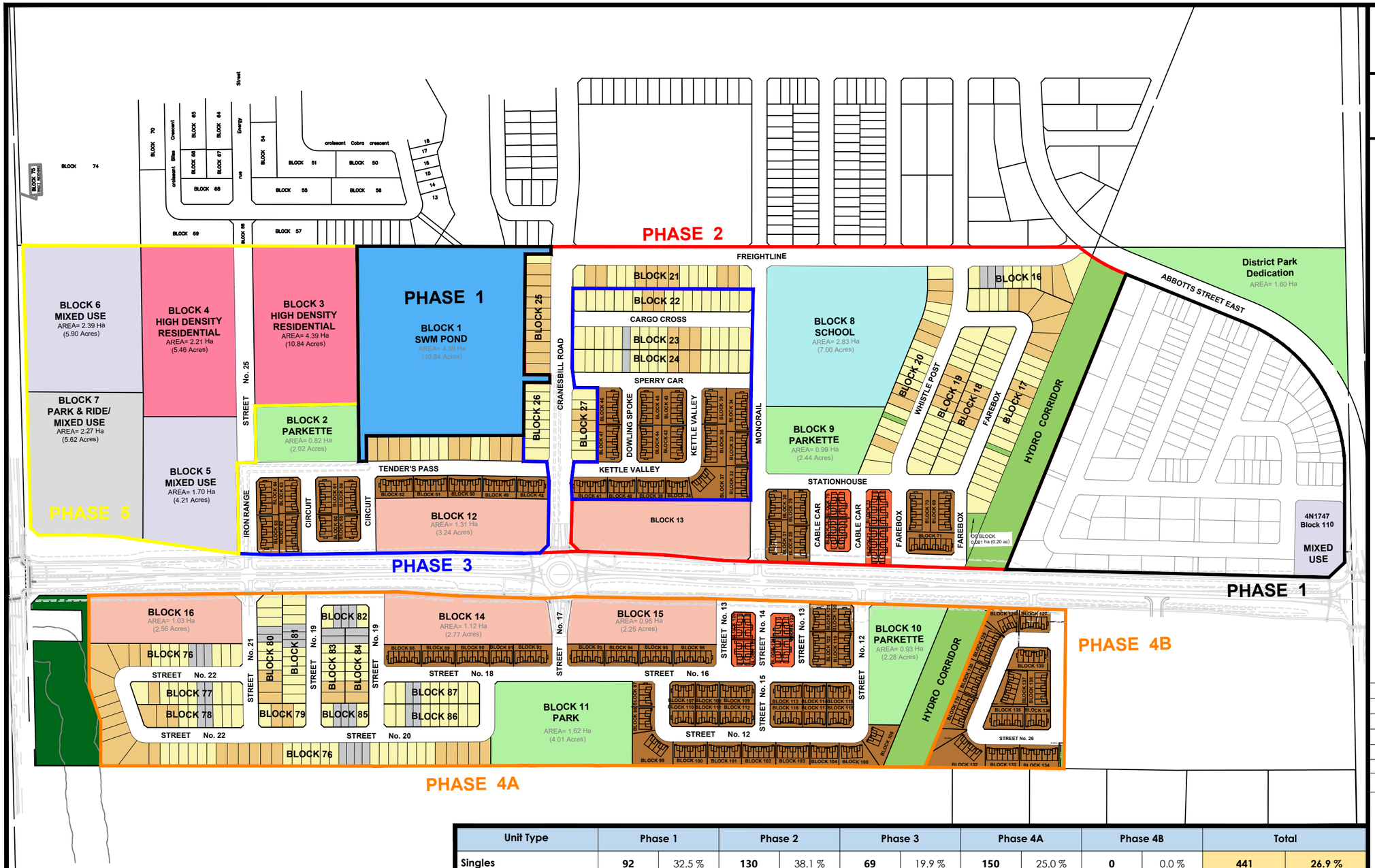
APPENDIX A

Concept Plan

Kizell Lands Concept Plan vs Minto Abbott's Run- Concept Plan Overlay



Unit Type	Phase 1		Phase 2		Phase 3		Phase 4A		Phase 4B		Total	
Singles	92	32.5 %	130	38.1 %	69	19.9 %	150	25.0 %	0	0.0 %	441	26.9 %
Executive Towns	149	52.7 %	45	13.2 %	166	48.0 %	175	29.1 %	71	100.0 %	606	36.9 %
Avenue Towns	0	0.0 %	42	12.3 %	0	0.0 %	30	5.0 %	0	0.0 %	72	4.4 %
Rear Lane Towns	42	14.8 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	42	2.6 %
4-6 Storey Medium Density Condos	0	0.0 %	124	36.4 %	111	32.1 %	246	40.9 %	0	0.0 %	481	29.3 %
Total	283	100.0 %	341	100.0 %	346	100.0 %	601	100.0 %	71	100.0 %	1642	100.0 %
Parkland Required	From DPA + Extra Units = 1.78 ha (1433 u) + 666 u/600 ha										2.13 ha	5.26 ac
Parkland Dedicated	0.00 ha		0.99 ha		0.82 ha		2.55 ha		0.00 ha		4.36 ha	10.77 ac

Title:

Concept Plan 34

Project:

Abbott's Run

Legend

- 28' Single Family Homes
- 30' Single Family Homes
- 36' Single Family Homes
- 43' Single Family Homes
- Executive Town Homes
- Avenue (B2B) Town Homes
- Rear Lane Town Homes
- 4-6 Storey Medium Density Condos
- High Density Residential
- Mixed Use Blocks
- Mixed Use Block / Park & Ride
- School Facilities
- Parkland
- Open Space
- Natural Feature
- Storm Water Management Pond
- Sidewalk

No.	Description	Date	By
13	Sidewalk Locations	2025-03-24	E.H.
12	Added block 13 overlay	2025-03-21	K.P.
11	Added pathway to block 17	2025-03-20	K.P.
10	Updated Phasing Limits	2024-11-11	K.P.
9	Issued For Review	2024-07-11	M.M.

Revisions

minto Communities

Drawn By: M.M.
Checked By: C.T.

Minto Communities Inc
180 Kent Street,
Ottawa, ON
K1P 0B6

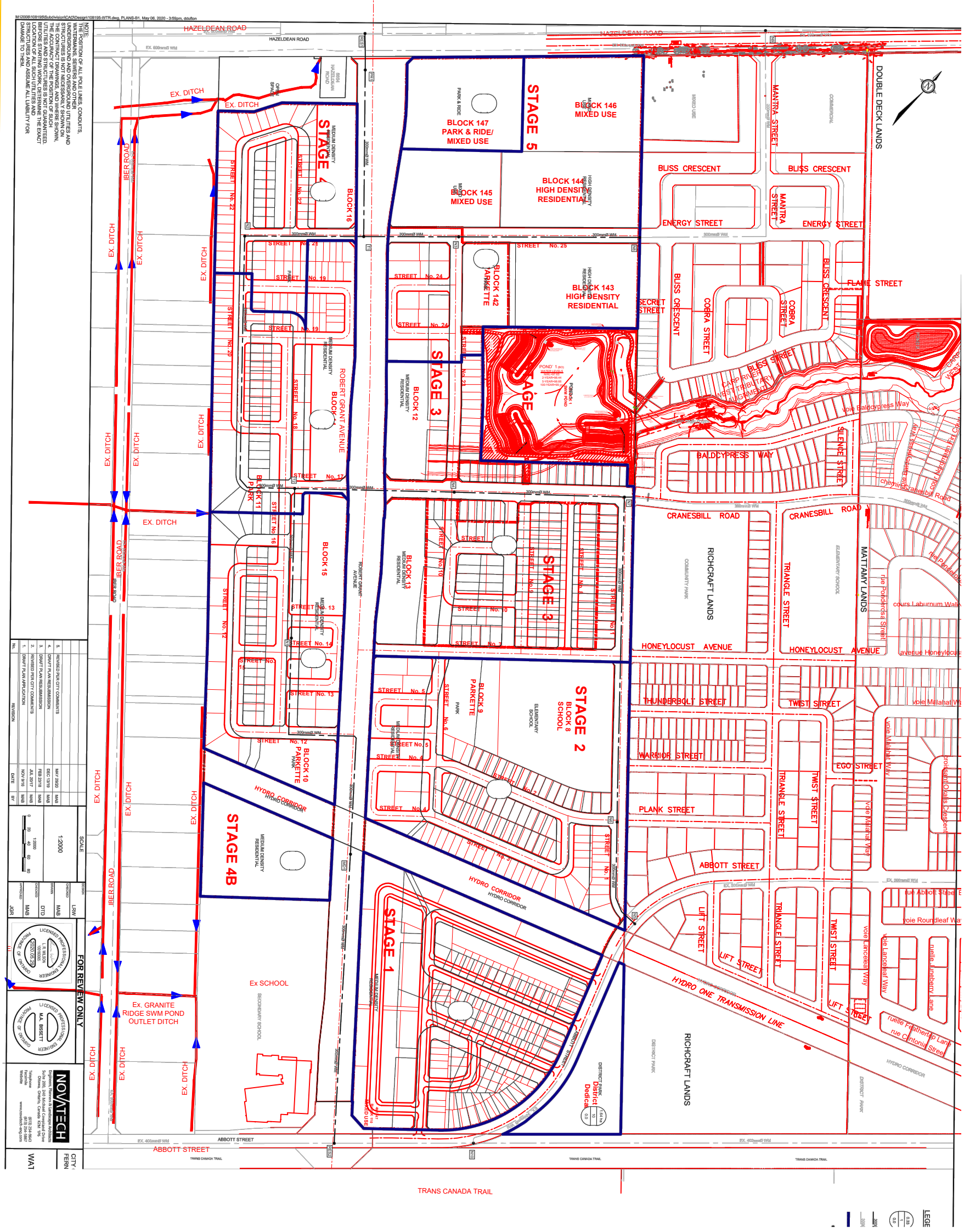
North

Scale: **NTS**

LEGEND

- Kizell Concept Plan
- Kizell Concept Plan Phase Line
- Minto Abbott's Run Concept Plan

*NOTE: this overlay is approximate and should only be used as a tool to compare land use between the two concept plans



120 Iber Road, Unit 103
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Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

ABBOTT'S RUN PRELIMINARY DESIGN

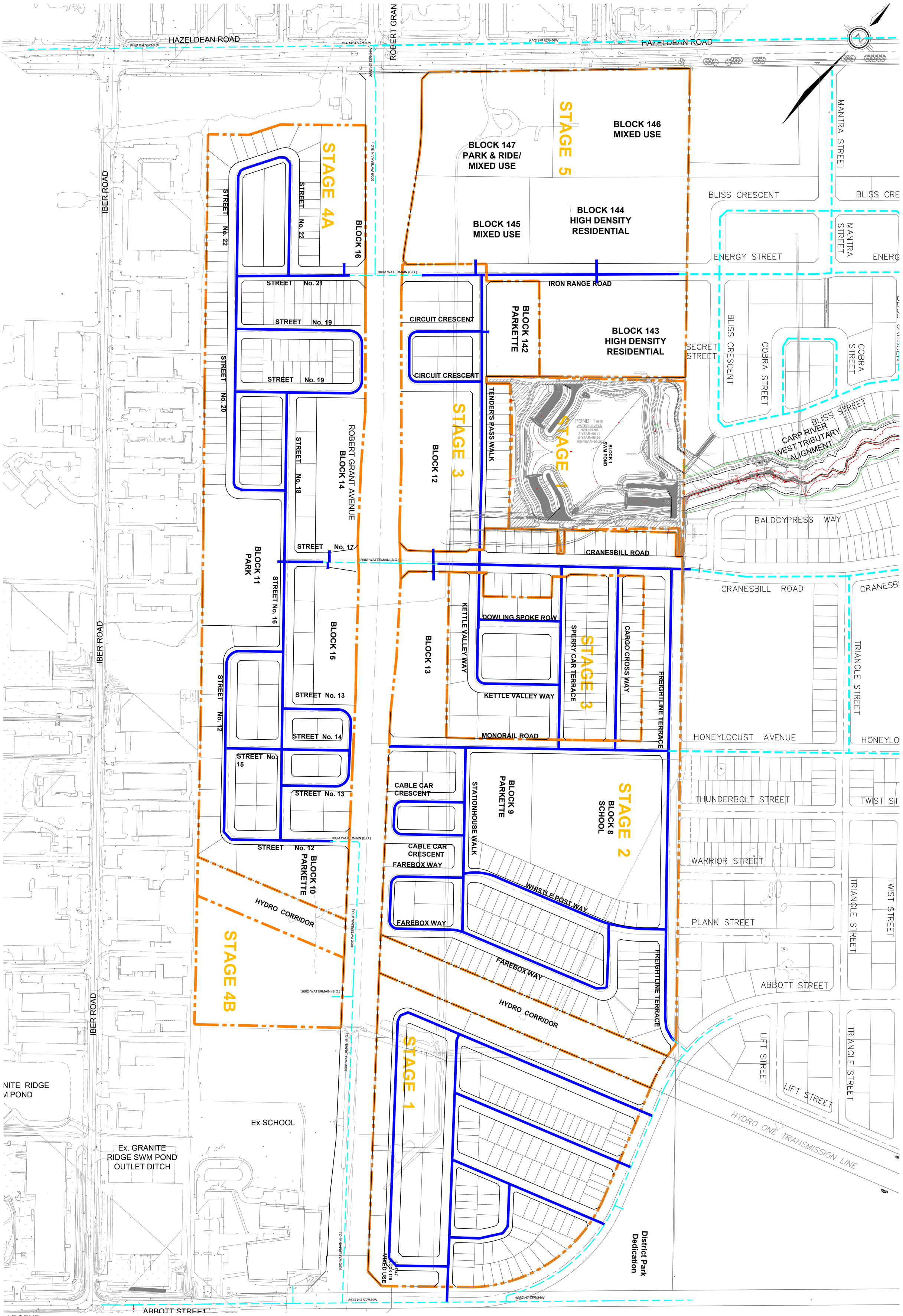
CITY OF OTTAWA

Kizell Lands Concept Plan vs. Minto's Abbott's Run Concept Plan

SCALE:	1:6000	PROJECT No.:	22-1295
DATE:	JANUARY 2025	FIGURE:	A

APPENDIX B

Water Servicing Figure
Geo Advice Boundary Conditions
Novatech Water Servicing Figure
Novatech Water Modelling 2020



LEGEND

- SUBJECT LANDS
- PROPOSED LOCAL WATERMAIN
- EXISTING WATERMAIN
- PLUG

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Fax. (613) 836-7183
www.DSEL.ca

ABBOTT'S RUN
PRELIMINARY
DESIGN
CITY OF OTTAWA

WATERMAIN SERVICING PLAN

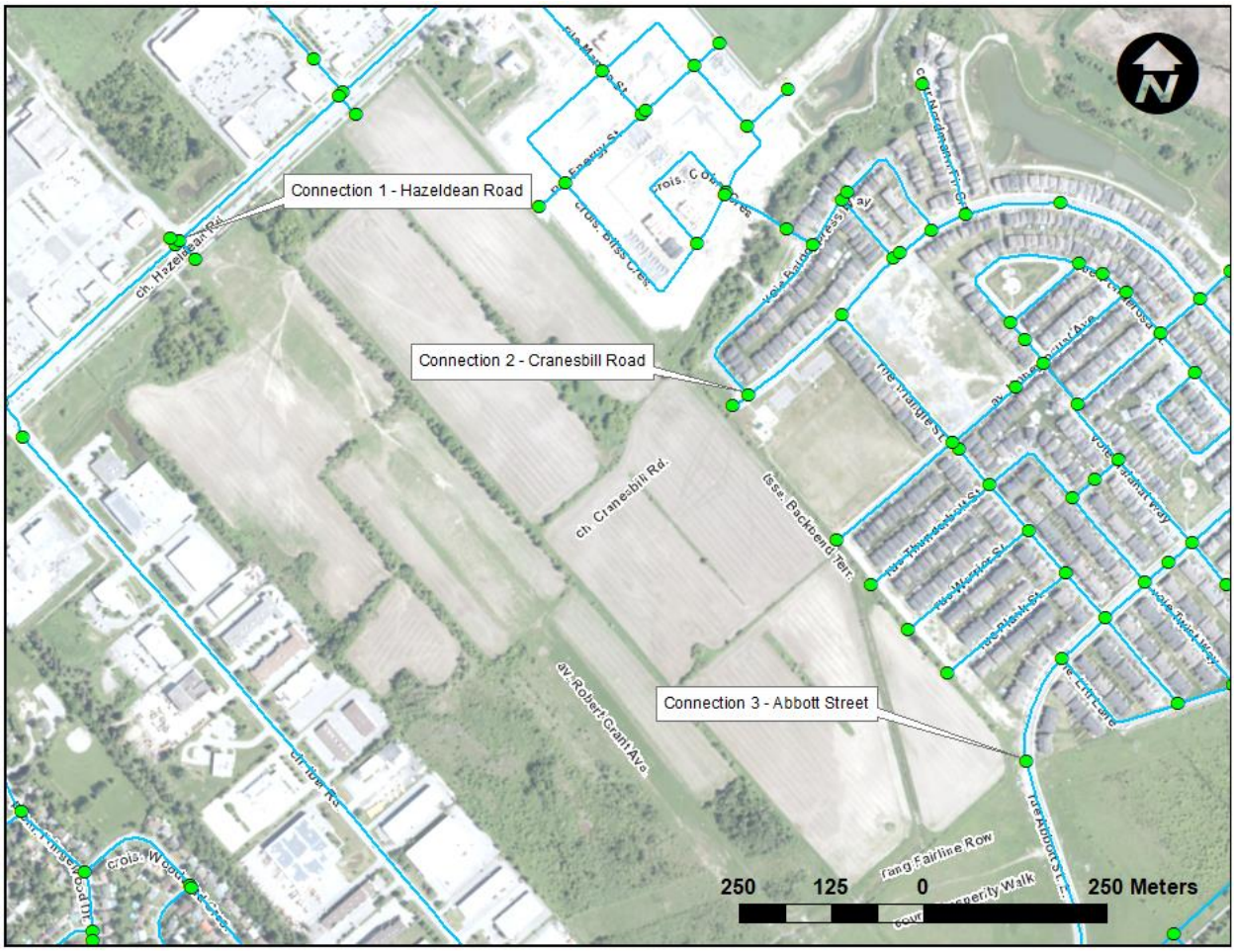
SCALE:	1:2000	PROJECT No.:	22-1295
DATE:	MAY 2025	DRAWING:	05

Boundary Conditions
Minto – Abbott's Phases 2 & 3

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	794	13.24
Maximum Daily Demand	1,172	19.53
Peak Hour	2,342	39.03
Fire Flow Demand #1	9,000	150.00
Fire Flow Demand #2	16,000	266.67

Location



Results

Connection 1 - Hazeldean Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.1	84.5
Peak Hour	154.9	75.8
Max Day plus Fire Flow #1	157.0	78.8
Max Day plus Fire Flow #2	155.6	76.8

[1] Ground Elevation = 101.6 m

Connection 2 - Cranesbill Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.1	87.5
Peak Hour	154.2	77.7
Max Day plus Fire Flow #1	151.9	74.4
Max Day plus Fire Flow #2	141.4	59.5

[1] Ground Elevation = 99.6 m

Connection 3 - Abbott Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.1	85.0
Peak Hour	154.2	75.1
Max Day plus Fire Flow #1	154.9	76.1
Max Day plus Fire Flow #2	149.9	69.1

[1] Ground Elevation = 101.3 m

Notes

1. Demands for proposed Connection 1 at existing stub off Hazeldean Road were assigned to upstream junction of the existing stub and Hazeldean Road off the public looped watermains. The engineer must calculate headloss off the dead-end main.
2. Demands for proposed Connection 2 at existing stub off Cranesbill Road were assigned to upstream junction of the existing stub and Cranesbill Road off the public looped watermains. The engineer must calculate headloss off the dead-end main.
3. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
    a. If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    b. Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

November 29, 2024

Sent by email: atourigny@dsel.ca

David Schaeffer Engineering Ltd.
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

Attention: **Alex Tourigny, P.Eng**
Project Manager

Re: **Water Distribution Network Boundary Condition Request**
Minto Communities Abbott's Run Development
GeoAdvice Project ID: 2024-123-DSE

Dear Mr.Tourigny,

In order to carry out the watermain analysis and hydraulic modeling for Abbott's Run development in the City of Ottawa, we request the hydraulic boundary conditions (HGL) for the proposed connection points as shown on the attached schematic. Flow conditions are outlined below:

Boundary conditions at **Connections 1, 2 and 3** are required for the demand conditions:

- Average day demand = 13.24 L/s
- Maximum day demand = 19.53 L/s
- Maximum day demand + fire flow (150 L/s) = 169.53L/s
- Maximum day demand + fire flow (167 L/s) = 186.53 L/s
- Maximum day demand + fire flow (217 L/s) = 236.53. L/s
- Maximum day demand + fire flow (267 L/s) = 286.53 L/s
- Peak hour demand = 39.03 L/s

The above demands should be allocated and split equally to Connections 1, 2 and 3.

For the maximum day demand plus fire flow scenarios, the HGLs for the lowest (150 L/s) and highest (267 L/s) fire flow requirement scenarios should be provided. The HGLs for any intermediate fire flow scenarios will be interpolated. Please confirm if any pumps turn on between the lowest (150 L/s) and highest (267 L/s) fire flow requirement scenarios. If there are any pumps feeding the development area and any additional pumps turning on between the lowest and highest fire flow scenarios, the HGLs **cannot** be interpolate or extrapolated. In this case, boundary conditions should be provided for all fire flow scenarios listed above.

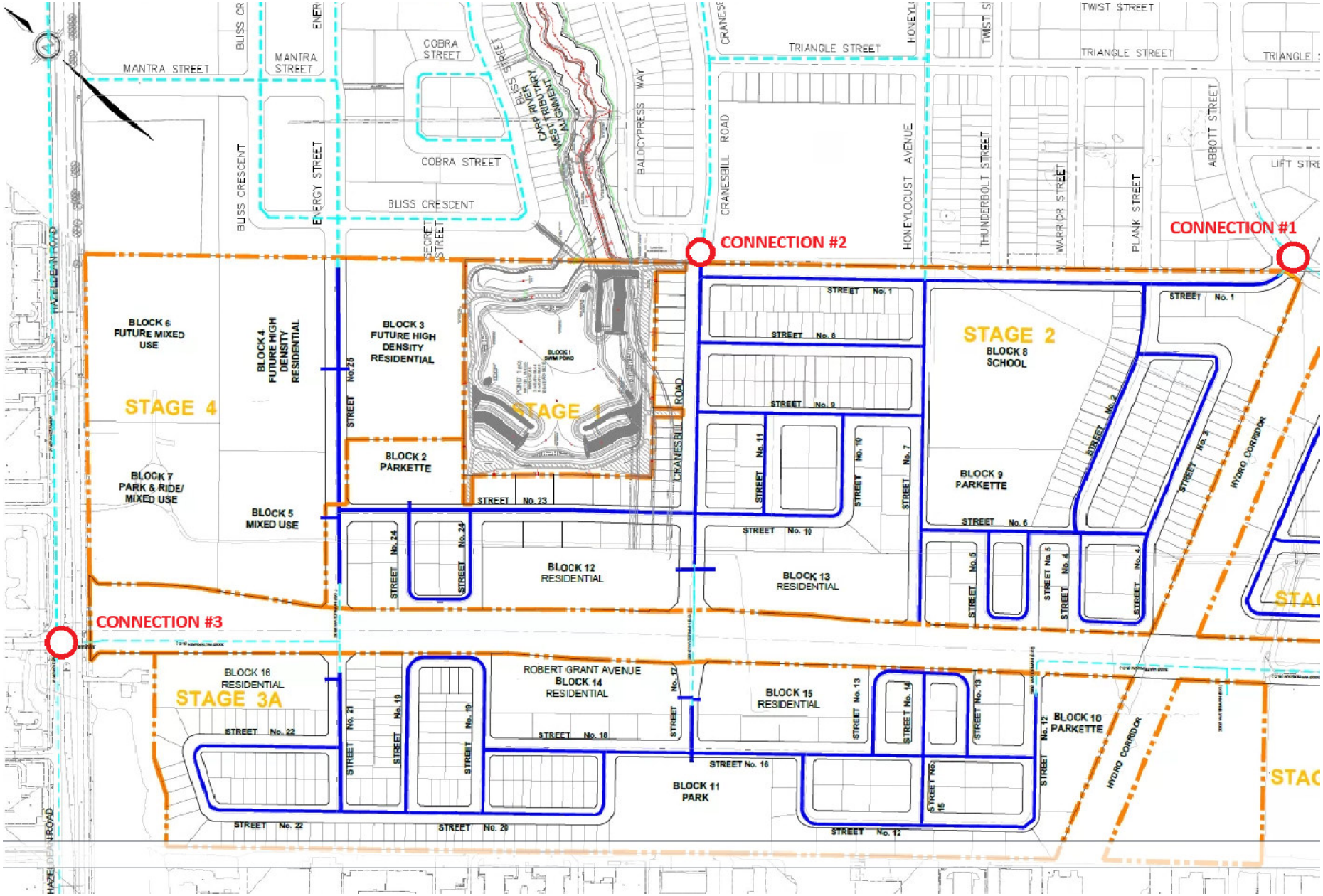
If you have any questions, please do not hesitate to contact me.

Yours truly,

GeoAdvice Engineering Inc.

Werner de Schaetzen, Ph.D., P.Eng.
President and Chief Executive Officer
werner@geoadvice.com
GeoAdvice Engineering Inc.

Attachments: Mark up for connection locations and demand calculations


MANTRA STREET
MANTRA STREET
COBRA STREET
COBRA STREET
BLISS CRESCENT
BLISS CRESCENT
ENERGY STREET
SECRETT STREET
BLISS STREET
CAPP RIVER WEST TRIBUTARY ALIGNMENT
BALDCYPRESS WAY
CRANESBILL ROAD
HONEYLOCUST AVENUE
TRIANGLE STREET
TRIANGLE STREET
TWIST STREET
THUNDERBOLT STREET
WARRIOR STREET
PLANK STREET
ABBOTT STREET
HAZELDEAN ROAD
CONNECTION #1
CONNECTION #2
CONNECTION #3
BLOCK 6 FUTURE MIXED USE
BLOCK 4 FUTURE HIGH DENSITY RESIDENTIAL
BLOCK 3 FUTURE HIGH DENSITY RESIDENTIAL
BLOCK 1 SWM POND
STAGE 4
STAGE 1
STAGE 2
BLOCK 8 SCHOOL
BLOCK 7 PARK & RIDE/ MIXED USE
BLOCK 5 MIXED USE
BLOCK 2 PARKETTE
BLOCK 9 PARKETTE
BLOCK 12 RESIDENTIAL
BLOCK 13 RESIDENTIAL
BLOCK 16 RESIDENTIAL
STAGE 3A
ROBERT GRANT AVENUE
BLOCK 14 RESIDENTIAL
BLOCK 15 RESIDENTIAL
BLOCK 11 PARK
BLOCK 10 PARKETTE
HYDRO CORRIDOR
STREET No. 1
STREET No. 2
STREET No. 3
STREET No. 4
STREET No. 5
STREET No. 6
STREET No. 7
STREET No. 8
STREET No. 9
STREET No. 10
STREET No. 11
STREET No. 12
STREET No. 13
STREET No. 14
STREET No. 15
STREET No. 16
STREET No. 17
STREET No. 18
STREET No. 19
STREET No. 20
STREET No. 21
STREET No. 22
STREET No. 23
STREET No. 24
STREET No. 25

Consumer Water Demands

Residential Demands - Phase 2*

Dwelling Type	Number of Units	Population		OWD Outdoor Water Demand (L/unit/day)	Water Loss per Connection (L/unit/day)	Average Day Demand			Max Day ADD + OWD	Peak Hour 2.1 x Max. Day
		Persons per Unit	Population Per Dwelling Type			(L/c/d)	(L/d)	(L/s)		
Singles	130	3.4	442	700	-	180	79,560	0.92	1.97	4.15
Executive Towns	45	2.7	122	350	-	198	24,057	0.28	0.46	0.97
Avenue Towns	42	2.7	113	350	-	198	22,453	0.26	0.43	0.90
Medium Density Condos	104	1.8	187	-	-	219	40,997	0.47	0.47	1.00
Connection Loss‡	218	-	-	-	80		17,440	0.20	0.20	0.20
Subtotal	**321**		**864**				**184,507**	**2.14**	**3.5**	**7.2**

Non Residential Demands - Phase 2

Property Type	Area (ha)				Average Day Demand			Max Day 1.5 x Avg. Day	Peak Hour 1.8 x Max Day
					(L/ha/d)	(L/d)	(L/s)		
School	2.83				28,000	79,240	0.92	1.38	2.48
Park	0.99				28,000	27,720	0.32	0.48	0.87
Subtotal	**3.82**					**106,960**	**1.24**	**1.86**	**3.34**

Residential Demands - Phase 3*

Dwelling Type	Number of Units	Population		(OWD)Outdoor Water Demand (L/unit/day)	Water Loss per Connection (L/unit/day)	Average Day Demand			Max Day ADD + OWD	Peak Hour 2.1 x Max. Day
		Persons per Unit	Population Per Dwelling Type			(L/c/d)	(L/d)	(L/s)		
Singles	69	3.4	235	700	-	180	42,228	0.49	1.05	2.20
Executive Towns	166	2.7	448	350	-	198	88,744	1.03	1.70	3.57
Medium Density Condos	111	1.8	200	-	-	219	43,756	0.51	0.51	1.06
Connection Loss‡	236	-	-	-	80		18,880	0.22	0.22	0.22
Subtotal	**346**		**883**				**193,608**	**2.24**	**3.5**	**7.1**

Non Residential Demands - Phase 3

Property Type	Area (ha)				Average Day Demand			Max Day 1.5 x Avg. Day	Peak Hour 1.8 x Max Day
					(L/ha/d)	(L/d)	(L/s)		
Park	0.82				28,000	22,960	0.27	0.40	0.72
Subtotal	**0.82**					**22,960**	**0.27**	**0.40**	**0.72**

Residential Demands - Phase 4A*

Dwelling Type	Number of Units	Population		(OWD)Outdoor Water Demand (L/unit/day)	Water Loss per Connection (L/unit/day)	Average Day Demand			Max Day ADD + OWD	Peak Hour 2.1 x Max. Day
		Persons per Unit	Population Per Dwelling Type			(L/c/d)	(L/d)	(L/s)		
Singles	150	3.4	510	700	-	180	91,800	1.06	2.28	4.78
Executive Towns	175	2.7	473	350	-	198	93,555	1.08	1.79	3.76
Avenue Towns	30	2.7	81	350	-	198	16,038	0.19	0.31	0.65
Medium Density Condos	246	1.8	443	-	-	219	96,973	1.12	1.12	2.36
Connection Loss‡	357	-	-	-	80		28,560	0.33	0.33	0.33
Subtotal	**601**		**1,506**				**326,926**	**3.78**	**5.8**	**11.9**

Non Residential Demands - Phase 4A

Property Type	Area (ha)				Average Day Demand			Max Day 1.5 x Avg. Day	Peak Hour 1.8 x Max Day
					(L/ha/d)	(L/d)	(L/s)		
Park	2.55				28,000	71,400	0.83	1.24	2.23
Subtotal	**2.55**					**71,400**	**0.83**	**1.24**	**2.23**

Residential Demands - Phase 4B*

Dwelling Type	Number of Units	Population		(OWD)Outdoor Water Demand (L/unit/day)	Water Loss per Connection (L/unit/day)	Average Day Demand			Max Day ADD + OWD	Peak Hour 2.1 x Max. Day
		Persons per Unit	Population Per Dwelling Type			(L/c/d)	(L/d)	(L/s)		
Executive Towns	49	2.7	132	350	-	198	26,195	0.30	0.50	1.05
Avenue Towns	62	2.7	167	350	-		33,145	0.38	0.63	1.33
Connection Loss‡	111	-	-	-	80		8,880	0.10	0.10	0.10
Subtotal	**111**		**300**				**68,221**	**0.79**	**1.2**	**2.5**

Residential Demands - Future Phase*

Dwelling Type	Number of Units**	Population		(OWD)Outdoor Water Demand (L/unit/day)	Water Loss per Connection (L/unit/day)	Average Day Demand			Max Day ADD + OWD	Peak Hour 2.1 x Max. Day
		Persons per Unit	Population Per Dwelling Type			(L/c/d)	(L/d)	(L/s)		
High Density Residential	264	1.8	475	-	-	219	104,069	1.20	1.20	2.53
Mixed Use Residential	164	1.8	295	-	-		64,649	0.75	0.75	1.57
Connection Loss‡	4	-	-	-	80		320	0.00	0.00	0.00
Subtotal	**428**		**770**				**169,038**	**1.96**	**2.0**	**4.1**

	Avg. Day	Max Day	Peak Hour
Total (Connection Points 1 & 2)	**13.24**	**19.53**	**39.03**

*Peaking factors based on the City of Ottawa's DraftFinal_SystemLevelDemandParameters_24May2024(JB).xls spreadsheet

**Units based on estimate provided by DSEL

‡Condo connections assumed to be 1 per 100 units. ADD, MDD and PHD are the same for conection loss

Lucas Wilson

From: Surprenant, Eric <Eric.Surprenant@ottawa.ca>
Sent: September-29-16 8:30 AM
To: Lucas Wilson
Subject: FW: Fernbank Community - Kizell Lands: WM Boundary Conditions

Lucas,

Here are the requested boundary conditions:

Hazeldean Connection (900mm feedermain):
PKHR = 155.5m
MAX HGL = 162.4m
MXDY+Fire (167 L/s) = 155.6m
MXDY+Fire (217 L/s) = 155.6m

Abbott Street Connection (400mm watermain):
PKHR = 154.5m
MAX HGL = 162.1m
MXDY+Fire (167 L/s) = 154.5m
MXDY+Fire (217 L/s) = 153.6m

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

From: Lucas Wilson [mailto:l.wilson@novatech-eng.com]
Sent: September 26, 2016 1:44 PM
To: Surprenant, Eric
Subject: Fernbank Community - Kizell Lands: WM Boundary Conditions

Eric,

Not sure who will be assigned to this project but I thought I'd start with you. I'm looking for boundary conditions to complete a hydraulic analysis in support of Draft Plan Submission.
The site is located north of Fernbank Crossing, between Abbott Street and Hazeldean. I've included a drawing which highlights the connections at Hazeldean and Abbott Street within the extended Robert Grant ROW. I've also attached the projected water demand for the Concept Site. Please let me know if you require additional information.

Thanks,
Lucas Wilson | P.Eng.
Project Engineer
NOVATECH

Engineers, Planners & Landscape Architects | 200-240 Michael Cowpland Drive, Ottawa, ON K2M 1P6
Office 613.254.9643 x282 | **Fax** 613.254.5867 | **Email** l.wilson@novatech-eng.com

Kizell Lands
Water Demand

	Area (ha)	Units	Population	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Singles	N/A	288	979	3.173	7.933	17.453
Towns	N/A	475	1283	4.156	10.391	22.859
Medium Density Residential	15.98	1039	1870	6.059	15.148	33.325
High Density Residential	N/A	360	648	2.100	5.250	11.550
Mixed Use Residential	N/A	460	828	2.683	6.708	14.758
Mixed Use Commercial	3.26	N.A	N/A	1.056	1.585	2.853
Schools	3.23	N/A	N/A	1.047	1.570	2.826
Park	4.90	N/A	N/A	1.588	2.382	4.288
Park N' Ride Residential	N/A	300	540	1.750	4.375	9.625
Park N' Ride Commercial	1.82	N/A	N/A	0.590	0.885	1.593
Total	**29.19**	**2922**	**6147**	**24.203**	**56.227**	**121.130**

Water Demand Parameters

Singles	3.4	ppl/unit		
Towns	2.7	ppl/unit		
Medium Density Residential	1.8	ppl/unit	65	units/net ha
Mixed Use Residential	1.8	ppl/unit		
Residential Demand	280	L/c/day		
Institutional/Commercial Demand	28000	L/gross ha/day		
Residential Max Day	2.5	x Avg Day		
Residential Peak Hour	2.2	x Max Day		
Institutional/Commercial Max Day	1.5	x Avg Day		
Institutional/Commercial Peak Hour	1.8	x Max Day		
Residential Fire Flow	167	L/s		
Institutional/Commercial Fire Flow	217	L/s		

Fernbank Community - Kizell Lands: Watermain Demand

Node	Singles	Towns	Stacked Towns (ha)	Medium Density Area (ha)	High Density (Units)	Mixed Use (Units)	Institutional/Commercial Area (ha)	Total Population	Total IC Area (ha)	Average Day Residential Demand (L/s)	Average Day IC Demand (L/s)	Total Average Day Demand (L/s)	Maximum Day Residential Demand (L/s)	Maximum Day IC Demand (L/s)	Total Maximum Day Demand (L/s)	Peak Hour Residential Demand (L/s)	Peak Hour IC Demand (L/s)	Total Peak Hour Demand (L/s)	Fire Flow (L/s)
MD1				2.38				278	0.00	0.902	0.000	0.902	2.256	0.000	2.256	4.963	0.000	4.963	217
N1	26	82		2.12			0.80	558	0.80	1.808	0.259	2.067	4.520	0.389	4.908	9.943	0.700	10.643	167
N2	8	58		1.25			0.83	330	0.83	1.070	0.269	1.339	2.674	0.403	3.077	5.883	0.726	6.609	167
N3		28		1.07	360	460	4.08	1676.8	4.08	5.434	1.322	6.756	13.585	1.983	15.568	29.887	3.570	33.457	217
N4	121	57		2.38				844	0.00	2.734	0.000	2.734	6.836	0.000	6.836	15.039	0.000	15.039	167
N5								0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A
N6	45	58		1.98			4.04	541	4.04	1.754	1.309	3.063	4.385	1.964	6.349	9.647	3.535	13.182	217
N7								0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	167
N8								0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	167
N9								0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A
N10	65	115		2.40			1.64	812	1.64	2.632	0.531	3.164	6.581	0.797	7.378	14.478	1.435	15.913	N/A
PR1						300	1.82	540	1.82	1.750	0.590	2.340	4.375	0.885	5.260	9.625	1.593	11.218	167
T1								0	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N/A
T2	23	77		2.40				567	0.00	1.837	0.000	1.837	4.593	0.000	4.593	10.104	0.000	10.104	167
Total	**288**	**475**	**0.0**	**15.98**	**360**	**760**	**13.21**	**6147**	**13.21**	**19.922**	**4.281**	**24.203**	**49.805**	**6.422**	**56.227**	**109.571**	**11.559**	**121.130**	

Water Demand Parameters

Singles	3.4	ppl/unit	Residential Max Day	2.5	x Avg Day	
Towns	2.7	ppl/unit	Residential Peak Hour	2.2	x Max Day	
Stacked Towns	132.3	ppl/net ha				
Medium Density Area	117	ppl/net ha	Institutional/Commercial Max Day	1.5	x Avg Day	
Mixed Use Residential	1.8	ppl/unit	Institutional/Commercial Peak Hour	1.8	x Max Day	
High Density Residential	1.8	ppl/unit				
Residential Demand	280	L/c/day	Residential Fire Flow	167	L/s	
Institutional/Commercial Demand	28000	L/gross ha/day	Institutional/Commercial Fire Flow	217	L/s	

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes - (Peak Hour)

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	4.96	154.44	51.51	505.31	73.29
Junc N1	103.78	10.64	154.42	50.64	496.78	72.05
Junc N2	103.04	6.61	154.78	51.74	507.57	73.62
Junc N3	101.61	33.46	154.98	53.37	523.56	75.94
Junc N4	102.28	15.04	154.37	52.09	511.00	74.11
Junc N5	101.45	0	154.4	52.95	519.44	75.34
Junc N6	102.27	13.18	154.37	52.1	511.10	74.13
Junc N7	101.52	0	154.37	52.85	518.46	75.20
Junc N8	100.7	0	155.17	54.47	534.35	77.50
Junc N9	96.68	0	155.5	58.82	577.02	83.69
Junc N10	102.7	15.89	154.47	51.77	507.86	73.66
Junc PR1	101.11	11.22	155.37	54.26	532.29	77.20
Junc T1	102.26	0	154.99	52.73	517.28	75.03
Junc T2	103.08	10.1	154.42	51.34	503.65	73.05
Resvr 1	155.5	-80.87	155.5	0	0.00	0.00
Resvr 2	154.5	-40.25	154.5	0	0.00	0.00

Network Table - Links - (Peak Hour)

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	11.51	0.17	0.14	0.030
Pipe 2	240	297	120	11.51	0.17	0.14	0.030
Pipe 3	406	297	120	6.54	0.09	0.05	0.033
Pipe 4	216	297	120	4.10	0.06	0.02	0.035
Pipe 5	436	297	120	29.58	0.43	0.82	0.026
Pipe 6	172	297	120	36.19	0.52	1.19	0.025
Pipe 7	242	297	120	-42.38	0.61	1.60	0.025
Pipe 8	52	297	120	-53.60	0.77	2.47	0.024
Pipe 9	576	900	120	-27.26	0.04	0.00	0.031
Pipe 10	262	297	120	-27.26	0.39	0.71	0.027
Pipe 11	137	297	120	6.20	0.09	0.05	0.033
Pipe 12	216	297	120	15.37	0.22	0.24	0.029
Pipe 13	246	297	120	0.33	0.00	0.00	0.047
Pipe 14	469	297	120	0.33	0.00	0.00	0.050
Pipe 15	283	297	120	12.85	0.19	0.18	0.030
Pipe 16	123	297	120	12.85	0.19	0.18	0.030
Pipe 17	173	400	120	-28.74	0.23	0.18	0.027
Pipe 18	472	297	120	-27.26	0.39	0.71	0.027
Pipe 19	147	297	120	-12.85	0.19	0.18	0.030

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes - (Max Pressure Check)

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	0.9	162.11	59.18	580.56	84.20
Junc N1	103.78	2.07	162.12	58.34	572.32	83.01
Junc N2	103.04	1.34	162.27	59.23	581.05	84.27
Junc N3	101.61	6.76	162.33	60.72	595.66	86.39
Junc N4	102.28	2.73	162.12	59.84	587.03	85.14
Junc N5	101.45	0	162.1	60.65	594.98	86.29
Junc N6	102.27	3.06	162.1	59.83	586.93	85.13
Junc N7	101.51	0	162.12	60.61	594.58	86.24
Junc N8	100.7	0	162.35	61.65	604.79	87.72
Junc N9	96.68	0	162.4	65.72	644.71	93.51
Junc N10	102.7	3.16	162.1	59.4	582.71	84.52
Junc PR1	101.11	2.34	162.38	61.27	601.06	87.18
Junc T1	102.26	0	162.32	60.06	589.19	85.45
Junc T2	103.08	1.84	162.14	59.06	579.38	84.03
Resvr 1	162.4	-27.38	162.4	0	0.00	0.00
Resvr 2	162.1	3.18	162.1	0	0.00	0.00

Network Table - Links - (Max Pressure Check)

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	-4.48	0.06	0.02	0.035
Pipe 2	240	297	120	-4.48	0.06	0.02	0.035
Pipe 3	406	297	120	-5.38	0.08	0.03	0.034
Pipe 4	216	297	120	7.45	0.11	0.06	0.032
Pipe 5	436	297	120	16.95	0.24	0.29	0.028
Pipe 6	172	297	120	18.29	0.26	0.34	0.028
Pipe 7	242	297	120	-15.46	0.22	0.25	0.029
Pipe 8	52	297	120	-17.80	0.26	0.32	0.028
Pipe 9	576	900	120	-9.58	0.02	0.00	0.035
Pipe 10	262	297	120	-9.58	0.14	0.10	0.031
Pipe 11	137	297	120	-2.82	0.04	0.01	0.037
Pipe 12	216	297	120	7.66	0.11	0.07	0.032
Pipe 13	246	297	120	4.93	0.07	0.03	0.034
Pipe 14	469	297	120	4.93	0.07	0.03	0.034
Pipe 15	283	297	120	-1.86	0.03	0.00	0.039
Pipe 16	123	297	120	-1.86	0.03	0.00	0.039
Pipe 17	173	400	120	-1.30	0.01	0.00	0.040
Pipe 18	472	297	120	-9.58	0.14	0.10	0.031
Pipe 19	147	297	120	1.86	0.03	0.00	0.040

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes - (Fire Flow Summary)

Fire Flow		Minimum Pressure		
Node	Flow (L/s)	Pressure (kPa)	Pressure (PSI)	Node
N10	217	497.47	72.15	N1
MD1	217	471.76	68.42	MD1
N1	167	459.89	66.70	N1
N2	167	480.98	69.76	N2
N3	217	480.30	69.66	N3
N4	167	468.53	67.95	N4
N6	217	427.62	62.02	N6
N7	167	468.92	68.01	N7
N8	167	485.01	70.34	N8
PR1	217	488.83	70.90	N1
T2	167	473.33	68.65	N1

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'N1')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	152.5	49.57	486.28	70.53
Junc N1	103.78	171.91	150.66	46.88	459.89	66.70
Junc N2	103.04	3.08	154.05	51.01	500.41	72.58
Junc N3	101.61	15.57	154.85	53.24	522.28	75.75
Junc N4	102.28	6.84	152.48	50.2	492.46	71.43
Junc N5	101.45	0	153.7	52.25	512.57	74.34
Junc N6	102.27	6.35	153.44	51.17	501.98	72.81
Junc N7	101.51	0	152.81	51.3	503.25	72.99
Junc N8	100.7	0	155.11	54.41	533.76	77.42
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	154.43	51.73	507.47	73.60
Junc PR1	101.11	5.26	155.44	54.33	532.98	77.30
Junc T1	102.26	0	154.8	52.54	515.42	74.75
Junc T2	103.08	4.59	152.27	49.19	482.55	69.99
Resvr 1	155.6	-94.11	155.6	0	0.00	0.00
Resvr 2	154.5	-121.74	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'N1')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	76.72	1.11	4.79	0.023
Pipe 2	240	297	120	76.72	1.11	4.79	0.023
Pipe 3	406	297	120	74.46	1.07	4.53	0.023
Pipe 4	216	297	120	97.45	1.41	7.46	0.022
Pipe 5	436	297	120	70.20	1.01	4.06	0.023
Pipe 6	172	297	120	73.28	1.06	4.40	0.023
Pipe 7	242	297	120	-55.52	0.80	2.63	0.024
Pipe 8	52	297	120	-60.78	0.88	3.11	0.024
Pipe 9	576	900	120	-33.33	0.05	0.00	0.030
Pipe 10	262	297	120	-33.33	0.48	1.02	0.026
Pipe 11	137	297	120	-17.77	0.26	0.32	0.028
Pipe 12	216	297	120	-31.84	0.46	0.94	0.026
Pipe 13	246	297	120	-38.67	0.56	1.35	0.025
Pipe 14	469	297	120	-38.67	0.56	1.35	0.025
Pipe 15	283	297	120	45.02	0.65	1.79	0.025
Pipe 16	123	297	120	45.02	0.65	1.79	0.025
Pipe 17	173	400	120	-45.02	0.36	0.42	0.026
Pipe 18	472	297	120	-33.33	0.48	1.02	0.026
Pipe 19	147	297	120	-45.02	0.65	1.79	0.025

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Network Table - Nodes (Max Day + FF 'N2')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.87	50.94	499.72	72.48
Junc N1	103.78	4.91	153.32	49.54	485.99	70.49
Junc N2	103.04	170.08	152.07	49.03	480.98	69.76
Junc N3	101.61	15.57	154.04	52.43	514.34	74.60
Junc N4	102.28	6.84	153.2	50.92	499.53	72.45
Junc N5	101.45	0	153.97	52.52	515.22	74.73
Junc N6	102.27	6.35	153.8	51.53	505.51	73.32
Junc N7	101.51	0	153.41	51.9	509.14	73.84
Junc N8	100.7	0	154.6	53.9	528.76	76.69
Junc N9	96.68	0	155.59	58.91	577.91	83.82
Junc N10	102.7	0	154.45	51.75	507.67	73.63
Junc PR1	101.11	5.26	155.27	54.16	531.31	77.06
Junc T1	102.26	0	153.9	51.64	506.59	73.47
Junc T2	103.08	4.59	153.09	50.01	490.60	71.16
Resvr 1	155.6	-138.72	155.6	0	0.00	0.00
Resvr 2	154.5	-77.12	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'N2')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	41.05	0.59	1.50	0.025
Pipe 2	240	297	120	41.05	0.59	1.50	0.025
Pipe 3	406	297	120	38.79	0.56	1.36	0.025
Pipe 4	216	297	120	-33.89	0.49	1.05	0.026
Pipe 5	436	297	120	-52.18	0.75	2.35	0.024
Pipe 6	172	297	120	117.89	1.70	10.62	0.021
Pipe 7	242	297	120	-84.11	1.21	5.68	0.022
Pipe 8	52	297	120	-89.37	1.29	6.36	0.022
Pipe 9	576	900	120	-49.35	0.08	0.01	0.028
Pipe 10	262	297	120	-49.35	0.71	2.12	0.024
Pipe 11	137	297	120	-33.78	0.49	1.05	0.026
Pipe 12	216	297	120	-22.89	0.33	0.51	0.027
Pipe 13	246	297	120	-29.73	0.43	0.83	0.026
Pipe 14	469	297	120	-29.73	0.43	0.83	0.026
Pipe 15	283	297	120	36.07	0.52	1.18	0.025
Pipe 16	123	297	120	36.07	0.52	1.18	0.025
Pipe 17	173	400	120	-36.07	0.29	0.28	0.026
Pipe 18	472	297	120	-49.35	0.71	2.12	0.024
Pipe 19	147	297	120	-36.07	0.52	1.18	0.025

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Network Table - Nodes (Max Day + FF 'N4')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.48	50.55	495.90	71.92
Junc N1	103.78	4.91	152.57	48.79	478.63	69.42
Junc N2	103.04	3.08	154	50.96	499.92	72.51
Junc N3	101.61	15.57	154.83	53.22	522.09	75.72
Junc N4	102.28	173.84	150.04	47.76	468.53	67.95
Junc N5	101.45	0	152.83	51.38	504.04	73.10
Junc N6	102.27	6.35	152.27	50	490.50	71.14
Junc N7	101.51	0	150.81	49.3	483.63	70.15
Junc N8	100.7	0	155.1	54.4	533.66	77.40
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	154.35	51.65	506.69	73.49
Junc PR1	101.11	5.26	155.43	54.32	532.88	77.29
Junc T1	102.26	0	154.78	52.52	515.22	74.73
Junc T2	103.08	4.59	152.17	49.09	481.57	69.85
Resvr 1	155.6	-95.39	155.6	0	0.00	0.00
Resvr 2	154.5	-120.46	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'N4')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	53.27	0.77	2.44	0.024
Pipe 2	240	297	120	53.27	0.77	2.44	0.024
Pipe 3	406	297	120	51.01	0.74	2.25	0.024
Pipe 4	216	297	120	-46.10	0.67	1.87	0.025
Pipe 5	436	297	120	71.48	1.03	4.20	0.023
Pipe 6	172	297	120	74.56	1.08	4.54	0.023
Pipe 7	242	297	120	-56.33	0.81	2.70	0.024
Pipe 8	52	297	120	-61.59	0.89	3.19	0.024
Pipe 9	576	900	120	-33.79	0.05	0.00	0.030
Pipe 10	262	297	120	-33.79	0.49	1.05	0.026
Pipe 11	137	297	120	-18.23	0.26	0.33	0.028
Pipe 12	216	297	120	112.99	1.63	9.81	0.022
Pipe 13	246	297	120	-60.84	0.88	3.12	0.024
Pipe 14	469	297	120	-60.84	0.88	3.12	0.024
Pipe 15	283	297	120	67.19	0.97	3.75	0.023
Pipe 16	123	297	120	67.19	0.97	3.75	0.023
Pipe 17	173	400	120	-67.19	0.53	0.88	0.024
Pipe 18	472	297	120	-33.79	0.49	1.05	0.026
Pipe 19	147	297	120	-67.19	0.97	3.75	0.023

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Network Table - Nodes (Max Day + FF 'N7')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.7	50.77	498.05	72.24
Junc N1	103.78	4.91	152.99	49.21	482.75	70.02
Junc N2	103.04	3.08	154.23	51.19	502.17	72.83
Junc N3	101.61	15.57	154.92	53.31	522.97	75.85
Junc N4	102.28	6.84	151	48.72	477.94	69.32
Junc N5	101.45	0	152.18	50.73	497.66	72.18
Junc N6	102.27	6.35	151.41	49.14	482.06	69.92
Junc N7	101.51	167	149.31	47.8	468.92	68.01
Junc N8	100.7	0	155.16	54.46	534.25	77.49
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	154.29	51.59	506.10	73.40
Junc PR1	101.11	5.26	155.45	54.34	533.08	77.32
Junc T1	102.26	0	154.89	52.63	516.30	74.88
Junc T2	103.08	4.59	152.69	49.61	486.67	70.59
Resvr 1	155.6	-88.9	155.6	0	0.00	0.00
Resvr 2	154.5	-126.95	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'N7')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	46.72	0.67	1.91	0.025
Pipe 2	240	297	120	46.72	0.67	1.91	0.025
Pipe 3	406	297	120	44.47	0.64	1.74	0.025
Pipe 4	216	297	120	-39.56	0.57	1.40	0.025
Pipe 5	436	297	120	64.99	0.94	3.52	0.023
Pipe 6	172	297	120	68.07	0.98	3.84	0.023
Pipe 7	242	297	120	-52.18	0.75	2.35	0.024
Pipe 8	52	297	120	-57.44	0.83	2.80	0.024
Pipe 9	576	900	120	-31.46	0.05	0.00	0.030
Pipe 10	262	297	120	-31.46	0.45	0.92	0.026
Pipe 11	137	297	120	-15.89	0.23	0.26	0.029
Pipe 12	216	297	120	99.96	1.44	7.82	0.022
Pipe 13	246	297	120	93.12	1.34	6.86	0.022
Pipe 14	469	297	120	-73.88	1.07	4.47	0.023
Pipe 15	283	297	120	80.23	1.16	5.20	0.023
Pipe 16	123	297	120	80.23	1.16	5.20	0.023
Pipe 17	173	400	120	-80.23	0.64	1.22	0.024
Pipe 18	472	297	120	-31.46	0.45	0.92	0.026
Pipe 19	147	297	120	-80.23	1.16	5.20	0.023

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Network Table - Nodes (Max Day + FF 'N10')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	154.49	51.56	505.80	73.36
Junc N1	103.78	4.91	154.49	50.71	497.47	72.15
Junc N2	103.04	3.08	155.02	51.98	509.92	73.96
Junc N3	101.61	15.57	155.27	53.66	526.40	76.35
Junc N4	102.28	6.84	154.32	52.04	510.51	74.04
Junc N5	101.45	0	153.93	52.48	514.83	74.67
Junc N6	102.27	6.35	153.97	51.7	507.18	73.56
Junc N7	101.51	0	154.2	52.69	516.89	74.97
Junc N8	100.7	0	155.39	54.69	536.51	77.81
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	167	153.82	51.12	501.49	72.73
Junc PR1	101.11	5.26	155.53	54.42	533.86	77.43
Junc T1	102.26	0	155.27	53.01	520.03	75.42
Junc T2	103.08	4.59	154.49	51.41	504.33	73.15
Resvr 1	155.6	-60.63	155.6	0	0.00	0.00
Resvr 2	154.5	-155.22	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'N10')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	4.27	0.06	0.02	0.035
Pipe 2	240	297	120	4.27	0.06	0.02	0.035
Pipe 3	406	297	120	2.01	0.03	0.01	0.039
Pipe 4	216	297	120	2.90	0.04	0.01	0.037
Pipe 5	436	297	120	36.72	0.53	1.22	0.025
Pipe 6	172	297	120	39.80	0.57	1.42	0.025
Pipe 7	242	297	120	-34.17	0.49	1.07	0.026
Pipe 8	52	297	120	-39.43	0.57	1.40	0.025
Pipe 9	576	900	120	-21.20	0.03	0.00	0.032
Pipe 10	262	297	120	-21.20	0.31	0.44	0.028
Pipe 11	137	297	120	-5.63	0.08	0.04	0.034
Pipe 12	216	297	120	29.23	0.42	0.80	0.026
Pipe 13	246	297	120	22.40	0.32	0.49	0.027
Pipe 14	469	297	120	22.40	0.32	0.49	0.027
Pipe 15	283	297	120	-16.05	0.23	0.26	0.029
Pipe 16	123	297	120	-16.05	0.23	0.26	0.029
Pipe 17	173	400	120	-150.95	1.20	3.94	0.021
Pipe 18	472	297	120	-21.20	0.31	0.44	0.028
Pipe 19	147	297	120	16.05	0.23	0.26	0.029

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Network Table - Nodes (Max Day + FF 'T2')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.21	50.28	493.25	71.54
Junc N1	103.78	4.91	152.03	48.25	473.33	68.65
Junc N2	103.04	3.08	153.71	50.67	497.07	72.09
Junc N3	101.61	15.57	154.71	53.1	520.91	75.55
Junc N4	102.28	6.84	151.79	49.51	485.69	70.44
Junc N5	101.45	0	153.45	52	510.12	73.99
Junc N6	102.27	6.35	153.11	50.84	498.74	72.34
Junc N7	101.51	0	152.25	50.74	497.76	72.19
Junc N8	100.7	0	155.02	54.32	532.88	77.29
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	154.41	51.71	507.28	73.57
Junc PR1	101.11	5.26	155.41	54.3	532.68	77.26
Junc T1	102.26	0	154.65	52.39	513.95	74.54
Junc T2	103.08	171.59	151.5	48.42	475.00	68.89
Resvr 1	155.6	-103.03	155.6	0	0.00	0.00
Resvr 2	154.5	-112.82	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'T2')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	60.70	0.88	3.10	0.024
Pipe 2	240	297	120	60.70	0.88	3.10	0.024
Pipe 3	406	297	120	58.44	0.84	2.89	0.024
Pipe 4	216	297	120	-53.54	0.77	2.46	0.024
Pipe 5	436	297	120	79.13	1.14	5.07	0.023
Pipe 6	172	297	120	82.20	1.19	5.44	0.023
Pipe 7	242	297	120	-61.23	0.88	3.16	0.024
Pipe 8	52	297	120	-66.49	0.96	3.68	0.023
Pipe 9	576	900	120	-36.54	0.06	0.01	0.029
Pipe 10	262	297	120	-36.54	0.53	1.21	0.025
Pipe 11	137	297	120	-20.98	0.30	0.43	0.028
Pipe 12	216	297	120	-38.93	0.56	1.36	0.025
Pipe 13	246	297	120	-45.77	0.66	1.84	0.025
Pipe 14	469	297	120	-45.77	0.66	1.84	0.025
Pipe 15	283	297	120	52.12	0.75	2.34	0.024
Pipe 16	123	297	120	52.12	0.75	2.34	0.024
Pipe 17	173	400	120	-52.12	0.41	0.55	0.025
Pipe 18	472	297	120	-36.54	0.53	1.21	0.025
Pipe 19	147	297	120	-52.12	0.75	2.34	0.024

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'MD1')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	169.26	151.02	48.09	471.76	68.42
Junc N1	103.78	4.91	152.48	48.7	477.75	69.29
Junc N2	103.04	3.08	154.52	51.48	505.02	73.25
Junc N3	101.61	15.57	155.05	53.44	524.25	76.04
Junc N4	102.28	6.84	153.45	51.17	501.98	72.81
Junc N5	101.45	0	154.06	52.61	516.10	74.85
Junc N6	102.27	6.35	153.92	51.65	506.69	73.49
Junc N7	101.51	0	153.61	52.1	511.10	74.13
Junc N8	100.7	0	155.25	54.55	535.14	77.61
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	154.46	51.76	507.77	73.65
Junc PR1	101.11	5.26	155.48	54.37	533.37	77.36
Junc T1	102.26	0	155.03	52.77	517.67	75.08
Junc T2	103.08	4.59	153.36	50.28	493.25	71.54
Resvr 1	155.6	-79.68	155.6	0	0.00	0.00
Resvr 2	154.5	-136.17	154.5	0	0.00	0.00

Network Table - Links (Max Day + FF 'MD1')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	103.56	1.49	8.35	0.022
Pipe 2	240	297	120	103.56	1.49	8.35	0.022
Pipe 3	406	297	120	-65.70	0.95	3.60	0.023
Pipe 4	216	297	120	70.61	1.02	4.11	0.023
Pipe 5	436	297	120	55.78	0.81	2.65	0.024
Pipe 6	172	297	120	58.85	0.85	2.93	0.024
Pipe 7	242	297	120	-46.29	0.67	1.88	0.025
Pipe 8	52	297	120	-51.55	0.74	2.29	0.024
Pipe 9	576	900	120	-28.13	0.04	0.00	0.031
Pipe 10	262	297	120	-28.13	0.41	0.75	0.026
Pipe 11	137	297	120	-12.56	0.18	0.17	0.030
Pipe 12	216	297	120	-19.42	0.28	0.38	0.028
Pipe 13	246	297	120	-26.26	0.38	0.66	0.027
Pipe 14	469	297	120	-26.26	0.38	0.66	0.027
Pipe 15	283	297	120	32.61	0.47	0.98	0.026
Pipe 16	123	297	120	32.61	0.47	0.98	0.026
Pipe 17	173	400	120	-32.61	0.26	0.23	0.027
Pipe 18	472	297	120	-28.13	0.41	0.75	0.026
Pipe 19	147	297	120	-32.61	0.47	0.98	0.026

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'PR1')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.6	50.67	497.07	72.09
Junc N1	103.78	4.91	153.61	49.83	488.83	70.90
Junc N2	103.04	3.08	153.84	50.8	498.35	72.28
Junc N3	101.61	15.57	154.08	52.47	514.73	74.66
Junc N4	102.28	6.84	153.6	51.32	503.45	73.02
Junc N5	101.45	0	153.59	52.14	511.49	74.19
Junc N6	102.27	6.35	153.59	51.32	503.45	73.02
Junc N7	101.51	0	153.6	52.09	511.00	74.11
Junc N8	100.7	0	154.62	53.92	528.96	76.72
Junc N9	96.68	0	155.59	58.91	577.91	83.82
Junc N10	102.7	0	153.6	50.9	499.33	72.42
Junc PR1	101.11	222.26	153.93	52.82	518.16	75.15
Junc T1	102.26	0	153.94	51.68	506.98	73.53
Junc T2	103.08	4.59	153.62	50.54	495.80	71.91
Resvr 1	155.6	-263.29	155.6	0	0.00	0.00
Resvr 2	153.6	-2.56	153.6	0	0.00	0.00

Network Table - Links (Max Day + FF 'PR1')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	-0.88	0.01	0.00	0.043
Pipe 2	240	297	120	-0.88	0.01	0.00	0.045
Pipe 3	406	297	120	-3.14	0.05	0.01	0.037
Pipe 4	216	297	120	8.05	0.12	0.07	0.032
Pipe 5	436	297	120	22.39	0.32	0.49	0.027
Pipe 6	172	297	120	25.46	0.37	0.62	0.027
Pipe 7	242	297	120	7.65	0.11	0.07	0.032
Pipe 8	52	297	120	-214.61	3.10	32.20	0.020
Pipe 9	576	900	120	-48.68	0.08	0.01	0.028
Pipe 10	262	297	120	-48.68	0.70	2.06	0.024
Pipe 11	137	297	120	-33.11	0.48	1.01	0.026
Pipe 12	216	297	120	9.75	0.14	0.10	0.031
Pipe 13	246	297	120	2.91	0.04	0.01	0.037
Pipe 14	469	297	120	2.91	0.04	0.01	0.037
Pipe 15	283	297	120	3.44	0.05	0.02	0.036
Pipe 16	123	297	120	3.44	0.05	0.02	0.036
Pipe 17	173	400	120	-3.44	0.03	0.00	0.037
Pipe 18	472	297	120	-48.68	0.70	2.06	0.024
Pipe 19	147	297	120	-3.44	0.05	0.02	0.036

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'N3')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.3	50.37	494.13	71.67
Junc N1	103.78	4.91	153.06	49.28	483.44	70.12
Junc N2	103.04	3.08	152.66	49.62	486.77	70.60
Junc N3	101.61	232.57	150.57	48.96	480.30	69.66
Junc N4	102.28	6.84	153	50.72	497.56	72.17
Junc N5	101.45	0	153.33	51.88	508.94	73.82
Junc N6	102.27	6.35	153.25	50.98	500.11	72.54
Junc N7	101.51	0	153.08	51.57	505.90	73.37
Junc N8	100.7	0	152.36	51.66	506.78	73.50
Junc N9	96.68	0	155.58	58.9	577.81	83.80
Junc N10	102.7	0	153.58	50.88	499.13	72.39
Junc PR1	101.11	5.26	155.02	53.91	528.86	76.70
Junc T1	102.26	0	152.56	50.3	493.44	71.57
Junc T2	103.08	4.59	152.97	49.89	489.42	70.98
Resvr 1	155.6	-213.54	155.6	0	0.00	0.00
Resvr 2	153.6	-52.31	153.6	0	0.00	0.00

Network Table - Links (Max Day + FF 'N3')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	27.43	0.40	0.71	0.027
Pipe 2	240	297	120	27.43	0.40	0.71	0.027
Pipe 3	406	297	120	25.17	0.36	0.61	0.027
Pipe 4	216	297	120	-20.26	0.29	0.41	0.028
Pipe 5	436	297	120	-27.37	0.40	0.71	0.027
Pipe 6	172	297	120	-24.29	0.35	0.57	0.027
Pipe 7	242	297	120	-115.38	1.67	10.20	0.021
Pipe 8	52	297	120	-120.64	1.74	11.08	0.021
Pipe 9	576	900	120	-92.90	0.15	0.03	0.026
Pipe 10	262	297	120	-92.90	1.34	6.83	0.022
Pipe 11	137	297	120	139.67	2.02	14.53	0.021
Pipe 12	216	297	120	-11.70	0.17	0.15	0.030
Pipe 13	246	297	120	-18.53	0.27	0.35	0.028
Pipe 14	469	297	120	-18.53	0.27	0.35	0.028
Pipe 15	283	297	120	24.88	0.36	0.60	0.027
Pipe 16	123	297	120	24.88	0.36	0.60	0.027
Pipe 17	173	400	120	-24.88	0.20	0.14	0.028
Pipe 18	472	297	120	-92.90	1.34	6.83	0.022
Pipe 19	147	297	120	-24.88	0.36	0.60	0.027

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'N6')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153	50.07	491.19	71.24
Junc N1	103.78	4.91	152.48	48.7	477.75	69.29
Junc N2	103.04	3.08	154.04	51	500.31	72.56
Junc N3	101.61	15.57	154.85	53.24	522.28	75.75
Junc N4	102.28	6.84	150.62	48.34	474.22	68.78
Junc N5	101.45	0	147.78	46.33	454.50	65.92
Junc N6	102.27	223.35	145.86	43.59	427.62	62.02
Junc N7	101.51	0	148.98	47.47	465.68	67.54
Junc N8	100.7	0	155.11	54.41	533.76	77.42
Junc N9	96.68	0	155.6	58.92	578.01	83.83
Junc N10	102.7	0	153.07	50.37	494.13	71.67
Junc PR1	101.11	5.26	155.44	54.33	532.98	77.30
Junc T1	102.26	0	154.8	52.54	515.42	74.75
Junc T2	103.08	4.59	152.27	49.19	482.55	69.99
Resvr 1	155.6	-94.18	155.6	0	0.00	0.00
Resvr 2	153.6	-171.66	153.6	0	0.00	0.00

Network Table - Links (Max Day + FF 'N6')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	39.95	0.58	1.43	0.025
Pipe 2	240	297	120	39.95	0.58	1.43	0.025
Pipe 3	406	297	120	37.70	0.54	1.29	0.025
Pipe 4	216	297	120	-32.79	0.47	0.99	0.026
Pipe 5	436	297	120	70.28	1.01	4.07	0.023
Pipe 6	172	297	120	73.36	1.06	4.41	0.023
Pipe 7	242	297	120	-55.56	0.80	2.64	0.024
Pipe 8	52	297	120	-60.82	0.88	3.12	0.024
Pipe 9	576	900	120	-33.36	0.05	0.00	0.030
Pipe 10	262	297	120	-33.36	0.48	1.02	0.026
Pipe 11	137	297	120	-17.79	0.26	0.32	0.028
Pipe 12	216	297	120	98.48	1.42	7.61	0.022
Pipe 13	246	297	120	91.64	1.32	6.66	0.022
Pipe 14	469	297	120	91.64	1.32	6.66	0.022
Pipe 15	283	297	120	131.71	1.90	13.03	0.021
Pipe 16	123	297	120	131.71	1.90	13.03	0.021
Pipe 17	173	400	120	-131.71	1.05	3.06	0.022
Pipe 18	472	297	120	-33.36	0.48	1.02	0.026
Pipe 19	147	297	120	-131.71	1.90	13.03	0.021

Fernbank Community - Kizell Lands: Watermain Analysis

Network Table - Nodes (Max Day + FF 'N8')

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc MD1	102.93	2.26	153.45	50.52	495.60	71.88
Junc N1	103.78	4.91	153.34	49.56	486.18	70.51
Junc N2	103.04	3.08	153.24	50.2	492.46	71.43
Junc N3	101.61	15.57	151.96	50.35	493.93	71.64
Junc N4	102.28	6.84	153.31	51.03	500.60	72.61
Junc N5	101.45	0	153.46	52.01	510.22	74.00
Junc N6	102.27	6.35	153.41	51.14	501.68	72.76
Junc N7	101.51	0	153.35	51.84	508.55	73.76
Junc N8	100.7	217	150.14	49.44	485.01	70.34
Junc N9	96.68	0	155.57	58.89	577.71	83.79
Junc N10	102.7	0	153.59	50.89	499.23	72.41
Junc PR1	101.11	5.26	155.15	54.04	530.13	76.89
Junc T1	102.26	0	153.23	50.97	500.02	72.52
Junc T2	103.08	4.59	153.31	50.23	492.76	71.47
Resvr 1	155.6	-229.23	155.6	0	0.00	0.00
Resvr 2	153.6	-36.61	153.6	0	0.00	0.00

Network Table - Links (Max Day + FF 'N8')

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe 1	178	297	120	18.87	0.27	0.36	0.028
Pipe 2	240	297	120	18.87	0.27	0.36	0.028
Pipe 3	406	297	120	16.61	0.24	0.28	0.029
Pipe 4	216	297	120	-11.70	0.17	0.15	0.030
Pipe 5	436	297	120	-11.67	0.17	0.15	0.030
Pipe 6	172	297	120	-8.59	0.12	0.08	0.031
Pipe 7	242	297	120	-100.82	1.46	7.95	0.022
Pipe 8	52	297	120	-106.08	1.53	8.73	0.022
Pipe 9	576	900	120	-123.15	0.19	0.05	0.024
Pipe 10	262	297	120	93.85	1.35	6.96	0.022
Pipe 11	137	297	120	109.42	1.58	9.25	0.022
Pipe 12	216	297	120	-4.56	0.07	0.03	0.035
Pipe 13	246	297	120	-11.40	0.16	0.14	0.030
Pipe 14	469	297	120	-11.40	0.16	0.14	0.030
Pipe 15	283	297	120	17.75	0.26	0.32	0.028
Pipe 16	123	297	120	17.75	0.26	0.32	0.028
Pipe 17	173	400	120	-17.75	0.14	0.07	0.029
Pipe 18	472	297	120	-123.15	1.78	11.51	0.021
Pipe 19	147	297	120	-17.75	0.26	0.32	0.028

DOUBLE DECK LANDS

POND 2

MATTAMY LANDS

ELEMENTARY SCHOOL

COMMERCIAL

RICHCRAFT LANDS

COMMUNITY PARK

CARP TRIBUTARY

HYDRO CORRIDOR

DISTRICT PARK

RICHCRAFT LANDS

DISTRICT PARK

MIXED USE

MIXED USE

HIGH DENSITY RESIDENTIAL

HIGH DENSITY RESIDENTIAL

POND 1

ELEMENTARY SCHOOL

DISTRICT PARK

1.84 ha | 10 | 0.0

ABBOTT STREET

2.27 ha | 6 | 540.0

PARK & RIDE

MIXED USE

12.22 ha | 5 | 1676.8

PARK

12.36 ha | 7 | 843.8

11.66 ha | 8 | 541.3

PARK

HYDRO CORRIDOR

9.98 ha | 9 | 812.3

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

ROBERT GRANT AVENUE

5654 HAZELDEAN ROAD

MEDIUM DENSITY RESIDENTIAL

2.01 ha | 4 | 330.1

MEDIUM DENSITY RESIDENTIAL

6.70 ha | 3 | 566.9

MEDIUM DENSITY RESIDENTIAL

7.63 ha | 2 | 557.8

PARK

HYDRO CORRIDOR

2.38 ha | MD1 | 278.5

MEDIUM DENSITY RESIDENTIAL

SECONDARY SCHOOL

OPEN SPACE

HAZELDEAN ROAD

ABBOTT STREET

TRANS CANADA TRAIL

IBER ROAD

EX. 900mmØ WM

EX. 600mmØ WM

EX. 400mmØ WM

EX. 300mmØ WM

300mmØ WM

N8 N7 N6 N5 N10 N3 N4 N2 N1 T1 T2 PR1 REST MD1 RES2

LEGEND

- 0.33 / 1 / 0.0 — AREA IN HECTARES / AREA ID / POPULATION EQUIVALENT
- 300Ø WM — PROPOSED WATERMAIN AND SIZE
- 300Ø WM — EXISTING / PROPOSED (BY OTHERS) WATERMAIN AND SIZE
- WATER SERVICE BOUNDARY
- N2 — PIPE NODE AND ID#

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
6.	REVISED PER CITY COMMENTS	AUG 28/20	MAB
5.	REVISED PER CITY COMMENTS	MAY 29/20	MAB
4.	DRAFT PLAN RESUBMISSION	DEC 13/19	MAB
3.	DRAFT PLAN RESUBMISSION	FEB 23/18	MAB
2.	REVISED PER CITY COMMENTS	JUL 20/17	MAB
1.	DRAFT PLAN APPLICATION	NOV 9/16	MAB

SCALE 1:2000

1:2000
0 20 40 60 80

DESIGN LRW
CHECKED MAB
DRAWN DTD
CHECKED MAB
APPROVED JGR

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER L. R. WILSON 100160065 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER M.A. BISSETT 2020.08.28 PROVINCE OF ONTARIO

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Ottawa, Ontario, Canada K2M 1P6
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Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
FERNBANK COMMUNITY - KIZELL LANDS

WATER DISTRIBUTION PLAN

PROJECT No. 108195-0
REV REV # 6
DRAWING No. 108195-WTR

M:\2008\108195\Submission\CAD\Design\108195-WTR.dwg, PLANS-B1, May 06, 2020 - 3:59pm, dduhon

APPENDIX C

Wastewater Servicing Figure
Sanitary Design Sheets
Novatech Sanitary Servicing Figure
Novatech Sanitary Design Sheet
Abbott Street Sanitary Sewer Analysis

LEGEND

- SITE BOUNDARY
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- SANITARY SEWER BY OTHERS
- OVERALL SANITARY DRAINAGE AREA
- SANITARY DRAINAGE BOUNDARY
- PROPOSED SANITARY MANHOLE
- EXTERNAL SANITARY MANHOLE

7.50Ha / 85 / 638 / MH UP / MH DOWN / RESIDENTIAL:
SANITARY DRAINAGE AREA
POPULATION PER HECTARE
TOTAL POPULATION
UPSTREAM MANHOLE
DOWNSTREAM MANHOLE
TRIB TYPE

3.2 Ha / 1.4 Ha / 436 / MH 100A / MH 101A:
RESIDENTIAL AREA
PARK/COMMERCIAL/INSTITUTIONAL AREA
POPULATION
UPSTREAM MANHOLE
DOWNSTREAM MANHOLE

DSEL
120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

ABBOTT'S RUN
PRELIMINARY DESIGN
CITY OF OTTAWA

SANITARY SERVICING PLAN

SCALE:	1:2000	PROJECT No.:	22-1295
DATE:	MAY 2025	DRAWING:	03

LEGEND

- 0.33 / A1-1 / 176.0 — AREA IN HECTARES / AREA ID / POPULATION EQUIVALENT
- SANITARY CATCHMENT
- SANITARY DRAINAGE AREA (LOCAL BOUNDARY)
- 482 — PROPOSED SANITARY SEWER AND MANHOLE WITH DIRECTION OF FLOW
- 482 — EXISTING / PROPOSED (BY OTHERS) SANITARY SEWER AND MANHOLE WITH DIRECTION OF FLOW

DOUBLE DECK LANDS

MATTAMY LANDS

RICHCRAFT LANDS

COMMUNITY PARK

RICHCRAFT LANDS

DISTRICT PARK

BLACKSTONE LANDS

REGIONAL LANDS

CRT LANDS

MIXED USE

POND 2

MIXED USE

MIXED USE

CARP TRIBUTARY

HYDRO CORRIDOR

HYDRO CORRIDOR

HYDRO CORRIDOR

TRANS CANADA TRAIL

TRANS CANADA TRAIL

HAZELDEAN ROAD

HAZELDEAN ROAD

OUTLET 4
Q PK = 15.6 L/s

OUTLET 3
Q PK = 1.5 L/s

OUTLET 2
Q PK = 15.9 L/s

OUTLET 1
FLOW ROUTED TO
STITTSVILLE DIVERSION TRUNK
Q PK = 493.4 L/s

Peak Flow= 15.9 L/s

Abbott's Run Peak Flow = 18.84 L/s

Peak Flow= 1.5 L/s

Peak Flow = 0 L/s

Peak Flow= 4.66 L/s

Peak Flow = 2.02 L/s

Peak Flow= 7.2 L/s

Peak Flow = 7.38 L/s

Peak Flow= 11.3 L/s

Peak Flow= 10.7 L/s

Peak Flow = 15.06 L/s

Peak Flow = 5.07 L/s

Peak Flow= 8.5 L/s

Abbotts Run Design
Total San Flow to
Hazeldean= 54.49 L/s

Kizell Design
Total San Flow to
Hazeldean = 66.4 L/s

Peak Flow = 7.72 L/s

Peak Flow = 7.5 L/s

Peak Flow = 9.41 L/s

Peak Flow= 11.3 L/s

Peak Flow = 4.86 L/s

Peak Flow= 4.2 L/s

Peak Flow= 5.7 L/s

Peak Flow = 2.97 L/s

MIXED USE

HIGH DENSITY

HIGH DENSITY

POND 1

ELEMENTARY SCHOOL

PARK

PARK & RIDE

PARK

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

MEDIUM DENSITY RESIDENTIAL

OPEN SPACE

PARK

PARK

SECONDARY SCHOOL

ROBERT GRANT AVENUE

ROBERT GRANT AVENUE

ABBOTT STREET

ABBOTT STREET

STITTSVILLE DIVERSION TRUNK (BY CITY)

IBER ROAD

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

Kizell Design Flow

Abbott's Run Design Flow

No.	REVISION	DATE	BY
6.	REVISED PER CITY COMMENTS	AUG 28/20	MAB
5.	REVISED PER CITY COMMENTS	MAY 29/20	MAB
4.	DRAFT PLAN RESUBMISSION	DEC 13/19	MAB
3.	DRAFT PLAN RESUBMISSION	FEB 23/18	MAB
2.	REVISED PER CITY COMMENTS	JUL. 20/17	MAB
1.	DRAFT PLAN APPLICATION	NOV. 9/16	MAB

SCALE
1:2000
1:2000
0 20 40 60 80

DESIGN LRW
CHECKED MAB
DRAWN DTD
CHECKED MAB
APPROVED JGR

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER L.R. WILSON 100160065 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER M.A. BISSETT 2020.08.28 PROVINCE OF ONTARIO

NOVATECH
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

CITY OF OTTAWA
FERNBANK COMMUNITY - KIZELL LANDS

SANITARY DRAINAGE AREA PLAN

PROJECT No. 108195-0
REV REV # 6
DRAWING No. 108195-SAN

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE					
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
BLOCK 143																										
	146A	148A	2.29		243	2.29	243	3.5	2.75		0.00		0.00		0.00	0.00	2.29	2.29	0.76	3.51	20.0	200	0.65	26.44	0.13	0.84	0.58
To IRON RANGE ROAD, Pipe 148A - 149A						2.29	243				0.00		0.00		0.00			2.29									
			2.21		234	2.21	234			2.39	2.39		0.00		0.00		4.60	4.60									
	147A	148A	2.39		110	4.60	344	3.4	3.84		2.39		0.00		0.00	1.16	2.39	6.99	2.31	7.31	18.0	200	0.70	27.44	0.27	0.87	0.74
To IRON RANGE ROAD, Pipe 148A - 149A						4.60	344				2.39		0.00		0.00			6.99									
BLOCK 147																										
	128A	74253	2.27		109	2.27	109	3.6	1.27		0.00		0.00		0.00	0.00	2.27	2.27	0.75	2.02	51.0	200	0.65	26.44	0.08	0.84	0.49
To ROBERT GRANT, Pipe 74253 - 74254						2.27	109				0.00		0.00		0.00			2.27									
BLOCK 142																										
	117A	118A				0.00					0.00		0.00	0.82	0.82	0.13	0.82	0.82	0.27	0.40	17.5	200	5.10	74.07	0.01	2.36	0.61
To TENDER'S PASS & KETTLE VALLEY, Pipe 118A - 120A						0.00	0				0.00		0.00		0.82			0.82									
CIRCUIT CRESCENT																										
			0.07		6	0.07	6				0.00		0.00		0.00		0.07	0.07									
	119A	120A	0.54		44	0.61	50	3.7	0.59		0.00		0.00		0.00	0.00	0.54	0.61	0.20	0.79	84.5	200	0.65	26.44	0.03	0.84	0.37
To TENDER'S PASS & KETTLE VALLEY, Pipe 120A - SA25						0.61	50				0.00		0.00		0.00			0.61									
	113A	114A	0.08		7	0.08	7	3.7	0.08		0.00		0.00		0.00	0.00	0.08	0.08	0.03	0.11	54.0	200	0.65	26.44	0.00	0.84	0.20
	114A	115A	0.03		3	0.11	10	3.7	0.12		0.00		0.00		0.00	0.00	0.03	0.11	0.04	0.16	11.0	200	0.35	19.40	0.01	0.62	0.18
	115A	116A	0.34		28	0.45	38	3.7	0.45		0.00		0.00		0.00	0.00	0.34	0.45	0.15	0.60	84.5	200	0.35	19.40	0.03	0.62	0.28
To TENDER'S PASS & KETTLE VALLEY, Pipe 116A - 118A						0.45	38				0.00		0.00		0.00			0.45									
IRON RANGE ROAD																										
	145A	148A				0.00					0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	65.0	200	1.70	42.76	0.00	1.36	#######
Contribution From BLOCK 143, Pipe 146A - 148A						2.29	243				0.00		0.00		0.00		2.29	2.29									
Contribution From BLOCK 143, Pipe 147A - 148A						4.60	344				2.39		0.00		0.00		6.99	9.28									
	148A	149A	0.54		0	7.43	587	3.3	6.37		2.39		0.00		0.00	1.16	0.54	9.82	3.24	10.77	56.0	200	0.80	29.34	0.37	0.93	0.86
Contribution From TENDER'S PASS & KETTLE VALLEY, Pipe 120A - SA25						2.85	232				0.00		0.00		0.82		3.67	3.67									
Contribution From TENDER'S PASS & KETTLE VALLEY, Pipe 122A - SA25						1.71	83				1.71		0.00		0.00		3.42	7.09									
	SA25	SA29	0.21		17	4.77	332	3.4	3.71		1.71		0.00		0.82	0.96	0.21	7.30	2.41	7.08	45.0	250	0.25	29.73	0.24	0.61	0.50
	SA29	74251	0.25		20	5.02	352	3.4	3.92		1.71		0.00		0.82	0.96	0.25	7.55	2.49	7.38	63.5	250	0.25	29.73	0.25	0.61	0.50
To ROBERT GRANT, Pipe 74251 - 74252						5.02	352				1.71		0.00		0.82			7.55									
STREET No. 21																										
Contribution From STREET No.20- 22, Pipe 101A - 102A						0.87	70				0.00		0.00		0.00		0.87	0.87									
Contribution From STREET No.20- 22, Pipe 98A - 102A						2.03	165				0.00		0.00		0.00		2.03	2.90									
	102A	107A	0.23		19	3.13	254	3.5	2.87		0.00		0.00		0.00	0.00	0.23	3.13	1.03	3.90	72.0	200	0.35	19.40	0.20	0.62	0.48
Contribution From STREET No.20- 22, Pipe 106A - 107A						1.69	136				0.00		0.00		0.00		1.69	4.82									
	107A	SA39	0.31		25	5.13	415	3.4	4.59		0.00		0.00		0.00	0.00	0.31	5.13	1.69	6.28	83.0	250	0.35	35.18	0.18	0.72	0.54
			0.20		16	5.33	431				0.00		0.00		0.00		0.20	5.33									
	SA39	74251	1.04		83	6.37	514	3.4	5.62		0.00		0.00		0.00	0.00	1.04	6.37	2.10	7.72	48.5	250	0.35	35.18	0.22	0.72	0.57
To ROBERT GRANT, Pipe 74251 - 74252						6.37	514				0.00		0.00		0.00			6.37									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha				
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph			
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4		

Designed:

Checked:

Dwg. Reference:
Sanitary Drainage Plan, Dwgs. No.

PROJECT:

LOCATION:
City of Ottawa

File Ref:

Date:
09 May 2025

Sheet No. 1
of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
BLOCK 13																											
	67A	SA31	1.31		105	1.31	105	3.6	1.22		0.00		0.00		0.00	0.00	1.31	1.31	0.43	1.65	19.5	200	6.00	80.34	0.02	2.56	0.99
To CRAINSBILL, Pipe SA31 - 74247						1.31	105				0.00		0.00		0.00			1.31									
	68A	SA31	1.39		111	1.39	111	3.6	1.29		0.00		0.00		0.00	0.00	1.39	1.39	0.46	1.75	19.5	200	0.65	26.44	0.07	0.84	0.47
To CRAINSBILL, Pipe SA31 - 74247						1.39	111				0.00		0.00		0.00			1.39									
DOWLING SPOKE ROW																											
	61A	62A	0.68		54	0.68	54	3.6	0.64		0.00		0.00		0.00	0.00	0.68	0.68	0.22	0.86	90.5	200	0.65	26.44	0.03	0.84	0.38
To SPERRY CAR TERRACE, Pipe 62A - SA19						0.68	54				0.00		0.00		0.00			0.68									
TENDER'S PASS & KETTLE VALLEY																											
	122A	SA25	1.71		83	1.71	83	3.6	0.97	1.71	1.71		0.00		0.00	0.83	3.42	3.42	1.13	2.93	17.0	250	0.34	34.68	0.08	0.71	0.43
To IRON RANGE ROAD, Pipe SA25 - SA29						1.71	83				1.71		0.00		0.00			3.42									
	58A	60A	0.78		62	0.78	62	3.6	0.73		0.00		0.00		0.00	0.00	0.78	0.78	0.26	0.99	97.5	200	0.65	26.44	0.04	0.84	0.40
To SPERRY CAR TERRACE, Pipe 60A - 62A						0.78	62				0.00		0.00		0.00			0.78									
	64A	65A	0.39		32	0.39	32	3.7	0.38		0.00		0.00		0.00	0.00	0.39	0.39	0.13	0.51	68.0	200	0.65	26.44	0.02	0.84	0.33
	65A	SA17	0.31		25	0.70	57	3.6	0.67		0.00		0.00		0.00	0.00	0.31	0.70	0.23	0.90	81.5	200	0.35	19.40	0.05	0.62	0.31
To CRAINSBILL, Pipe SA17 - SA31						0.70	57				0.00		0.00		0.00			0.70									
	111A	112A	0.86		69	0.86	69	3.6	0.81		0.00		0.00		0.00	0.00	0.86	0.86	0.28	1.09	107.0	200	0.65	26.44	0.04	0.84	0.41
	112A	116A	0.66		53	1.52	122	3.6	1.41		0.00		0.00		0.00	0.00	0.66	1.52	0.50	1.92	92.0	200	0.35	19.40	0.10	0.62	0.39
Contribution From CIRCUIT CRESCENT, Pipe 115A - 116A						0.45	38				0.00		0.00		0.00		0.45	1.97									
	116A	118A	0.11		9	2.08	169	3.5	1.94		0.00		0.00		0.00	0.00	0.11	2.08	0.69	2.62	62.5	200	0.35	19.40	0.14	0.62	0.43
Contribution From BLOCK 142, Pipe 117A - 118A						0.00	0				0.00		0.00		0.82		0.82	2.90									
	118A	120A				2.08	169	3.5	1.94		0.00		0.00		0.82	0.13	0.00	2.90	0.96	3.03	7.5	200	0.35	19.40	0.16	0.62	0.45
Contribution From CIRCUIT CRESCENT, Pipe 119A - 120A						0.61	50				0.00		0.00		0.00		0.61	3.51									
	120A	SA25	0.16		13	2.85	232	3.5	2.63		0.00		0.00		0.82	0.13	0.16	3.67	1.21	3.97	72.0	200	0.35	19.40	0.20	0.62	0.48
To IRON RANGE ROAD, Pipe SA25 - SA29						2.85	232				0.00		0.00		0.82			3.67									
SPERRY CAR TERRACE																											
	59A	60A	0.35		28	0.35	28	3.7	0.33		0.00		0.00		0.00	0.00	0.35	0.35	0.12	0.45	64.0	200	0.65	26.44	0.02	0.84	0.32
Contribution From TENDER'S PASS & KETTLE VALLEY, Pipe 58A - 60A						0.78	62				0.00		0.00		0.00		0.78	1.13									
	60A	62A	0.35		28	1.48	118	3.6	1.37		0.00		0.00		0.00	0.00	0.35	1.48	0.49	1.86	76.0	200	0.35	19.40	0.10	0.62	0.39
Contribution From DOWLING SPOKE ROW, Pipe 61A - 62A						0.68	54				0.00		0.00		0.00		0.68	2.16									
	62A	SA19	0.32		26	2.48	198	3.5	2.26		0.00		0.00		0.00	0.00	0.32	2.48	0.82	3.08	81.0	200	0.35	19.40	0.16	0.62	0.45
To CRAINSBILL, Pipe SA19 - SA17						2.48	198				0.00		0.00		0.00			2.48									
CARGO CROSS WAY																											
	55A	56A	0.93		74	0.93	74	3.6	0.87		0.00	2.83	2.83		0.00	1.38	3.76	3.76	1.24	3.49	118.0	200	0.65	26.44	0.13	0.84	0.58
	56A	343A	0.73		58	1.66	132	3.6	1.53		0.00		2.83		0.00	1.38	0.73	4.49	1.48	4.38	115.0	200	0.35	19.40	0.23	0.62	0.50
To CRAINSBILL, Pipe 343A - SA19						1.66	132				0.00		2.83		0.00			4.49									
CRAINSBILL																											
Contribution From FREIGHTLINE TERRACE, Pipe 50A - 52A						1.36	109				0.00		0.00		0.00		1.36	1.36									
	52A	343A	0.45		36	1.81	145	3.6	1.67		0.00		0.00		0.00	0.00	0.45	1.81	0.60	2.27	74.0	200	0.35	19.40	0.12	0.62	0.41

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha				
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph			
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4		

Designed:	PROJECT:		
Checked:	LOCATION: **City of Ottawa**		
Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.	File Ref:	Date: **09 May 2025**	Sheet No. 2 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From CARGO CROSS WAY, Pipe 56A - 343A						1.66	132				0.00		2.83		0.00		4.49	6.30									
	343A	SA19	0.40		32	3.87	309	3.5	3.46		0.00		2.83		0.00	1.38	0.40	6.70	2.21	7.05	72.0	250	0.25	29.73	0.24	0.61	0.50
Contribution From SPERRY CAR TERRACE, Pipe 62A - SA19						2.48	198				0.00		0.00		0.00		2.48	9.18									
	SA19	SA17	0.80		64	7.15	571	3.4	6.21		0.00		2.83		0.00	1.38	0.80	9.98	3.29	10.88	106.0	250	0.25	29.73	0.37	0.61	0.56
Contribution From TENDER'S PASS & KETTLE VALLEY, Pipe 65A - SA17						0.70	57				0.00		0.00		0.00		0.70	10.68									
	SA17	SA31	0.12		10	7.97	638	3.3	6.89		0.00		2.83		0.00	1.38	0.12	10.80	3.56	11.83	52.5	250	0.25	29.73	0.40	0.61	0.57
Contribution From BLOCK 13, Pipe 67A - SA31						1.31	105				0.00		0.00		0.00		1.31	12.11									
Contribution From BLOCK 13, Pipe 68A - SA31						1.39	111				0.00		0.00		0.00		1.39	13.50									
	SA31	74247	0.15		12	10.82	866	3.3	9.18		0.00		2.83		0.00	1.38	0.15	13.65	4.50	15.06	56.5	250	0.25	29.73	0.51	0.61	0.61
To ROBERT GRANT, Pipe 74247 - 74248						10.82	866				0.00		2.83		0.00			13.65									
BLOCK 5																											
	87A	SA-37	1.12		90	1.12	90	3.6	1.05		0.00		0.00		0.00	0.00	1.12	1.12	0.37	1.42	16.0	200	6.00	80.34	0.02	2.56	0.96
To STREET No. 17, Pipe SA-37 - 74247						1.12	90				0.00		0.00		0.00			1.12									
	88A	SA-37	0.95		76	0.95	76	3.6	0.89		0.00		0.00		0.00	0.00	0.95	0.95	0.31	1.20	13.0	200	0.65	26.44	0.05	0.84	0.43
To STREET No. 17, Pipe SA-37 - 74247						0.95	76				0.00		0.00		0.00			0.95									
STREET No.20- 22																											
	101A	102A	0.87		70	0.87	70	3.6	0.82		0.00		0.00		0.00	0.00	0.87	0.87	0.29	1.11	126.5	200	0.65	26.44	0.04	0.84	0.41
To STREET No. 21, Pipe 102A - 107A						0.87	70				0.00		0.00		0.00			0.87									
	101A	104A	0.21		17	0.21	17	3.7	0.20		0.00		0.00		0.00	0.00	0.21	0.21	0.07	0.27	12.0	200	0.65	26.44	0.01	0.84	0.27
	104A	105A	0.26		21	0.47	38	3.7	0.45		0.00		0.00		0.00	0.00	0.26	0.47	0.16	0.61	55.0	200	0.35	19.40	0.03	0.62	0.28
	105A	106A	0.26		21	0.73	59	3.6	0.70		0.00		0.00		0.00	0.00	0.26	0.73	0.24	0.94	14.0	200	0.35	19.40	0.05	0.62	0.31
	106A	107A	0.96		77	1.69	136	3.6	1.57		0.00		0.00		0.00	0.00	0.96	1.69	0.56	2.13	143.0	200	0.35	19.40	0.11	0.62	0.40
To STREET No. 21, Pipe 107A - SA39						1.69	136				0.00		0.00		0.00			1.69									
	97A	98A	0.51		41	0.51	41	3.7	0.49		0.00		0.00		0.00	0.00	0.51	0.51	0.17	0.66	45.0	200	0.65	26.44	0.02	0.84	0.35
Contribution From STREET No. 19, Pipe 96A - 98A						1.04	85				0.00		0.00		0.00		1.04	1.55									
	98A	102A	0.48		39	2.03	165	3.5	1.89		0.00		0.00		0.00	0.00	0.48	2.03	0.67	2.56	73.5	200	0.35	19.40	0.13	0.62	0.43
To STREET No. 21, Pipe 102A - 107A						2.03	165				0.00		0.00		0.00			2.03									
Contribution From STREET No. 19, Pipe 73A - 75A						0.06	5				0.00		0.00		0.00		0.06	0.06									
	75A	76A	0.22		18	0.28	23	3.7	0.28		0.00		0.00		0.00	0.00	0.22	0.28	0.09	0.37	33.5	200	0.35	19.40	0.02	0.62	0.24
	76A	77A	0.63		50	0.91	73	3.6	0.86		0.00		0.00		0.00	0.00	0.63	0.91	0.30	1.16	89.5	200	0.35	19.40	0.06	0.62	0.34
	77A	78A	0.06		5	0.97	78	3.6	0.91		0.00		0.00		0.00	0.00	0.06	0.97	0.32	1.23	11.0	200	0.35	19.40	0.06	0.62	0.34
	78A	79A	0.10		8	1.07	86	3.6	1.01		0.00		0.00		0.00	0.00	0.10	1.07	0.35	1.36	63.0	200	0.35	19.40	0.07	0.62	0.35
To STREET No. 16-18, Pipe 79A - 86A						1.07	86				0.00		0.00		0.00			1.07									
STREET No. 19																											
	73A	74A	0.16		13	0.16	13	3.7	0.16		0.00		0.00		0.00	0.00	0.16	0.16	0.05	0.21	36.0	200	0.95	31.97	0.01	1.02	0.28
To STREET No. 16-18, Pipe 74A - 151A						0.16	13				0.00		0.00		0.00			0.16									
	73A	75A	0.06		5	0.06	5	3.8	0.06		0.00		0.00		0.00	0.00	0.06	0.06	0.02	0.08	35.0	200	0.65	26.44	0.00	0.84	0.19
To STREET No.20- 22, Pipe 75A - 76A						0.06	5				0.00		0.00		0.00			0.06									
	70A	71A	0.10		8	0.10	8	3.7	0.10		0.00		0.00		0.00	0.00	0.10	0.10	0.03	0.13	26.5	200	0.65	26.44	0.00	0.84	0.22
	71A	72A	0.03		3	0.13	11	3.7	0.13		0.00		0.00		0.00	0.00	0.03	0.13	0.04	0.18	11.5	200	0.35	19.40	0.01	0.62	0.19

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha
Average Daily Flow =	280	l/p/day		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha
Max Res. Peak Factor =	4.00			
Commercial/Inst./Park Peak Factor =	1.50			
Institutional =	0.32	l/s/Ha		

Industrial Peak Factor = as per MOE Graph

Extraneous Flow =	0.330	L/s/ha		
Minimum Velocity =	0.600	m/s		
Manning's n =	(Conc)	0.013	(Pvc)	0.013
Townhouse coeff=		2.7		
Single house coeff=		3.4		

Designed:

Checked:

Dwg. Reference:
Sanitary Drainage Plan, Dwgs. No.

PROJECT:

LOCATION:
City of Ottawa

File Ref:

Date:
09 May 2025

Sheet No. 3
of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
	72A	74A	0.29		24	0.42	35	3.7	0.42		0.00		0.00		0.00	0.00	0.29	0.42	0.14	0.56	81.5	200	0.35	19.40	0.03	0.62	0.27
To STREET No. 16-18, Pipe 74A - 151A						0.42	35				0.00		0.00		0.00			0.42									
	70A	94A	0.13		11	0.13	11	3.7	0.13		0.00		0.00		0.00	0.00	0.13	0.13	0.04	0.18	32.0	200	0.65	26.44	0.01	0.84	0.23
	94A	95A	0.07		6	0.20	17	3.7	0.20		0.00		0.00		0.00	0.00	0.07	0.20	0.07	0.27	11.0	200	0.35	19.40	0.01	0.62	0.21
	95A	96A	0.48		39	0.68	56	3.6	0.66		0.00		0.00		0.00	0.00	0.48	0.68	0.22	0.89	75.5	200	0.35	19.40	0.05	0.62	0.31
	96A	98A	0.36		29	1.04	85	3.6	0.99		0.00		0.00		0.00	0.00	0.36	1.04	0.34	1.34	77.0	200	0.35	19.40	0.07	0.62	0.35
To STREET No.20- 22, Pipe 98A - 102A						1.04	85				0.00		0.00		0.00			1.04									
STREET No. 17																											
Contribution From STREET No. 16-18, Pipe 79A - 86A						2.83	229				0.00		0.00		1.62		4.45	4.45									
Contribution From STREET No. 16-18, Pipe 85A - 86A						1.96	159				0.00		0.00		0.00		1.96	6.41									
	86A	SA-37	0.07		6	4.86	394	3.4	4.37		0.00		0.00		1.62	0.26	0.07	6.48	2.14	6.77	45.0	200	0.35	19.40	0.35	0.62	0.56
Contribution From BLOCK 5, Pipe 87A - SA-37						1.12	90				0.00		0.00		0.00		1.12	7.60									
Contribution From BLOCK 5, Pipe 88A - SA-37						0.95	76				0.00		0.00		0.00		0.95	8.55									
	SA-37	74247	0.19		16	7.12	576	3.4	6.26		0.00		0.00		1.62	0.26	0.19	8.74	2.88	9.41	86.5	200	0.35	19.40	0.48	0.62	0.61
To ROBERT GRANT, Pipe 74247 - 74248						7.12	576				0.00		0.00		1.62			8.74									
CABLE CAR CRESCENT																											
			0.05		4	0.05	4				0.00		0.00		0.00		0.05	0.05									
	38A	39A	0.36		29	0.41	33	3.7	0.39		0.00		0.00		0.00	0.00	0.36	0.41	0.14	0.53	82.0	200	0.65	26.44	0.02	0.84	0.33
To STATIONHOUSE WALK, Pipe 39A - 43A						0.41	33				0.00		0.00		0.00			0.41									
	40A	41A	0.04		4	0.04	4	3.8	0.05		0.00		0.00		0.00	0.00	0.04	0.04	0.01	0.06	32.0	200	0.65	26.44	0.00	0.84	0.17
	41A	42A	0.07		6	0.11	10	3.7	0.12		0.00		0.00		0.00	0.00	0.07	0.11	0.04	0.16	11.0	200	0.35	19.40	0.01	0.62	0.18
	42A	43A	0.43		35	0.54	45	3.7	0.53		0.00		0.00		0.00	0.00	0.43	0.54	0.18	0.71	81.5	200	0.35	19.40	0.04	0.62	0.29
To STATIONHOUSE WALK, Pipe 43A - 45A						0.54	45				0.00		0.00		0.00			0.54									
STATIONHOUSE WALK																											
Contribution From FAREBOX WAY & WHISTLE POST, Pipe 150A - 29A						0.20	17				0.00		0.00		0.00		0.20	0.20									
Contribution From FAREBOX WAY & WHISTLE POST, Pipe 28A - 29A						0.42	35				0.00		0.00		0.00		0.42	0.62									
	29A	36A	0.12		11	0.74	63	3.6	0.74		0.00		0.00		0.00	0.00	0.12	0.74	0.24	0.99	72.5	200	0.35	19.40	0.05	0.62	0.32
Contribution From FAREBOX WAY & WHISTLE POST, Pipe 34A - 36A						0.69	59				0.00		0.00		0.00		0.69	1.43									
	36A	39A	0.08		7	1.51	129	3.6	1.49		0.00		0.00		0.00	0.00	0.08	1.51	0.50	1.99	48.0	200	0.35	19.40	0.10	0.62	0.40
Contribution From CABLE CAR CRESCENT, Pipe 38A - 39A						0.41	33				0.00		0.00		0.00		0.41	1.92									
	39A	43A	0.08		7	2.00	169	3.5	1.94		0.00		0.00	0.99	0.99	0.16	1.07	2.99	0.99	3.08	48.0	200	0.35	19.40	0.16	0.62	0.45
Contribution From CABLE CAR CRESCENT, Pipe 42A - 43A						0.54	45				0.00		0.00		0.00		0.54	3.53									
	43A	45A	0.11		9	2.65	223	3.5	2.53		0.00		0.00		0.99	0.16	0.11	3.64	1.20	3.89	70.0	200	0.35	19.40	0.20	0.62	0.48
To MONORAIL ROAD, Pipe 45A - SA35						2.65	223				0.00		0.00		0.99			3.64									
MONORAIL ROAD																											
	44A	45A	0.53		43	0.53	43	3.7	0.51		0.00		0.00		0.00	0.00	0.53	0.53	0.17	0.69	118.5	200	0.65	26.44	0.03	0.84	0.36
Contribution From STATIONHOUSE WALK, Pipe 43A - 45A						2.65	223				0.00		0.00		0.99		3.64	4.17									
	45A	SA35	0.45		36	3.63	302	3.5	3.39		0.00		0.00		0.99	0.16	0.45	4.62	1.52	5.07	73.5	200	0.34	19.12	0.27	0.61	0.51
	SA35	74245				3.63	302	3.5	3.39		0.00		0.00		0.99	0.16	0.00	4.62	1.52	5.07	29.5	200	0.25	16.40	0.31	0.52	0.46
To ROBERT GRANT, Pipe 74245 - 74246						3.63	302				0.00		0.00		0.99			4.62									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed:

Checked:

Dwg. Reference:
Sanitary Drainage Plan, Dwgs. No.

PROJECT:

LOCATION:
City of Ottawa

File Ref:

Date:
09 May 2025

Sheet No. 4
of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
STREET No. 13																											
	8A	9A	0.21		17	0.21	17	3.7	0.20		0.00		0.00		0.00	0.00	0.21	0.21	0.07	0.27	49.5	200	0.65	26.44	0.01	0.84	0.27
	9A	10A	0.03		3	0.24	20	3.7	0.24		0.00		0.00		0.00	0.00	0.03	0.24	0.08	0.32	11.5	200	0.35	19.40	0.02	0.62	0.22
	10A	12A	0.05		4	0.29	24	3.7	0.29		0.00		0.00		0.00	0.00	0.05	0.29	0.10	0.38	38.0	200	0.35	19.40	0.02	0.62	0.24
Contribution From STREET No.14, Pipe 11A - 12A						0.30	24				0.00		0.00		0.00		0.30	0.59									
	12A	13A	0.05		4	0.64	52	3.6	0.61		0.00		0.00		0.00	0.00	0.05	0.64	0.21	0.83	39.0	200	0.35	19.40	0.04	0.62	0.31
	13A	14A	0.06		5	0.70	57	3.6	0.67		0.00		0.00		0.00	0.00	0.06	0.70	0.23	0.90	10.5	200	0.35	19.40	0.05	0.62	0.31
	14A	20A	0.37		30	1.07	87	3.6	1.02		0.00		0.00		0.00	0.00	0.37	1.07	0.35	1.37	71.5	200	0.35	19.40	0.07	0.62	0.35
To STREET No. 16-18, Pipe 20A - 25A						1.07	87				0.00		0.00		0.00			1.07									
STREET No.14																											
	11A	12A	0.30		24	0.30	24	3.7	0.29		0.00		0.00		0.00	0.00	0.30	0.30	0.10	0.39	57.0	200	0.65	26.44	0.01	0.84	0.29
To STREET No. 13, Pipe 12A - 13A						0.30	24				0.00		0.00		0.00			0.30									
	18A	19A	0.11		9	0.11	9	3.7	0.11		0.00		0.00		0.00	0.00	0.11	0.11	0.04	0.15	56.0	200	1.90	45.21	0.00	1.44	0.32
To STREET No. 16-18, Pipe 19A - 20A						0.11	9				0.00		0.00		0.00			0.11									
STREET No. 16-18																											
	83A	84A	0.40		32	0.40	32	3.7	0.38		0.00		0.00		0.00	0.00	0.40	0.40	0.13	0.51	55.5	200	1.10	34.40	0.01	1.09	0.40
Contribution From STREET No. 12, Pipe 82A - 84A						1.03	84				0.00		0.00		0.00		1.03	1.43									
	84A	85A	0.16		13	1.59	129	3.6	1.49		0.00		0.00		0.00	0.00	0.16	1.59	0.52	2.02	35.5	200	0.35	19.40	0.10	0.62	0.40
	85A	86A	0.37		30	1.96	159	3.5	1.83		0.00		0.00		0.00	0.00	0.37	1.96	0.65	2.47	85.5	200	0.35	19.40	0.13	0.62	0.42
To STREET No. 17, Pipe 86A - SA-37						1.96	159				0.00		0.00		0.00			1.96									
Contribution From STREET No. 19, Pipe 72A - 74A						0.42	35				0.00		0.00		0.00		0.42	0.42									
Contribution From STREET No. 19, Pipe 73A - 74A						0.16	13				0.00		0.00		0.00		0.16	0.58									
	74A	151A	0.84		67	1.42	115	3.6	1.33		0.00		0.00		0.00	0.00	0.84	1.42	0.47	1.80	65.5	200	0.35	19.40	0.09	0.62	0.39
	151A	79A				1.42	115	3.6	1.33		0.00		0.00		0.00	0.00	0.00	1.42	0.47	1.80	65.5	200	0.35	19.40	0.09	0.62	0.39
Contribution From STREET No.20- 22, Pipe 78A - 79A						1.07	86				0.00		0.00		0.00		1.07	2.49									
	79A	86A	0.34		28	2.83	229	3.5	2.60		0.00		0.00	1.62	1.62	0.26	1.96	4.45	1.47	4.33	85.5	200	0.35	19.40	0.22	0.62	0.50
To STREET No. 17, Pipe 86A - SA-37						2.83	229				0.00		0.00		1.62			4.45									
	17A	19A	0.18		15	0.18	15	3.7	0.18		0.00		0.00		0.00	0.00	0.18	0.18	0.06	0.24	46.0	200	0.65	26.44	0.01	0.84	0.26
Contribution From STREET No.14, Pipe 18A - 19A						0.11	9				0.00		0.00		0.00		0.11	0.29									
	19A	20A	0.17		14	0.46	38	3.7	0.45		0.00		0.00		0.00	0.00	0.17	0.46	0.15	0.60	46.0	200	0.40	20.74	0.03	0.66	0.29
Contribution From STREET No. 13, Pipe 14A - 20A						1.07	87				0.00		0.00		0.00		1.07	1.53									
	20A	25A	0.27		22	1.80	147	3.6	1.69		0.00		0.00		0.00	0.00	0.27	1.80	0.59	2.29	70.0	200	0.35	19.40	0.12	0.62	0.41
To STREET No. 12, Pipe 25A - SA33						1.80	147				0.00		0.00		0.00			1.80									
STREET No. 12																											
	80A	81A	0.58		47	0.58	47	3.7	0.56		0.00		0.00		0.00	0.00	0.58	0.58	0.19	0.75	72.5	200	0.80	29.34	0.03	0.93	0.40
	81A	82A	0.19		16	0.77	63	3.6	0.74		0.00		0.00		0.00	0.00	0.19	0.77	0.25	1.00	11.0	200	1.65	42.13	0.02	1.34	0.55
	82A	84A	0.26		21	1.03	84	3.6	0.98		0.00		0.00		0.00	0.00	0.26	1.03	0.34	1.32	63.0	200	2.20	48.65	0.03	1.55	0.66
To STREET No. 16-18, Pipe 84A - 85A						1.03	84				0.00		0.00		0.00			1.03									
	21A	22A	0.18		15	0.18	15	3.7	0.18		0.00		0.00		0.00	0.00	0.18	0.18	0.06	0.24	23.0	200	0.80	29.34	0.01	0.93	0.27
	22A	23A	0.82		66	1.00	81	3.6	0.95		0.00		0.00		0.00	0.00	0.82	1.00	0.33	1.28	108.5	200	0.80	29.34	0.04	0.93	0.46
	23A	24A	0.15		12	1.15	93	3.6	1.09		0.00		0.00		0.00	0.00	0.15	1.15	0.38	1.46	11.0	200	0.40	20.74	0.07	0.66	0.37
	24A	25A	0.33		27	1.48	120	3.6	1.39		0.00		0.00		0.00	0.00	0.33	1.48	0.49	1.88	63.0	200	1.75	43.39	0.04	1.38	0.68

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed:	PROJECT:		
Checked:	LOCATION: **City of Ottawa**		
Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.	File Ref:	Date: **09 May 2025**	Sheet No. 5 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From STREET No. 16-18, Pipe 20A - 25A						1.80	147				0.00		0.00		0.00		1.80	3.28									
	25A	SA33	0.35		28	3.63	295	3.5	3.31		0.00		0.00	0.71	0.71	0.11	1.06	4.34	1.43	4.86	72.0	200	0.35	19.40	0.25	0.62	0.51
	SA33	SA07				3.63	295	3.5	3.31		0.00		0.00		0.71	0.11	0.00	4.34	1.43	4.86	29.0	200	0.30	17.96	0.27	0.57	0.49
	SA07	74244				3.63	295	3.5	3.31		0.00		0.00		0.71	0.11	0.00	4.34	1.43	4.86	21.0	200	0.50	23.19	0.21	0.74	0.58
To ROBERT GRANT, Pipe 74244 - 74245						3.63	295				0.00		0.00		0.71			4.34									
BLOCK 9																											
	4A	SA01	2.38		191	2.38	191	3.5	2.18		0.00		0.00		0.00	0.00	2.38	2.38	0.79	2.97	49.0	250	0.35	35.18	0.08	0.72	0.43
To ROBERT GRANT, Pipe SA01 - 74242						2.38	191				0.00		0.00		0.00			2.38									
ROBERT GRANT																											
			0.00		0	0.00	0				0.00		0.00		0.00		0.00	0.00		493.40							
	74231	74232				0.00	0				0.00		0.00		0.00	0.00	0.00	0.00	0.00	493.40	136.5	900	0.65	1952.92	0.25	3.07	2.55
	74232	74241				0.00	0				0.00		0.00		0.00	0.00	0.00	0.00	0.00	493.40	119.5	900	0.15	1194.53	0.41	1.88	1.78
	74241	SA01				0.00	0				0.00		0.00		0.00	0.00	0.00	0.00	0.00	493.40	88.5	900	0.15	1194.53	0.41	1.88	1.78
Contribution From BLOCK 9, Pipe 4A - SA01						2.38	191				0.00		0.00		0.00		2.38	2.38									
	SA01	74242				2.38	191	3.5	2.18		0.00		0.00		0.00	0.00	0.00	2.38	0.79	496.37	31.5	900	0.20	1303.00	0.38	2.05	1.90
	74242	74243				2.38	191	3.5	2.18		0.00		0.00		0.00	0.00	0.00	2.38	0.79	496.37	120.0	900	0.15	1194.53	0.42	1.88	1.78
	74243	74244				2.38	191	3.5	2.18		0.00		0.00		0.00	0.00	0.00	2.38	0.79	496.37	47.5	900	0.25	1398.56	0.35	2.20	2.01
Contribution From STREET No. 12, Pipe SA07 - 74244						3.63	295				0.00		0.00		0.71		4.34	6.72									
	74244	74245				6.01	486	3.4	5.33		0.00		0.00		0.71	0.11	0.00	6.72	2.22	501.06	126.5	900	0.10	1065.87	0.47	1.68	1.65
Contribution From MONORAIL ROAD, Pipe SA35 - 74245						3.63	302				0.00		0.00		0.99		4.62	11.34									
	74245	74246				9.64	788	3.3	8.41		0.00		0.00		1.70	0.27	0.00	11.34	3.74	505.82	115.0	900	0.10	1065.87	0.47	1.68	1.65
	74246	74247				9.64	788	3.3	8.41		0.00		0.00		1.70	0.27	0.00	11.34	3.74	505.82	118.5	900	0.10	1065.87	0.47	1.68	1.65
Contribution From CRAINSBILL, Pipe SA31 - 74247						10.82	866				0.00		2.83		0.00		13.65	24.99									
Contribution From STREET No. 17, Pipe SA-37 - 74247						7.12	576				0.00		0.00		1.62		8.74	33.73									
	74247	74248				27.58	2230	3.0	21.96		0.00		2.83		3.32	1.91	0.00	33.73	11.13	528.40	121.5	900	0.15	1194.53	0.44	1.88	1.82
	74248	74249				27.58	2230	3.0	21.96		0.00		2.83		3.32	1.91	0.00	33.73	11.13	528.40	78.5	900	0.20	1303.00	0.41	2.05	1.93
	74249	74250				27.58	2230	3.0	21.96		0.00		2.83		3.32	1.91	0.00	33.73	11.13	528.40	87.5	900	0.15	1194.53	0.44	1.88	1.82
	74250	74251				27.58	2230	3.0	21.96		0.00		2.83		3.32	1.91	0.00	33.73	11.13	528.40	79.0	900	0.15	1194.53	0.44	1.88	1.82
Contribution From IRON RANGE ROAD, Pipe SA29 - 74251						5.02	352				1.71		0.00		0.82		7.55	41.28									
Contribution From STREET No. 21, Pipe SA39 - 74251						6.37	514				0.00		0.00		0.00		6.37	47.65									
	74251	74252				38.97	3096	2.9	29.54		1.71		2.83		4.14	2.88	0.00	47.65	15.72	541.54	120.5	900	0.15	1194.53	0.45	1.88	1.83
	74252	74253				38.97	3096	2.9	29.54		1.71		2.83		4.14	2.88	0.00	47.65	15.72	541.54	120.5	900	0.15	1194.53	0.45	1.88	1.83
Contribution From BLOCK 147, Pipe 128A - 74253						2.27	109				0.00		0.00		0.00		2.27	49.92									
	74253	74254				41.24	3205	2.9	30.48		1.71		2.83		4.14	2.88	0.00	49.92	16.47	543.23	93.0	900	1.40	2635.39	0.21	4.14	3.24
FAREBOX WAY & WHISTLE POST																											
	150A	29A	0.20		17	0.20	17	3.7	0.20		0.00		0.00		0.00	0.00	0.20	0.20	0.07	0.27	22.0	200	0.65	26.44	0.01	0.84	0.27
To STATIONHOUSE WALK, Pipe 29A - 36A						0.20	17				0.00		0.00		0.00			0.20									
	28A	29A	0.42		35	0.42	35	3.7	0.42		0.00		0.00		0.00	0.00	0.42	0.42	0.14	0.56	85.0	200	0.65	26.44	0.02	0.84	0.34
To STATIONHOUSE WALK, Pipe 29A - 36A						0.42	35				0.00		0.00		0.00			0.42									
	136A	137A	0.88		50	0.88	50	3.7	0.59		0.00		0.00		0.00	0.00	0.88	0.88	0.29	0.88	88.5	200	0.65	26.44	0.03	0.84	0.39
	137A	139A	0.67		39	1.55	89	3.6	1.04		0.00		0.00		0.00	0.00	0.67	1.55	0.51	1.55	86.0	200	0.35	19.40	0.08	0.62	0.37
	32A	33A	0.25		21	0.25	21	3.7	0.25		0.00		0.00		0.00	0.00	0.25	0.25	0.08	0.33	56.5	200	0.65	26.44	0.01	0.84	0.28

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed:

Checked:

Dwg. Reference:
Sanitary Drainage Plan, Dwgs. No.

PROJECT:

LOCATION:
City of Ottawa

File Ref:

Date:
09 May 2025

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of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION				RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET		FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
		33A	34A	0.05		5	0.30	26	3.7	0.31		0.00		0.00		0.00	0.00	0.05	0.30	0.10	0.41	11.0	200	0.35	19.40	0.02	0.62	0.25
		34A	36A	0.39		33	0.69	59	3.6	0.70		0.00		0.00		0.00	0.00	0.39	0.69	0.23	0.92	84.0	200	0.35	19.40	0.05	0.62	0.31
To STATIONHOUSE WALK, Pipe 36A - 39A							0.69	59				0.00		0.00		0.00			0.69									
		132A	133A	0.89		52	0.89	52	3.6	0.61		0.00		0.00		0.00	0.00	0.89	0.89	0.29	0.91	104.0	200	0.65	26.44	0.03	0.84	0.39
		133A	134A	0.39		23	1.28	75	3.6	0.88		0.00		0.00		0.00	0.00	0.39	1.28	0.42	1.30	55.0	200	0.35	19.40	0.07	0.62	0.35
		134A	135A	0.34		20	1.62	95	3.6	1.11		0.00		0.00		0.00	0.00	0.34	1.62	0.53	1.64	14.5	200	0.35	19.40	0.08	0.62	0.37
		135A	139A	0.28		16	1.90	111	3.6	1.29		0.00		0.00		0.00	0.00	0.28	1.90	0.63	1.92	72.5	200	0.35	19.40	0.10	0.62	0.39
		139A	140A	0.57		33	4.02	233	3.5	2.64		0.00		0.00		0.00	0.00	0.57	4.02	1.33	3.97	13.5	200	0.35	19.40	0.20	0.62	0.48
		140A	141A				4.02	233	3.5	2.64		0.00		0.00		0.00	0.00	0.00	4.02	1.33	3.97	60.5	200	0.35	19.40	0.20	0.62	0.48
To FREIGHTLINE TERRACE, Pipe 141A - 142A							4.02	233				0.00		0.00		0.00			4.02									
FREIGHTLINE TERRACE																												
		49A	50A	0.83		66	0.83	66	3.6	0.78		0.00		0.00		0.00	0.00	0.83	0.83	0.27	1.05	116.0	200	0.65	26.44	0.04	0.84	0.41
		50A	52A	0.53		43	1.36	109	3.6	1.27		0.00		0.00		0.00	0.00	0.53	1.36	0.45	1.72	116.0	200	0.35	19.40	0.09	0.62	0.38
To CRAINSBILL, Pipe 52A - 343A							1.36	109				0.00		0.00		0.00			1.36									
Contribution From FAREBOX WAY & WHISTLE POST, Pipe 140A - 141A							4.02	233				0.00		0.00		0.00		4.02	4.02									
		141A	142A	0.48		28	4.50	261	3.5	2.95		0.00		0.00		0.00	0.00	0.48	4.50	1.49	4.43	114.0	200	0.35	19.40	0.23	0.62	0.50
		142A	143A	0.23		13	4.73	274	3.5	3.09		0.00		0.00		0.00	0.00	0.23	4.73	1.56	4.65	17.0	200	0.70	27.44	0.17	0.87	0.65
		143A	144A	0.01		1	4.74	275	3.5	3.10		0.00		0.00		0.00	0.00	0.01	4.74	1.56	4.66	23.5	200	0.35	19.40	0.24	0.62	0.50

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed:

Checked:

Dwg. Reference:

Sanitary Drainage Plan, Dwgs. No.

PROJECT:

LOCATION:

City of Ottawa

File Ref:

Date: **09 May 2025**

Sheet No. 7

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FERNBANK COMMUNITY - KIZELL LANDS
SANITARY SEWER DESIGN SHEET

AREA			RESIDENTIAL																ICI				INFILTRATION				PIPE					
			SINGLES		TOWNS		STACKED TOWNS		MEDIUM DENISTY		HIGH DENSITY		MIXED USE/ PARK & RIDE		TOTAL																	
ID	From	To	Units	Pop.	Units	Pop.	Area	Pop.	Area	Pop.	Units	Pop.	Units	Pop.	Pop.	Accum. Pop.	Peak Factor	Peak Flow (l/s)	Commercial Area (ha)	Institutional Area (ha)	Accum. Area (ha)	Peak Flow (l/s)	Total Area (ha)	Accum. Area (ha)	Infilt. Flow (l/s)	**Total Flow (l/s)**	Size (mm)	Slope (%)	Length (m)	Capacity (l/s)	Full Flow Vel. (m/s)	Q/Q_{full} (%)
Outlet 1																																
Stittsville Diversion Trunk																										493.4						
	SA100	SA101		0.0		0.0								0.0	0.0	0	3.8	0.0			0.00	0.0	0.00	0.00	0.0	493.4	900	0.41	32	1209.3	1.84	40.8%
A1-1	SA101	SA102		0.0		0.0								0.0	0.0	0.0	3.8	0.0			0.00	0.0	0.91	0.91	0.3	493.7	900	0.41	134	1209.3	1.84	40.8%
A1-2	SA102	SA104		0.0		0.0								0.0	0.0	0.0	3.8	0.0			0.00	0.0	1.12	2.03	0.7	494.1	900	0.16	240	755.4	1.15	65.4%
A1-3	SA104	SA106		0.0		0.0			2.38	278.5				0.0	278.5	278.5	3.5	3.1	0.00		0.00	0.0	7.80	9.83	3.2	499.8	900	0.16	167	755.4	1.15	66.2%
A1-4	222	SA106	9	30.6	41	110.7			0.73	85.4				0.0	226.7	226.7	3.5	2.6		0.80	0.80	0.4	3.74	3.74	1.2	4.2	200	0.35	105	20.2	0.62	20.7%
A1-5	SA106	SA107a		0.0		0.0								0.0	0.0	505.2	3.4	5.5			0.80	0.4	0.56	14.13	4.7	504.0	900	0.16	126	755.4	1.15	66.7%
A1-6	212	SA107a	46	156.4	45	121.5			1.98	231.7				0.0	509.6	509.6	3.4	5.6		0.80	0.80	0.4	7.68	7.68	2.5	8.5	200	0.35	109	20.2	0.62	42.0%
A1-7	SA107a	SA108		0.0		0.0								0.0	0.0	1014.7	3.2	10.6			1.60	0.8	1.17	22.98	7.6	512.4	900	0.16	234	755.4	1.15	67.8%
A1-8	148	SA108	40	136.0	109	294.3			2.90	339.3				0.0	769.6	769.6	3.3	8.2			0.00	0.0	9.39	9.39	3.1	11.3	200	0.35	115	20.2	0.62	55.9%
A1-9	190	SA108	93	316.2	11	29.7			1.31	153.3				0.0	499.2	499.2	3.4	5.5		3.24	3.24	1.6	10.95	10.95	3.6	10.7	250	0.20	109	27.7	0.55	38.4%
A1-10	SA108	SA112		0.0		0.0								0.0	0.0	2283.5	3.0	22.4			4.84	2.4	1.78	45.10	14.9	533.1	900	0.16	367	755.4	1.15	70.6%
A1-11	112	SA112	8	27.2	67	180.9			2.16	252.7				0.0	460.8	460.8	3.4	5.1		0.83	0.83	0.4	6.24	6.24	2.1	7.5	200	0.75	115	29.6	0.91	25.4%
A1-12	120	SA112		0.0	70	189.0			2.14	250.4			160	288.0	727.4	727.4	3.3	7.8	1.36	0.82	2.18	1.1	7.36	7.36	2.4	11.3	250	0.25	109	31.0	0.61	36.4%
A1-13	SA112	SA114		0.0		0.0								0.0	0.0	3471.7	2.9	32.7			7.85	3.8	1.66	60.36	19.9	549.9	900	0.16	241	755.4	1.15	72.8%
A1-14	SA114	SA115		0.0		0.0							300	540.0	540.0	4011.7	2.9	37.3	1.82	2.28	11.95	5.8	2.28	62.64	20.7	557.1	900	1.42	93	2250.5	3.43	24.8%
Outlet 2																																
A2-1, A2-2	R20	R19	69	234.6	147	396.9			2.38	278.5				0.0	910	910	3.3	9.6		1.64	1.64	0.8	16.65	16.65	5.5	15.9	300	0.50	43	71.3	0.98	22.3%
Outlet 3																																
A3-1	404	R30	23	78.2		0.0								0.0	78.2	78.2	3.6	0.9			0.00	0.0	1.74	1.74	0.6	1.5	200	0.35	11	20.2	0.62	7.4%
Outlet 4																																
A4-1	604	RCAP1		0.0		0.0					360	648.0	300	540.0	1188.0	1188.0	3.2	12.3	1.90		1.90	0.9	7.21	7.21	2.4	15.6	200	1.00	4	34.2	1.06	45.7%

Design Parameters:			**Population Density:**		**Project: Kizell Lands (108195)**
Avg Flow/Person =	280	l/day		ppl/unit	units/net ha	Designed: LRW
Comm./Inst. Flow =	28000	l/ha/day	Mixed Use/HDR	1.80	85	Checked: MAB
Infiltration =	0.33	l/s/ha	Singles	3.40		Date: December 13, 2019
Pipe Friction n =	0.013		Towns	2.70		
Residential Peaking Factor = Harmon Equation (max 4, min 2)			Stacked Towns	2.70	49	
Peaking Factor Comm./Inst. =	1.5		Medium Density	1.80	65	

Abbott Street Sewer
Plan View
Matchline Overall View

HAZELDEAN CRAIG SUBDIVISION
REFER TO
STANTEC
PROJECT No. 160401043

Abbott's Run
Stage 2 and 3

Hazeldean
Craig
Subdivision

Abbottsville
Subdivision

Abbott's Run
Stage 1

Abbottsville
Subdivision

Matchline 1

Matchline 1

Matchline 2

Matchline 2

Matchline 3

Matchline 3

Honeylocust Avenue

voie Malahat Way

voie Malahat Way

voie Malahat Way

Glen Cairn Pond

Glen Cairn Pond Extension

Spearman Lane

McElroy Drive

Morton Drive

Montebello Lane

Morton Drive

Terry Fox Drive

Castlefrank Road

Castle Glen Crescent

rue Abbott Street East

rue Abbott Street East

voie Roundleaf Way

voie Lanceleaf Way

voie Roundleaf Way

chemin Rouncey Road

A=0.44
POP=24
RESIDENTIAL

A=0.87
POP=49
RESIDENTIAL

A=3.86
PARK

A=7.35
PARK

POP=510
RESIDENTIAL

A=2.40
POP=213

A=9.21
POP=354

A=0.90
PARK

METRIC HOMES
REFER TO
NOVATECH
PROJECT No. 110037-00

STREET I

TRANS CANADA TRAIL

BLACKSTONE COMMUNITY PHASES 2 - 4
REFER TO
STANTEC CONSULTING LIMITED
PROJECT No. 160401009

SANITARY PEAK VELOCITY LEGEND (m/s)

0.00-0.40 | 0.40-0.50 | 0.50-0.80 | 0.80-0.90 | 0.90-1.20 | 1.20-1.95 | 1.95-2.00 | 2.00+ | >6.00

Abbott's Run Subdivision Plan View

Abbott's Run Stage 2 and 3

Hazeldean Craig Subdivision

Abbott's Run Stage 1

4.28L/s from Abbott's Run Stages 2 and 3

14.52L/s from Abbott's Run Stage 1

MH18

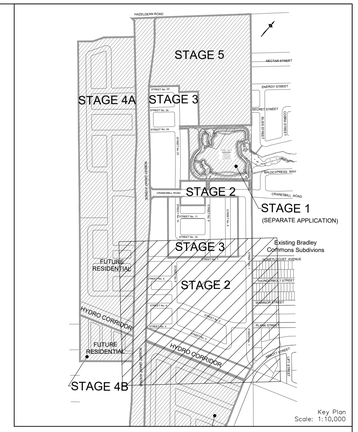
MH19

MH20

MH410A

Matchline 1

Matchline 1



LEGEND

SANITARY DRAINAGE BOUNDARY

SANITARY SUB-DRAINAGE BOUNDARY

UPSTREAM MH TO DOWNSTREAM MH — 43A - 44A

AREA IN HECTARES — 0.78

POPULATION — 61

UPSTREAM MH TO DOWNSTREAM MH — 43A-44A

AREA IN OTHER PHASES IN HECTARES — 0.78

POPULATION — 61

EXTERNAL AREA IN HECTARES — A=53.63

EXTERNAL POPULATION — 107 POP=5739

DENSITY (PERSONS/HECTARE)

EXTERNAL LAND USE — RESIDENTIAL

MAINTENANCE HOLE — MH202A

CAP

EXISTING SANITARY MAINTENANCE HOLE

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. PROJECT NO. 21942-22 DATED SEPTEMBER 1, 2022

LEGAL INFORMATION

M-PLAN PROVIDED BY ANNIS, O'SULLIVAN,VOLLEBEKK LTD, PROJECT NUMBER 25486-24 STAGE 2 DATED NOVEMBER 22, 2024, STAGE 3 DATED NOVEMBER 25, 2024.

NOT FOR CONSTRUCTION

ELEVATION NOTE

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM, DERIVED FROM VERTICAL CONTROL MONUMENT NO. BM88U502 HAVING AN ELEVATION OF 106.039 METERS.

ELEVATION = 106.039m

No.	BY	DATE	DESCRIPTION
1	S.L.M.	24-12-20	1st SUBMISSION

CITY OF OTTAWA

PROJECT No. 22-1295-PH2

LICENSED PROFESSIONAL ENGINEER S. L. MERRICK 100186523 2024-12-20 PROVINCE OF ONTARIO

MINTO COMMUNITIES

ABBOTT'S RUN

STAGE 2 / STAGE 3

DSEL

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

SANITARY DRAINAGE PLAN

DRAWN BY: M.B.	DESIGNED BY: C.B.
SCALE: 1:1000	CHECKED BY: S.M.
PROJECT NO. 22-1295-PH2	SHEET 54 OF 63

CITY PLAN No. XXXXXX

CITY FILE No. D07-XX-XX-XXXX

Hazeldean Craig Subdivision Plan View

Abbottsville Subdivision

Hazeldean Craig Subdivision

Hazeldean Craig Subdivision

Abbott's Run Stage 2 and 3

Abbott's Run Stage 1

MH57A

MH15

MH16

MH17

MH18

MH19

MH20

37.41 L/s from Hazeldean Criag Abbott's Run Stages 2 and 3

HYDRO ONE TRANSMISSION LINE

SEE DWG-SSP-1

R23A 0.18 7 | R22A 0.80 58 | R21A 0.83 78 | R15A 0.09 0 | R28A 0.44 24 | R26E 0.44 32 | R25A 0.56 51 | R24A 0.52 46 | R16A 0.17 0 | R40A 0.69 65 | R41A 0.80 62 | R27S 0.51 34 | R26S 0.46 33 | R38A 0.56 51 | R39A 0.66 49 | R37A 0.99 76 | R29A 0.43 20 | R31A 0.67 48 | R33A 0.66 57 | R35A 0.66 59 | R17A 0.32 16 | R18A 0.31 22 | R34A 0.74 66 | R36A 0.73 59 | R19A 0.38 24 | R20A 0.32 14 | R30A 0.44 27 | R32A 0.73 58 | G20A 5.73 0 | R20B 1.49 115 | R20C 9.04 680

Stantec

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

Legend

- PROPOSED SANITARY SEWER
- 1 / 0.38 / 14 — SANITARY DRAINAGE AREA ID# / POPULATION / SANITARY DRAINAGE AREA ha.
- SANITARY DRAINAGE AREA ha.
- SANITARY DRAINAGE AREA ha. FUTURE PHASE

REVIEWED BY DEVELOPMENT REVIEW BRANCH.

SIGNED _____

DATE _____

PLAN NUMBER _____

12	ISSUED FOR CONSTRUCTION	SG	SG	18.09.13
11	REVISED PER CITY COMMENTS	WAJ	SG	18.02.14
10	REVISED DRAFT PLAN	WAJ	SG	17.12.18
9	ISSUED FOR GRADING REVIEW	MJS	SG	17.11.22
8	REVISED SERVICING ABBOTT STREET	MJS	SG	17.11.20
7	ISSUED FOR EARLY SERVICING	MJS	SG	17.10.31
6	REVISED PER CITY COMMENTS	DCT	SG	17.10.04
5	REVISED MANHOLE SIZING	MJS	GR	17.09.14
4	ISSUED FOR MOE APPROVAL	MJS	SG	17.09.11
3	ISSUED FOR TENDER	MJS	SG	17.09.06
2	REVISED AS PER CITY COMMENTS	MJS	DT	17.07.06
1	ISSUED TO CITY FOR REVIEW	MJS	DT	17.02.22
	Revision	By	Appd.	YY.MM.DD

File Name: 160401217-SA | MS Dwn. | SG Chkd. | DT Dsgn. | 17.01.10 YY.MM.DD

Permit-Seal

Client/Project
2118356 ONTARIO INC.

HAZELDEAN CRAIG SUBDIVISION

OTTAWA, ON, CANADA

Title
SANTARY DRAINAGE PLAN

Project No. 160401217

Scale 1:750 (0 7.5 22.5 37.5m)

Drawing No. SAN-2

Sheet 48 of 49

Revision 12

DWG# 17514

D07-16-13-0035

Abbottsville Subdivision Plan View

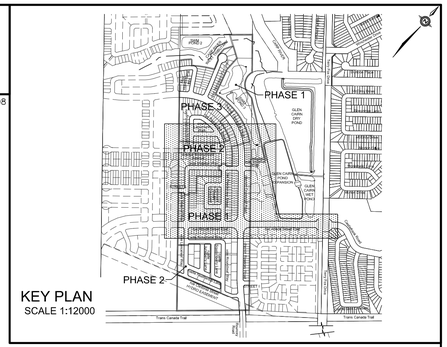
EVIEWED BY DEVELOPMENT REVIEW BRANCH

SIGNED _____

DATE _____

PLAN NUMBER 16888

#D07-16-13-0008



KEY PLAN
SCALE 1:12000

LEGEND

SANITARY DRAINAGE BOUNDARY

SANITARY SUB-DRAINAGE BOUNDARY

UPSTREAM MH TO DOWNSTREAM MH — 43A - 44A

AREA IN HECTARES — 0.78

POPULATION — 61

EXTERNAL AREA IN HECTARES — A=53.63

EXTERNAL POPULATION — 107

DENSITY (PERSONS/HECTARE) — POP=2736

EXTERNAL LAND USE — RESIDENTIAL

UPSTREAM MH TO DOWNSTREAM MH — 43A-44A

AREA IN OTHER PHASES IN HECTARES — 0.78

POPULATION — 61

200mmø SAN

MAINTENANCE HOLE — MH202A

CAP

WEST TRIBUTARY AQUATIC SETBACK

WEST TRIBUTARY 16m MEANDER BELT

WEST TRIBUTARY 40m CORRIDOR

EX. 100 YEAR FLOODPLAIN ELEVATION (95.20) (MVCA MAPPING)

PROPOSED 100 YEAR FLOODPLAIN ELEVATION (95.20) (MVCA MAPPING)

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-745-02. SURVEYS DATED JUNE 25, 2014 AND OCTOBER 27, 2015.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-745-00, DATED JULY 20, 2016. CALCULATED R-PLANS PREPARED BY FAIRHALL MOFFATT & WOODLAND LTD., JOB No. T30800, DATED JUNE 22, 2016, J.D. BARNES LIMITED, REFERENCE No. 7-10-745-02, DATED MARCH 22, 2016 AND CITY OF OTTAWA INFRASTRUCTURE SERVICES DEPARTMENT, SURVEYS & MAPPING UNIT, FILE No. 17816, DATED AUGUST 12, 2014.

BENCH MARK No. 0011988U502 ELEVATION = 106.039 m

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE BENCHMARK No. 0011988U502 HAVING A PUBLISHED ELEVATION OF 106.039 METRES.

TOWNSHIP: STITTSVILLE

CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3km NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30cm WEST OF EASTERLY EXTREMITY, 30cm NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.

No.	DATE	BY	DESCRIPTION
4.	16-08-22	Z.L.	3rd SUBMISSION
3.	16-07-08	Z.L.	2nd SUBMISSION SUBDIVISION
2.	16-06-10	Z.L.	2nd SUBMISSION POND 3
1.	15-12-02	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 12-594

LICENSED PROFESSIONAL ENGINEER Z. LI 16-08-22 PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN

© DSEL

MATTAMY (FERNBANK) LIMITED

ABBOTTSVILLE CROSSING SUBDIVISION

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY:	C.M./W.L	CHECKED BY:	K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	K.M.	CHECKED BY:	Z.L.		71
SCALE:	1:1000	DATE:	DECEMBER 2015		

CITY FILE No. D07-16-13-0008 CITY PLAN No. 16888

METRIC HOMES REFER TO NOVATECH PROJECT No. 110037-00

Hazeldean Craig Subdivision

Abbottsville Subdivision

Abbottsville Subdivision

Matchline 2

Matchline 3

Matchline 3

MATCHLINE

MATCHLINE

REFER TO DWG No. 72

MH57A

MH58A

MH59A

MH60A

MH112A

MH1120A

MH113A

FUTURE STREET

STREET 18

rue Abbott Street East

chemin Rouncey Road

voie Roundleaf Way

voie Lanceleaf Way

ruelle Juniberry Lane

ruelle Squashberry Lane

ruelle Feathertop Lane

CASTLEFRANK ROAD

TERRY FOX DRIVE

A=15.76 POP=1190

A=5.22 POP=40

A=2.40 POP=213

Abbottsville Subdivision

Abbottsville Subdivision

Hazeldean Craig Subdivision

Abbottsville Subdivision

Abbottsville Subdivision Plan View

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE
PLAN NUMBER 16888

#D07-16-13-0008

KEY PLAN
SCALE 1:12000
PHASE 1
PHASE 3
PHASE 2
PHASE

REFER TO DWG No. 71

REFER TO DWG No. 71

METRIC HOMES REFER TO NOVATECH PROJECT No. 110037-00

BLACKSTONE COMMUNITY PHASES 2 - 4 REFER TO STANTEC CONSULTING LIMITED PROJECT No. 160401009

LEGEND

SANITARY DRAINAGE BOUNDARY
SANITARY SUB-DRAINAGE BOUNDARY
UPSTREAM MH TO DOWNSTREAM MH
AREA IN HECTARES
POPULATION
EXTERNAL AREA IN HECTARES
EXTERNAL POPULATION
DENSITY (PERSONS/HECTARE)
EXTERNAL LAND USE
UPSTREAM MH TO DOWNSTREAM MH
AREA IN OTHER PHASES IN HECTARES
POPULATION
MAINTENANCE HOLE
CAP
WEST TRIBUTARY AQUATIC SETBACK
WEST TRIBUTARY 16m MEANDER BELT
WEST TRIBUTARY 40m CORRIDOR
EX. 100 YEAR FLOODPLAIN ELEVATION (95.20) (MVCA MAPPING)
PROPOSED 100 YEAR FLOODPLAIN ELEVATION (95.20) (MVCA MAPPING)

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-745-02. SURVEYS DATED JUNE 25, 2014 AND OCTOBER 27, 2015.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-745-00, DATED JULY 20, 2016. CALCULATED R-PLANS PREPARED BY FAIRHALL MOFFATT & WOODLAND LTD., JOB No. T30800, DATED JUNE 22, 2016, J.D. BARNES LIMITED, REFERENCE No. 7-10-745-02, DATED MARCH 22, 2016 AND CITY OF OTTAWA INFRASTRUCTURE SERVICES DEPARTMENT, SURVEYS & MAPPING UNIT, FILE No. 17816, DATED AUGUST 12, 2014.

BENCH MARK No. 0011988U502 ELEVATION = 106.039 m

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM AND ARE DERIVED FROM THE BENCHMARK No. 0011988U502 HAVING A PUBLISHED ELEVATION OF 106.039 METRES.

TOWNSHIP: STITTSVILLE

CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3km NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30cm WEST OF EASTERLY EXTREMITY, 30cm NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.

No.	DATE	BY	DESCRIPTION
4.	16-08-22	Z.L.	3rd SUBMISSION
3.	16-07-08	Z.L.	2nd SUBMISSION SUBDIVISION
2.	16-06-10	Z.L.	2nd SUBMISSION POND 3
1.	15-12-02	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 12-594

LICENSED PROFESSIONAL ENGINEER Z. LI 16-08-22 PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN
© DSEL

MATTAMY (FERNBANK) LIMITED

ABBOTTSVILLE CROSSING SUBDIVISION

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY:	C.M./W.L	CHECKED BY:	K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	K.M.	CHECKED BY:	Z.L.		72
SCALE:	1:1000	DATE:	DECEMBER 2015		

CITY FILE No. D07-16-13-0008 CITY PLAN No. 16888

SANITARY SEWER CALCULATION SHEET

NOTE: The highlighted rows indicate the Abbott Street Sewer. Please review this design sheet alongside the plan view of the Abbotts Run Subdivision, which is included in this appendix.

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK			INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
	33A	34A	0.05		5	0.30	26	3.7	0.31		0.00		0.00		0.00	0.00	0.05	0.30	0.10	0.41	11.0	200	0.35	19.40	0.02	0.62	0.25
	34A	36A	0.39		33	0.69	59	3.6	0.70		0.00		0.00		0.00	0.00	0.39	0.69	0.23	0.92	84.0	200	0.35	19.40	0.05	0.62	0.31
To STATIONHOUSE WALK, Pipe 36A - 39A						0.69	59				0.00		0.00		0.00			0.69									
	132A	133A	0.89		52	0.89	52	3.6	0.61		0.00		0.00		0.00	0.00	0.89	0.89	0.29	0.91	104.0	200	0.65	26.44	0.03	0.84	0.39
	133A	134A	0.39		23	1.28	75	3.6	0.88		0.00		0.00		0.00	0.00	0.39	1.28	0.42	1.30	55.0	200	0.35	19.40	0.07	0.62	0.35
	134A	135A	0.34		20	1.62	95	3.6	1.11		0.00		0.00		0.00	0.00	0.34	1.62	0.53	1.64	14.5	200	0.35	19.40	0.08	0.62	0.37
	135A	139A	0.28		16	1.90	111	3.6	1.29		0.00		0.00		0.00	0.00	0.28	1.90	0.63	1.92	72.5	200	0.35	19.40	0.10	0.62	0.39
	139A	140A	0.57		33	4.02	233	3.5	2.64		0.00		0.00		0.00	0.00	0.57	4.02	1.33	3.97	13.5	200	0.35	19.40	0.20	0.62	0.48
	140A	141A				4.02	233	3.5	2.64		0.00		0.00		0.00	0.00	0.00	4.02	1.33	3.97	60.5	200	0.35	19.40	0.20	0.62	0.48
To FREIGHTLINE TERRACE, Pipe 141A - 142A						4.02	233				0.00		0.00		0.00			4.02									
FREIGHTLINE TERRACE																											
	49A	50A	0.83		66	0.83	66	3.6	0.78		0.00		0.00		0.00	0.00	0.83	0.83	0.27	1.05	116.0	200	0.65	26.44	0.04	0.84	0.41
	50A	52A	0.53		43	1.36	109	3.6	1.27		0.00		0.00		0.00	0.00	0.53	1.36	0.45	1.72	116.0	200	0.35	19.40	0.09	0.62	0.38
To CRAINSBILL, Pipe 52A - 343A						1.36	109				0.00		0.00		0.00			1.36									
Contribution From FAREBOX WAY & WHISTLE POST, Pipe 140A - 141A						4.02	233				0.00		0.00		0.00		4.02	4.02									
	141A	142A	0.48		28	4.50	261	3.5	2.95		0.00		0.00		0.00	0.00	0.48	4.50	1.49	4.43	114.0	200	0.35	19.40	0.23	0.62	0.50
	142A	143A	0.23		13	4.73	274	3.5	3.09		0.00		0.00		0.00	0.00	0.23	4.73	1.56	4.65	17.0	200	0.70	27.44	0.17	0.87	0.65
	143A	144A	0.01		1	4.74	275	3.5	3.10		0.00		0.00		0.00	0.00	0.01	4.74	1.56	4.66	23.5	200	0.35	19.40	0.24	0.62	0.50
	214A	EX.410A				10.70	977	3.2	10.27		0.00		0.00	1.640	1.64	0.26	12.34	12.34	4.07	14.61	23.5	200	0.35	19.40	0.75	0.62	0.68
	144A	MH R20				15.44	1252	3.2	12.93		0.00		0.00		1.64	0.26	0.00	17.08	5.64	18.84	23.5	200	0.35	19.40	0.97	0.62	0.70

Flow Contribution from Abbott's Run

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.3241	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013	(Pvc) 0.013
Commercial/Inst./Park Peak Factor =	1.50				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed:		PROJECT:	
Checked:		LOCATION:	**City of Ottawa**
Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.	File Ref:	Date: **09 May 2025**	Sheet No. 7 of 7

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE							
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE Design (%)	SLOPE As-Built (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
voie Baldcypress Way																												
	1A	2A	0.39	10	34.0	0.39	34.0	3.68	0.41								0.39	0.39	0.129	0.54	56.5	200	0.65		26.44	0.02	0.84	0.33
	2A	3A	0.12	2	6.8	0.51	40.8	3.67	0.49								0.12	0.51	0.168	0.66	14.0	200	0.35		19.40	0.03	0.62	0.29
	3A	101A	0.49	10	34.0	1.00	74.8	3.62	0.88								0.49	1.00	0.330	1.21	108.5	200	0.35		19.40	0.06	0.62	0.34
To chemin Cranesbill Road, Pipe 101A - 102A						1.00	74.8											1.00										
cour Nordmann Firr Court																												
	5A	6A	0.48	5	17.0	0.48	17.0	3.71	0.20								0.48	0.48	0.158	0.36	29.0	200	0.65		26.44	0.01	0.84	0.29
	6A	8A	0.81	18	61.2	1.29	78.2	3.62	0.92								0.81	1.29	0.426	1.35	116.0	200	0.35		19.40	0.07	0.62	0.35
	8A	102A	0.22	5	17.0	1.51	95.2	3.60	1.11								0.22	1.51	0.498	1.61	56.5	200	0.35		19.40	0.08	0.62	0.37
To chemin Cranesbill Road, Pipe 102A - 103A						1.51	95.2											1.51										
cours Laburnum Walk																												
	13A	19A	0.48	9	30.6	0.48	30.6	3.68	0.36								0.48	0.48	0.158	0.52	117.5	200	0.65		26.44	0.02	0.84	0.33
To rue Ponderosa Street, Pipe 19A - 20A						0.48	30.6											0.48										
avenue Honeylocust Avenue																												
Contribution From External						0.44	24.0										0.44	0.44										
	9A	10A	0.26	5	17.0	0.70	41.0	3.67	0.49								0.26	0.70	0.231	0.72	52.0	200	0.40		20.74	0.03	0.66	0.30
Contribution From rue Ponderosa Street, Pipe 13A - 10A						0.29	20.4										0.29	0.99										
	10A	11A	0.46	11	37.4	1.45	98.8	3.60	1.15								0.46	1.45	0.479	1.63	71.0	200	0.40		20.74	0.08	0.66	0.39
	11A	21A	0.43	10	34.0	1.88	132.8	3.57	1.54								0.43	1.88	0.620	2.16	68.0	200	0.40		20.74	0.10	0.66	0.42
To rue Ponderosa Street, Pipe 21A - 35A						1.88	132.8											1.88										
rue Ponderosa Street																												
	13A	10A	0.29	6	20.4	0.29	20.4	3.70	0.24								0.29	0.29	0.096	0.34	72.0	200	0.65		26.44	0.01	0.84	0.28
To avenue Honeylocust Avenue, Pipe 10A - 11A						0.29	20.4											0.29										
	13A	14A	0.34	6	20.4	0.34	20.4	3.70	0.24								0.34	0.34	0.112	0.35	66.5	200	0.65		26.44	0.01	0.84	0.29
	14A	16A	0.12	1	3.4	0.46	23.8	3.70	0.29								0.12	0.46	0.152	0.44	7.5	200	0.35		19.40	0.02	0.62	0.25
	16A	15A	0.25	3	10.2	0.71	34.0	3.68	0.41								0.25	0.71	0.234	0.64	36.5	200	0.35		19.40	0.03	0.62	0.28
	15A	151A	0.06	1	3.4	0.77	37.4	3.67	0.44								0.06	0.77	0.254	0.69	8.0	200	0.35		19.40	0.04	0.62	0.29
To BLOCK 420 (SERVICING BLOCK), Pipe 151A - 103A						0.77	37.4											0.77										
	18A	151A	0.15	3	10.2	0.15	10.2	3.73	0.12								0.15	0.15	0.050	0.17	33.0	200	0.65		26.44	0.01	0.84	0.23
To BLOCK 420 (SERVICING BLOCK), Pipe 151A - 103A						0.15	10.2											0.15										
Contribution From Block 429 (Park)																												
San Control MH 2A		151A												0.35	0.35	0.04	0.35	0.35	0.116	0.16	11.0	200	1.00		32.80	0.005	1.04	0.27
To BLOCK 420 (SERVICING BLOCK), Pipe 151A - 103A															0.35			0.35										
	18A	19A	0.30	6	20.4	0.30	20.4	3.70	0.24								0.30	0.30	0.099	0.34	64.5	200	0.65		26.44	0.01	0.84	0.28
Contribution From cours Laburnum Walk, Pipe 13A - 19A						0.48	30.6										0.48	0.78										
	19A	20A	0.18	3	10.2	0.96	61.2	3.64	0.72								0.18	0.96	0.317	1.04	39.0	200	0.35		19.40	0.05	0.62	0.33
	20A	21A	0.15	3	10.2	1.11	71.4	3.63	0.84								0.15	1.11	0.366	1.21	36.5	200	0.35		19.40	0.06	0.62	0.34
Contribution From avenue Honeylocust Avenue, Pipe 11A - 21A						1.88	132.8										1.88	2.99										
	21A	35A	0.32	6	20.4	3.31	224.6	3.50	2.55								0.32	3.31	1.092	3.64	72.5	200	0.35	**0.50**	23.19	0.16	0.74	0.54
To voie Malahat Way, Pipe 35A - 109A						3.31	224.6											3.31										

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da			
Average Daily Flow =	280	l/p/day	Industrial Peak Factor =	as per MOE Graph	
Comm/Inst Flow =	28000	L/ha/da	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/Inst./Park Peak Factor =	1.00		Townhouse coeff=	2.7	
Institutional	0.32	l/s/Ha	Single house coeff=	3.4	

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 70, 71, 72

PROJECT: **Abbottsville Crossing Subdivision**

LOCATION: **City of Ottawa**

File Ref: 12-594

Date: March, 2017

Sheet No. 1 of 5

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE							
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE Design (%)	SLOPE As-Built (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
	26A	27A	0.29	5	17.0	0.29	17.0	3.71	0.20								0.29	0.29	0.096	0.30	59.0	200	1.00	**0.97**	32.30	0.01	1.03	0.31
Contribution From croissant Oxalis Crescent, Pipe 22A - 27A						0.34	20.4										0.34	0.63										
	27A	28A	0.63	15	51.0	1.26	88.4	3.61	1.03								0.63	1.26	0.416	1.45	93.0	200	0.50	**0.52**	23.65	0.06	0.75	0.41
Contribution From croissant Oxalis Crescent, Pipe 25A - 28A						1.06	71.4										1.06	2.32										
	28A	35A	0.28	6	20.4	2.60	180.2	3.53	2.06								0.28	2.60	0.858	2.92	71.5	200	0.50	**0.53**	23.88	0.12	0.76	0.51
To voie Malahat Way, Pipe 35A - 109A						2.60	180.2											2.60										
BLOCK 420 (SERVICING BLOCK)																												
Contribution From rue Ponderosa Street, Pipe 15A - 151A						0.77	37.4										0.77	0.77										
Contribution From rue Ponderosa Street, Pipe 18A - 151A						0.15	10.2										0.15	0.92										
Contribution From Block 429 (Park), Pipe Ctrl. 2A - 151A														0.35			0.35	1.27										
	151A	103A	0.06	0	0.0	0.98	47.7	3.66	0.57					0.35		0.04	0.06	1.33	0.439	1.05	77.0	200	0.35		19.40	0.05	0.62	0.33
To chemin Cranesbill Road, Pipe 103A - 104A						0.98	47.7							0.35				1.33										
croissant Oxalis Crescent																												
	23A	22A	0.07	1	3.4	0.07	3.4	3.76	0.04								0.07	0.07	0.023	0.06	11.0	200	0.65	**0.64**	26.24	0.00	0.84	0.17
	22A	27A	0.27	5	17.0	0.34	20.4	3.70	0.24								0.27	0.34	0.112	0.35	64.5	200	0.65	**0.64**	26.24	0.01	0.84	0.29
To rue Ponderosa Street, Pipe 27A - 28A						0.34	20.4											0.34										
	23A	24A	0.62	14	47.6	0.62	47.6	3.66	0.56								0.62	0.62	0.205	0.77	78.0	200	0.80	**0.77**	28.78	0.03	0.92	0.39
	24A	25A	0.19	2	6.8	0.81	54.4	3.65	0.64								0.19	0.81	0.267	0.91	11.0	200	0.80	**0.82**	29.70	0.03	0.95	0.43
	25A	28A	0.25	5	17.0	1.06	71.4	3.63	0.84								0.25	1.06	0.350	1.19	64.5	200	0.35	**0.36**	19.68	0.06	0.63	0.35
To rue Ponderosa Street, Pipe 28A - 35A						1.06	71.4											1.06										
voie Malahat Way																												
	31A	29A	0.51	12	40.8	0.51	40.8	3.67	0.49								0.51	0.51	0.168	0.66	68.0	200	0.65	**0.65**	26.44	0.02	0.84	0.35
	29A	58A	0.35	7	23.8	0.86	64.6	3.63	0.76								0.35	0.86	0.284	1.04	77.5	200	2.10	**2.04**	46.85	0.02	1.49	0.60
To rue Abbott Street East, Pipe 58A - 59A						0.86	64.6											0.86										
	31A	32A	0.64	13	44.2	0.64	44.2	3.66	0.52								0.64	0.64	0.211	0.73	91.0	200	0.65		26.44	0.03	0.84	0.36
	32A	33A	0.11	1	3.4	0.75	47.6	3.66	0.56								0.11	0.75	0.248	0.81	11.0	200	0.40		20.74	0.04	0.66	0.31
	33A	34A	0.58	13	44.2	1.33	91.8	3.60	1.07								0.58	1.33	0.439	1.51	73.0	200	0.40		20.74	0.07	0.66	0.38
	34A	35A	0.50	12	40.8	1.83	132.6	3.57	1.53								0.50	1.83	0.604	2.13	75.5	200	1.30	**1.14**	35.02	0.06	1.11	0.61
Contribution From rue Ponderosa Street, Pipe 21A - 35A						3.31	224.6										3.31	5.14										
Contribution From rue Ponderosa Street, Pipe 28A - 35A						2.60	180.2										2.60	7.74										
	35A	109A	0.11	0	0.0	7.85	537.4	3.37	5.87								0.11	7.85	2.591	8.46	76.0	250	0.25	**0.24**	29.13	0.29	0.59	0.51
To chemin Cranesbill Road, Pipe 109A - 110A						7.85	537.4											7.85										

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da			
Average Daily Flow =	280	l/p/day	Industrial Peak Factor =	as per MOE Graph	
Comm/Inst Flow =	28000	L/ha/da	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/Inst peak Factor =	1.00		Townhouse coeff=	2.7	
Institutional	0.32		Single house coeff=	3.4	

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 70, 71, 72

PROJECT: **Abbottsville Crossing Subdivision**

LOCATION: **City of Ottawa**

File Ref: 12-594

Date: March, 2017

Sheet No. 2 of 5

NOTE: The highlighted rows indicate the Abbott Street Sewer. Please review this design sheet alongside the plan view of the Abbottsville Subdivision, which is included in this appendix.

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

Cumulative flow from the Craig Subdivision and Abbott's Run Subdivision to the Abbott Street Sewer

Most restrictive leg at 83% capacity

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM								PIPE								
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)							INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE Design (%)	SLOPE As-Built (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
voie Lanceleaf Way																										
	43A	44A	0.74	26	70.2	0.74	70.2	3.63	0.83									0.244	1.07	98.0	200	0.65	**0.80**	29.34	0.04	0.93	0.44
Contribution From voie Roundleaf Way, Pipe 45A - 44A						0.26	21.6																			
	44A	58A	0.28	8	21.6	1.28	113.4	3.58	1.32								0.28	1.28	0.422	1.74	73.0	200	0.40	**0.36**	19.68	0.09	0.63	0.39
To rue Abbott Street East, Pipe 58A - 59A						1.28	113.4											1.28								
rue Abbott Street East																										
Contribution From External						29.05	2328.0							1.64		30.69	30.69									
	57A	58A	0.08	0	0.0	29.13	2328.0	3.03	22.86					1.64	0.18	0.08	30.77	10.154	33.19	34.0	300	0.20	**0.21**	44.31	0.75	0.63	0.69
Contribution From voie Lanceleaf Way, Pipe 44A - 58A						1.28	113.4									1.28	32.05									
Contribution From voie Malahat Way, Pipe 29A - 58A						0.86	64.6									0.86	32.91									
	58A	59A	0.23	4	13.6	31.50	2519.6	3.01	24.58					1.64	0.18	0.23	33.14	10.936	35.70	48.5	300	0.20	**0.21**	44.31	0.81	0.63	0.70
Contribution From Block 428 (Park)																										
San Control MH 1A		59A											0.44	0.44	0.05	0.44	0.44	0.145	0.20	16.0	200	1.00	**1.00**	32.80	0.01	1.04	0.28
	59A	60A	0.73	16	54.4	32.23	2574.0	3.00	25.03					2.08	0.22	0.73	34.31	11.322	36.57	101.5	300	0.20	**0.21**	44.31	0.83	0.63	0.70
	60A	112A	0.25	4	13.6	32.48	2587.6	3.00	25.16					2.08	0.22	0.25	34.56	11.405	36.79	81.5	300	0.20	**0.27**	50.25	0.73	0.71	0.78
To chemin Rouncey Road, Pipe 112A - 1120A						32.48	2587.6							2.08			34.56									
	201A	202A	0.54	9	24.3	0.54	24.3	3.70	0.29							0.54	0.54	0.178	0.47	70.					0.02	0.80	0.30
	202A	307A	0.50	9	24.3	1.04	48.6	3.65	0.57							0.50	1.04	0.343	0.91	85.					0.05	0.61	0.31
Contribution From Block 128, Pipe 306A - 307A						2.42	298.0									2.42	3.46									
	307A	56A	0.45	10	27.0	3.91	373.6	3.43	4.15							0.45	3.91	1.290	5.44	80.					0.16	0.67	0.49
	56A	112A	0.26	5	13.5	4.17	387.1	3.42	4.29							0.26	4.17	1.376	5.67	75.					0.19	0.59	0.45
To chemin Rouncey Road, Pipe 112A - 1120A						4.17	387.1										4.17									
Block 128 (Servicing Block - Metric Homes)																										
Contribution From External						2.42	298.0									2.42	2.42									
	306A	307A	0.00	0	0.0	2.42	298.0	3.46	3.34							0.00	2.42	0.799	4.14	14.0	200	0.35	**0.36**	19.68	0.21	0.63	0.50
To rue Abbott Street East, Pipe 307A - 56A						2.42	298.0										2.42									
ruelle Juneberry Lane																										
	37A	38A	0.28	13	35.1	0.28	35.1	3.68	0.42							0.28	0.28	0.092	0.51	52.0	200	0.65		26.44	0.02	0.84	0.33
	38A	45A	0.35	16	43.2	0.63	78.3	3.62	0.92							0.35	0.63	0.208	1.13	68.5	200	0.35	**0.29**	17.66	0.06	0.56	0.31
To voie Roundleaf Way, Pipe 45A - 46A						0.63	78.3										0.63									
ruelle Squashberry Lane																										
	40A	46A	0.33	20	54.0	0.33	54.0	3.65	0.64							0.33	0.33	0.109	0.75	81.0	200	0.65	**0.62**	25.83	0.03	0.82	0.36
To voie Roundleaf Way, Pipe 46A - 47A						0.33	54.0										0.33									
	40A	42A	0.28	15	40.5	0.28	40.5	3.67	0.48							0.28	0.28	0.092	0.57	69.0	200	1.25	**1.26**	36.82	0.02	1.17	0.42
To ruelle Feathertop Lane, Pipe 42A - 50A						0.28	40.5										0.28									
ruelle Feathertop Lane																										
	41A	42A	0.32	14	37.8	0.32	37.8	3.67	0.45							0.32	0.32	0.106	0.56	96.5	200	0.65	**0.50**	23.19	0.02	0.84	0.35
Contribution From ruelle Squashberry Lane, Pipe 40A - 42A						0.28	40.5									0.28	0.60									
	42A	50A	0.14	6	16.2	0.74	94.5	3.60	1.10							0.14	0.74	0.244	1.34	48.5	200	0.40	**0.39**	20.48	0.07	0.65	0.36
To voie Roundleaf Way, Pipe 50A - 53A						0.74	94.5										0.74									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	Industrial Peak Factor =	as per MOE Graph	
Average Daily Flow =	280	l/p/day	Extraneous Flow =	0.330	L/s/ha
Comm/Inst Flow =	28000	L/ha/da	Minimum Velocity =	0.600	m/s
Industrial Flow =	35000	L/ha/da	Manning's n =	0.013	
Max Res. Peak Factor =	4.00		Townhouse coeff=	2.7	
Commercial/Inst peak Factor =	1.00		Single house coeff=	3.4	
Institutional	0.32				

Designed: K.M.	PROJECT: Abbottsville Crossing Subdivision		
Checked: Z.L.	LOCATION: City of Ottawa		
Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 70, 71, 72	File Ref: 12-594	Date: March, 2017	Sheet No. 3 of 5

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE							
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE Design (%)	SLOPE As-Built (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
voie Roundleaf Way																												
	45A	44A	0.26	8	21.6	0.26	21.6	3.70	0.26								0.26	0.26	0.086	0.35	69.0	200	1.00	**1.03**	33.29	0.01	1.06	0.34
To voie Lanceleaf Way, Pipe 44A - 58A						0.26	21.6											0.26										
Contribution From ruelle Juneberry Lane, Pipe 38A - 45A						0.63	78.3										0.63	0.63										
	45A	46A	0.19	7	18.9	0.82	118.8	3.58	1.38								0.19	0.82	0.271	1.65	45.0	200	0.35	**0.33**	18.84	0.09	0.60	0.36
Contribution From ruelle Squashberry Lane, Pipe 40A - 46A						0.33	54.0										0.33	1.15										
	46A	47A	0.15	5	13.5	1.30	186.3	3.53	2.13								0.15	1.30	0.429	2.56	37.0	200	0.35	**0.43**	21.51	0.12	0.68	0.45
	47A	48A	0.14	3	8.1	1.44	194.4	3.52	2.22								0.14	1.44	0.475	2.70	11.5	200	0.35	**0.35**	19.40	0.14	0.62	0.43
	48A	49A	0.31	13	35.1	1.75	229.5	3.50	2.60								0.31	1.75	0.578	3.18	47.0	200	0.35	**0.34**	19.12	0.17	0.61	0.45
	49A	50A	0.63	29	78.3	2.38	307.8	3.46	3.45								0.63	2.38	0.785	4.24	114.5	200	0.35	**0.38**	20.22	0.21	0.64	0.51
Contribution From ruelle Feathertop Lane, Pipe 42A - 50A						0.74	94.5										0.74	3.12										
	50A	53A	0.12	2	5.4	3.24	407.7	3.42	4.52								0.12	3.24	1.069	5.59	48.0	200	0.35	**0.35**	19.40	0.29	0.62	0.53
To rue Clintonia Street, Pipe 53A - 54A						3.24	407.7											3.24										
rue Clintonia Street																												
Contribution From External						0.87	49.0								7.35		8.22	8.22										
	51A	52A	1.65	12	32.4	2.52	81.4	3.61	0.95					1.28	8.63	0.93	2.93	11.15	3.680	5.56	101.0	200	0.35		19.40	0.29	0.62	0.53
	52A	53A	0.28	12	32.4	2.80	113.8	3.58	1.32						8.63	0.93	0.28	11.43	3.772	6.02	109.5	200	0.35	**0.40**	20.74	0.29	0.62	0.53
Contribution From voie Roundleaf Way, Pipe 50A - 53A						3.24	407.7										3.24	14.67										
	53A	54A	0.13	3	8.1	6.17	529.6	3.37	5.78						8.63	0.93	0.13	14.80	4.884	11.59	40.0	200	0.35	**0.33**	18.84	0.62	0.60	0.63
	54A	115A	0.13	3	8.1	6.30	537.7	3.37	5.87						8.63	0.93	0.13	14.93	4.927	11.73	41.5	200	0.35	**0.49**	22.96	0.51	0.73	0.73
To chemin Rouncey Road, Pipe 115A - 117A						6.30	537.7								8.63			14.93										
STREET I																												
Contribution From External, Pipe 127 (B.O.) - 55A						8.21	381.0								0.94		9.15	9.15										
	55A	114A	0.06	0	0.0	8.27	381.0	3.43	4.24						0.94	0.10	0.06	9.21	3.039	7.38	38.0	200	0.35	**0.50**	23.19	0.32	0.74	0.66
To chemin Rouncey Road, Pipe 114A - 115A						8.27	381.0								0.94			9.21										
chemin Cranesbill Road																												
Contribution From External						12.07	830.0						2.34		3.45		17.86	17.86										
Contribution From External						16.98	987.0				8.07				0.87		25.92	43.78										
	100A	101A	0.40	10	34.0	29.45	1851.0	3.09	18.54		8.07	0.37	2.71		4.32	3.95	0.77	44.55	14.702	37.19	46.0	450	0.12		98.76	0.38	0.62	0.58
Contribution From voie Baldcypress Way, Pipe 3A - 101A						1.00	74.8										1.00	45.55										
	101A	102A	0.45	9	30.6	30.90	1956.4	3.08	19.53		8.07		2.71		4.32	3.95	0.45	46.00	15.180	38.66	61.0	450	0.12		98.76	0.39	0.62	0.58
Contribution From cour Nordmann Firr Court, Pipe 8A - 102A						1.51	95.2										1.51	1.51										
	102A	103A	0.16	3	10.2	32.57	2061.8	3.06	20.45		8.07		2.71		4.32	3.95	0.16	47.67	15.731	40.13	39.5	450	0.12		98.76	0.41	0.62	0.59
Contribution From Block 420, Pipe 151A - 103A						0.98	47.7								0.35		1.33	49.00										
	103A	104A	0.73	16	54.4	34.28	2163.9	3.05	21.39		8.07		2.71		4.67	3.99	0.73	49.73	16.411	41.79	89.5	450	0.12		98.76	0.42	0.62	0.59
	104A	107A	0.71	14	47.6	34.99	2211.5	3.04	21.79		8.07		2.71		4.67	3.99	0.71	50.44	16.645	42.43	86.5	450	0.12		98.76	0.43	0.62	0.59
	107A	108A	0.55	11	37.4	35.54	2248.9	3.04	22.16		8.07		2.71		4.67	3.99	0.55	50.99	16.827	42.98	68.0	450	0.12	**0.13**	102.80	0.42	0.65	0.62
	108A	109A	0.58	13	44.2	36.12	2293.1	3.03	22.52		8.07		2.71		4.67	3.99	0.58	51.57	17.018	43.53	80.0	450	0.12	**0.12**	98.76	0.44	0.62	0.60

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	Industrial Peak Factor = as per MOE Graph		
Average Daily Flow =	280	l/p/day	Extraneous Flow =	0.330	L/s/ha
Comm/Inst Flow =	28000	L/ha/da	Minimum Velocity =	0.600	m/s
Industrial Flow =	35000	L/ha/da	Manning's n =	0.013	
Max Res. Peak Factor =	4.00		Townhouse coeff=	2.7	
Commercial/Inst peak Factor =	1.00		Single house coeff=	3.4	
Institutional	0.32				

Designed: K.M.	PROJECT: **Abbottsville Crossing Subdivision**		
Checked: Z.L.	LOCATION: **City of Ottawa**		
Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 70, 71, 72	File Ref: 12-594	Date: March, 2017	Sheet No. 4 of 5

NOTE: The highlighted rows indicate the Abbott Street Sewer. Please review this design sheet alongside the plan view of the Abbottsville Subdivision, which is included in this appendix.

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE							
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE Design (%)	SLOPE As-Built (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Contribution From voie Malahat Way, Pipe 35A - 109A						7.85	537.4										7.85	59.42										
			0.45	10	34.0												0.45	59.87										
	109A	110A	0.46	14	37.8	44.88	2902.3	2.96	27.84		8.07		2.71		4.67	3.99	0.46	60.33	19.909	51.74	120.0	450	0.12	**0.12**	98.76	0.52	0.62	0.63
			0.47	9	30.6												0.47	60.80										
	110A	112A	0.47	13	35.1	45.82	2968.0	2.96	28.47		8.07		2.71		4.67	3.99	0.47	61.27	20.219	52.68	120.0	450	0.12	**0.13**	102.80	0.51	0.65	0.65
To chemin Rouncey Road, Pipe 112A - 1120A						45.82	2968.0								4.67			61.27										
chemin Rouncey Road																												
Contribution From chemin Cranesbill Road, Pipe 110A - 112A						45.82	2968.0								4.67		61.27	61.27										
Contribution From rue Abbott Street East, Pipe 60A - 112A						32.48	2587.6								2.08		34.56	95.83										
Contribution From rue Abbott Street East, Pipe 56A - 112A						4.17	387.1										4.17	100.00										
			0.21	4	10.8												0.21	100.21										
	112A	1120A	0.22	3	10.2	82.90	5963.7	2.74	52.96		8.07		2.71		6.75	4.21	0.22	100.43	33.142	90.31	59.0	525	0.11	**0.10**	136.00	0.66	0.63	0.67
			0.27	9	24.3												0.27	100.70										
	1120A	113A	0.29	7	23.8	83.46	6011.8	2.74	53.38		8.07		2.71		6.75	4.21	0.29	100.99	33.327	90.92	72.5	525	0.11	**0.12**	148.98	0.61	0.69	0.72
			0.47	17	45.9												0.47	101.46										
	113A	114A	0.44	10	34.0	84.37	6091.7	2.73	53.89		8.07		2.71		6.75	4.21	0.44	101.90	33.627	91.73	119.0	525	0.11	**0.09**	129.02	0.71	0.60	0.65
Contribution From Street I, Pipe 55A - 114A						8.27	381.0								0.94		9.21	111.11										
	114A	115A	0.31	8	21.6	92.95	6494.3	2.71	57.04		8.07		2.71		7.69	4.31	0.31	111.42	36.769	98.12	54.5	600	0.11	**0.11**	203.64	0.48	0.72	0.71
Contribution From rue Clintonia Street, Pipe 54A - 115A						6.30	537.7								8.63		14.93	126.35										
			0.16	4	10.8												0.16	126.51										
	115A	Ex. FT08	0.16	0	0.0	99.57	7042.8	2.68	61.17		8.07		2.71		16.32	5.24	0.16	126.67	41.801	108.21	91.0	600	0.11	**0.24**	300.80	0.36	1.06	0.97
To TRANS CANADA TRAIL, Existing SAN Trunk FT08 - FT07						99.57	7042.8				8.07		2.71		16.32													

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da			
Average Daily Flow =	280	l/p/day	Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00		Manning's n =	0.013	
Commercial/Inst peak Factor =	1.00		Townhouse coeff=	2.7	
Institutional	0.32		Single house coeff=	3.4	

Designed: K.M.

Checked: Z.L.

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No. 70, 71, 72

PROJECT: **Abbottsville Crossing Subdivision**

LOCATION: **City of Ottawa**

File Ref: 12-594

Date: March, 2017

Sheet No. 5 of 5

Stantec

SUBDIVISION: **Hazeldean Craig Subdivision**

DATE: 29/3/2018
REVISION: 3
DESIGNED BY: DT
CHECKED BY: SG

SANITARY DESIGN (City of O

FILE NUMBER: 160401217

Flow contribution from Abbott's Run stages 1-3 towards the Abbott Street Sewer

DESIGN PARAMETERS

R (RES.)=	4.0	AVG. DAILY FLOW / PERSON	350 l/p/day	MINIMUM VELOCITY	0.60 m/s
(RES.)=	2.0	COMMERCIAL	50,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (COMM., INST.):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	50,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TOWNHOME	2.7	INFILTRATION	0.28 l/s/Ha		
PERSONS / APARTMENT	1.8				

actual area =15.29ha

actual population = 1263 p

1.64ha

actual flow =18.80L/s

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE							
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA	SINGLE	UNITS TOWN	APT	POP.	CUMULATIVE AREA	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW	LENGTH	DIA	MATERIAL	CLASS	SLOPE	CAP. (FULL)	CAP. V PEAK FLOW	VEL. (FULL)	VEL. (ACT.)
			(ha)					(ha)			(l/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)			(%)	(l/s)	(%)	(m/s)	(m/s)
G20A, R20B, R20C	20A	20	10.53	22	15	0	795	16.53	795	3.86	12.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	5.73	0.0	16.26	16.26	4.6	16.99	16.4	300	PVC	SDR 35	0.50	67.9	**25.03%**	0.96	0.67
R20A	20	19	0.32	0	5	0	14	10.85	809	3.86	12.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.32	16.58	4.6	17.28	43.2	300	PVC	SDR 35	0.50	67.9	**25.45%**	0.96	0.68
R19A	19	18	0.38	0	9	0	24	11.23	833	3.85	13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.38	16.96	4.7	17.74	44.8	300	PVC	SDR 35	0.50	67.9	**26.13%**	0.96	0.68
R18A	18	17	0.31	0	8	0	22	11.55	855	3.84	13.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.31	17.28	4.8	18.14	48.4	300	PVC	SDR 35	0.50	67.9	**26.72%**	0.96	0.69
R37A	37	17	0.99	0	28	0	76	0.99	76	4.00	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.99	0.99	0.3	1.50	119.3	200	PVC	SDR 35	0.40	21.1	**7.10%**	0.67	0.32
R17A	17	16	0.32	0	6	0	16	12.85	947	3.82	14.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.32	18.58	5.2	19.83	80.0	300	PVC	SDR 35	0.20	42.9	**46.19%**	0.61	0.51
R39A	39	38	0.66	0	18	0	49	0.66	49	4.00	0.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.66	0.66	0.2	0.97	72.3	200	PVC	SDR 35	0.40	21.1	**4.59%**	0.67	0.28
R38A	38	16	0.56	0	19	0	51	1.21	100	4.00	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.56	1.21	0.3	1.96	79.7	200	PVC	SDR 35	0.40	21.1	**9.26%**	0.67	0.35
R27S	27	26	0.51	10	0	0	34	0.51	34	4.00	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.51	0.51	0.1	0.69	79.0	200	PVC	SDR 35	0.40	21.1	**3.28%**	0.67	0.25
R32A	32	31	0.73	17	0	0	58	0.73	58	4.00	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.73	0.73	0.2	1.14	89.6	200	PVC	SDR 35	0.65	27.0	**4.23%**	0.85	0.35
R31A	31	26	0.67	14	0	0	48	1.39	105	4.00	1.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.67	1.39	0.4	2.10	113.9	200	PVC	SDR 35	0.40	21.1	**9.92%**	0.67	0.36
R26S	26	25	0.46	5	6	0	33	2.36	173	4.00	2.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.46	2.36	0.7	3.46	79.0	200	PVC	SDR 35	0.40	21.1	**16.35%**	0.67	0.41
R34A	34	33	0.74	9	13	0	66	0.74	66	4.00	1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.74	0.74	0.2	1.27	94.0	200	PVC	SDR 35	0.65	27.0	**4.71%**	0.85	0.36
R33A	33	25	0.66	8	11	0	57	1.40	123	4.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.66	1.40	0.4	2.38	111.1	200	PVC	SDR 35	0.40	21.1	**11.24%**	0.67	0.36
R25A	25	24	0.56	0	19	0	51	4.31	347	4.00	5.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.56	4.31	1.2	6.82	79.0	200	PVC	SDR 35	0.40	21.1	**32.26%**	0.67	0.50
R36A	36	35	0.73	0	22	0	59	0.73	59	4.00	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.73	0.73	0.2	1.17	89.8	200	PVC	SDR 35	0.90	31.7	**3.68%**	1.00	0.39
R35A	35	24	0.66	0	22	0	59	1.39	119	4.00	1.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.66	1.39	0.4	2.31	115.5	200	PVC	SDR 35	0.50	23.6	**9.79%**	0.74	0.39
R24A	24	16	0.52	0	17	0	46	6.22	511	3.97	8.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.52	6.22	1.7	9.96	81.1	200	PVC	SDR 35	1.00	33.4	**29.79%**	1.05	0.77
R16A	16	15	0.17	0	0	0	0	20.46	1558	3.67	23.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.17	26.19	7.3	30.47	79.0	300	PVC	SDR 35	0.20	42.9	**70.97%**	0.61	0.58
R41A	41	40	0.80	0	23	0	62	0.80	62	4.00	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.80	0.80	0.2	1.23	88.4	200	PVC	SDR 35	0.50	23.6	**5.20%**	0.74	0.33
R40A	40	15	0.69	0	24	0	65	1.49	127	4.00	2.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.69	1.49	0.4	2.47	96.9	200	PVC	SDR 35	0.40	21.1	**11.69%**	0.67	0.37
R26E	26	23	0.44	3	8	0	29.05ha	0.44	32	2328	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.44	0.44	0.1	0.64	71.2			5	0.50	23.6	**2.70%**	0.74	0.27
R23A	23	22	0.18	2	0	0		0.62	39		0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.18	0.62	0.2	0.80	11.0			5	0.50	23.6	**3.38%**	0.74	0.29
R22A	22	21	0.80	6	14	0	58	1.42	97	4.00	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.80	1.42	0.4	1.97	115.0	200	PVC	SDR 35	0.75	29.0	**6.78%**	0.91	0.43
R21A	21	15	0.83	0	29	0	78	2.25	175	4.00	2.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.83	2.25	0.6	3.47	114.2	200	PVC	SDR 35	1.20	36.6	**9.47%**	1.15	0.60
R15A	15	57A	0.09	0	0	0	0	24.59	1860	3.61	27.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.09	30.02	8.4	35.60	42.4	300	PVC	SDR 35	0.20	42.9	**82.91%**	0.61	0.61
	57A	58A	0.00	0	0	0	0	24.59	1860	3.61	27.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.73	0.0	0.00	30.02	8.4	35.60	33.9	300	PVC	SDR 35	0.20	42.9	**82.91%**	0.61	0.61
																												300							
R28A	28	9A	0.44	7	0	0	24	0.44	24	4.00	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.44	0.44	0.1	0.51	77.0	200	PVC	SDR 35	1.00	33.4	**1.52%**	1.05	0.32
	9A	10A	0.00	0	0	0	0	0.44	24	4.00	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.44	0.1	0.51	52.1	200	PVC	SDR 35	0.40	21.1	**2.41%**	0.67	0.23
																												200							

actual flow =37.41L/s falls within capacity

NOTE: The highlighted rows indicate the Abbott Street Sewer. Please review this design sheet alongside the plan view of the Hazeldean Craig Subdivision, which is included in this appendix.

Cumulative flow from the Craig Subdivision and Abbott's Run Subdivision to the Abbott Street Sewer

Stantec

SUBDIVISION:
Hazeldean Craig Subdivision

DATE: 29/3/2018
REVISION: 3
DESIGNED BY: DT
CHECKED BY: SG

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401217

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	350 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	50,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (COMM., INST.):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	50,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TOWNHOME	2.7	INFILTRATION	0.28 l/s/Ha		
PERSONS / APARTMENT	1.8				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE							
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA	SINGLE	UNITS TOWN	APT	POP.	CUMULATIVE AREA	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW	LENGTH	DIA	MATERIAL	CLASS	SLOPE	CAP. (FULL)	CAP. V PEAK FLOW	VEL. (FULL)	VEL. (ACT.)
			(ha)					(ha)			(l/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)			(%)	(l/s)	(%)	(m/s)	(m/s)
R7A	7	6	0.60	8	0	0	27	0.60	27	4.00	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.60	0.60	0.2	0.61	66.7	200	PVC	SDR 35	0.65	27.0	**2.26%**	0.85	0.29
R6A	6	4	0.16	1	0	0	3	0.77	31	4.00	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.16	0.77	0.2	0.71	27.4	200	PVC	SDR 35	0.60	25.9	**2.74%**	0.81	0.30
G5A	5	4	0.00	0	0	0	0	0.00	0	4.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	3.45	0.0	3.45	3.45	1.0	0.97	15.5	150	PVC	DR 28	1.00	15.3	**6.30%**	0.86	0.41
	4	3	0.00	0	0	0	0	0.77	31	4.00	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.0	0.00	4.21	1.2	1.68	20.7	200	PVC	SDR 35	0.60	25.9	**6.47%**	0.81	0.38
R3A	3	2	0.63	8	0	0	27	1.40	58	4.00	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.0	0.63	4.84	1.4	2.29	120.0	200	PVC	SDR 35	0.60	25.9	**8.85%**	0.81	0.41
R30A, R30B	30	29	2.18	31	0	0	105	2.18	105	4.00	1.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	2.18	2.18	0.6	2.32	84.0	200	PVC	SDR 35	1.00	33.4	**6.93%**	1.05	0.51
R29A	29	27	0.43	6	0	0	20	2.61	126	4.00	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.43	2.61	0.7	2.77	119.0	200	PVC	SDR 35	1.00	33.4	**8.28%**	1.05	0.52
R27N	27	14	0.54	8	0	0	27	3.15	153	4.00	2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.54	3.15	0.9	3.36	113.9	200	PVC	SDR 35	0.40	21.1	**15.90%**	0.67	0.40
R14A	14	2	0.49	7	0	0	24	3.64	177	4.00	2.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.49	3.64	1.0	3.88	113.9	200	PVC	SDR 35	0.40	21.1	**18.37%**	0.67	0.42
R2A, I2A	2	1	0.53	8	0	0	27	5.57	262	4.00	4.2	0.00	0.00	0.00	0.00	0.00	0.00	2.34	2.34	0.00	3.45	2.0	2.87	11.35	3.2	9.45	110.1	300	PVC	SDR 35	0.20	42.9	**22.01%**	0.61	0.41
R1AA	1A	9	0.05	1	0	0	3	0.05	3	4.00	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.05	0.05	0.0	0.07	11.1	200	PVC	SDR 35	0.65	27.0	**0.26%**	0.85	0.16
R13A	13	12	0.61	9	0	0	31	0.61	31	4.00	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.61	0.61	0.2	0.67	115.7	200	PVC	SDR 35	0.50	23.6	**2.82%**	0.74	0.27
R12A	12	10	0.27	4	0	0	14	0.88	44	4.00	0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.27	0.88	0.2	0.96	46.1	200	PVC	SDR 35	0.50	23.6	**4.08%**	0.74	0.31
RP2A-E, CP2A-C, P2	11B	11A	21.39	51	296	206	1603	21.39	1603	3.66	23.8	6.35	6.35	0.00	0.00	0.00	0.00	0.00	0.00	1.96	1.96	5.5	29.70	29.70	8.3	37.59	44.1	300	PVC	SDR 35	0.20	42.9	**87.54%**	0.61	0.62
	11A	11	0.00	0	0	0	0	21.39	1603	3.66	23.8	0.00	6.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	5.5	0.00	29.70	8.3	37.59	50.2	300	PVC	SDR 35	0.20	42.9	**87.54%**	0.61	0.62
	11	10	0.00	0	0	0	0	21.39	1603	3.66	23.8	0.00	6.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	5.5	0.00	29.70	8.3	37.59	37.9	300	PVC	SDR 35	0.20	42.9	**87.54%**	0.61	0.62
R10A	10	9	0.47	8	0	0	27	22.74	1675	3.64	24.7	0.00	6.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	5.5	0.47	31.05	8.7	38.93	62.6	300	PVC	SDR 35	0.20	42.9	**90.67%**	0.61	0.62
R9A	9	1	0.58	7	7	0	43	23.32	1718	3.64	25.3	0.00	6.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	5.5	0.58	31.63	8.9	39.67	105.7	300	PVC	SDR 35	0.20	42.9	**92.38%**	0.61	0.63
R1A	1	100A	0.02	0	0	0	0	28.91	1979	3.59	28.8	0.00	6.35	0.00	0.00	0.00	0.00	0.00	2.34	0.00	5.41	7.5	0.02	43.01	12.0	48.36	10.2	375	PVC	SDR 35	0.20	72.6	**66.63%**	0.69	0.64
	100A	101A	0.00	0	0	0	0	28.91	1979	3.59	28.8	0.00	6.35	0.00	0.00	0.00	0.00	0.00	2.34	0.00	5.41	7.5	0.00	43.01	12.0	48.36	45.9	450	CONCRETE	SDR 35	0.12	104.1	**46.45%**	0.63	0.53
																												450							

APPENDIX D

Stormwater Servicing Figure
Stormwater Design Sheets
Novatech Pond 1 Drainage Plan
Novatech Pond 1 Design Sheets
Novatech Pond 1 Design Calculation

LEGEND

- SITE BOUNNDARY
- STORM PIPE
- FUTURE STORM SEWER
- EXISTING STORM SEWER
- PROPOSED STORM MANHOLE
- EXISTONG STORM MANHOLE
- STORM DRAINAGE AREA
- 100 YEAR CAPTURE AREA

6.07Ha — STORM DRAINAGE AREA
0.55 — RUN-OFF COEFFICIENT
150 153 — UPSTREAM MH/DOWNSTREAM MH
5-YEAR — STORM FREQUENCY

100 YEAR INTAKE

100 YEAR CAPTURE AREA — CAPTURE AREA
AREA= 6.0 Ha — RUN-OFF COEFFICIENT
RC= 0.65
STORAGE= 170.4 m³ — 85% STORAGE CAPACITY

DSEL
120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

ABBOTT'S RUN
PRELIMINARY DESIGN
CITY OF OTTAWA

STORM SERVICING PLAN

SCALE:	1:2000	PROJECT No.:	22-1295
DATE:	MAY 2025	DRAWING:	02

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	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	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	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
BLOCK 1																																
	151	ST-52			0.00	0.00	0.93	0.40	1.03	1.03			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	108	600	600	CONC	0.15	15.5	237.8056	0.8411	0.3072	0.453
To STREET No. 10-23, Pipe ST-52 - ST-54						0.00				1.03				0.00				0.00	10.31													
BLOCK 2																																
	137	ST-34	2.27	0.80	5.05	5.05			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	388	600	600	CONC	0.60	67.5	475.6113	1.6821	0.6688	0.815
To ROBERT GRANT, Pipe ST-34 - ST-76						5.05				0.00				0.00				0.00	10.67													
STM BLOCK																																
Contribution From ROBERT GRANT, Pipe ST-26 - ST-44						0.00				0.00				0.00				0.00	12.64													
	ST-44	ST-28			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	12.64	67.97	92.06	107.85	157.57	0	750	750	CONC	0.35	16.5	658.6236	1.4908	0.1845	0.000
To STREET No. 21, Pipe ST-28 - ST-66						0.00				0.00				0.00				0.00	12.82													
Contribution From STREET No. 19, Pipe 30 - 119						1.03				0.00				0.00				0.00	11.82													
	119	120			0.00	1.03			0.00	0.00			0.00	0.00			0.00	0.00	11.82	70.47	95.48	111.88	163.49	73	600	600	CONC	0.15	9.5	237.8056	0.8411	0.1883	0.306
Contribution From STREET No. 19, Pipe 121 - 120						1.77				0.00				0.00				0.00	12.47													
	120	501			0.00	2.80			0.00	0.00			0.00	0.00			0.00	0.00	12.47	68.48	92.75	108.67	158.77	192	825	825	CONC	0.10	81.0	453.9246	0.8492	1.5898	0.423
To STREET No. 21, Pipe 501 - ST-28						2.80				0.00				0.00				0.00	14.06													
STREET No. 21																																
Contribution From STREET No.20- 22, Pipe 123 - 127						1.91				0.00				0.00				0.00	12.44													
Contribution From STREET No.20- 22, Pipe 126 - 127						1.81				0.00				0.00				0.00	12.48													
	127	133	0.24	0.70	0.47	4.18			0.00	0.00			0.00	0.00			0.00	0.00	12.48	68.44	92.71	108.62	158.70	286	825	825	CONC	0.10	75.5	453.9246	0.8492	1.4819	0.631
Contribution From STREET No.20- 22, Pipe 132 - 133						3.11				0.00				0.00				0.00	14.55													
			0.35	0.70	0.68	7.98			0.00	0.00			0.00	0.00			0.00	0.00														
	133	136	1.04	0.80	2.31	10.29			0.00	0.00			0.00	0.00			0.00	0.00	14.55	62.85	85.04	99.60	145.46	647	1200	1200	CONC	0.10	81.0	1232.8868	1.0901	1.2384	0.525
			-5.62	0.70	-10.94	-0.64			0.00	0.00			0.00	0.00			0.00	0.00	16.25													
					0.00	-0.64			0.00	0.00			0.00	0.00	5.62	0.70	10.94	10.94	16.25													
	136	501	0.08	0.70	0.16	-0.49			0.00	0.00			0.00	0.00			0.00	10.94	16.25	58.97	79.73	93.35	136.28	1462	1200	1200	CONC	0.10	9.5	1232.8868	1.0901	0.1452	1.186
Contribution From STM BLOCK, Pipe 120 - 501						2.80				0.00				0.00				0.00	14.06													
	501	ST-28			0.00	2.31			0.00	0.00			0.00	0.00			0.00	10.94	16.39	58.66	79.31	92.85	135.56	1618	1200	1200	CONC	0.10	11.1	1232.8868	1.0901	0.1697	1.313
Contribution From ROBERT GRANT, Pipe ST-30 - ST-28						10.22				0.00				0.00				0.00	14.94													
Contribution From STM BLOCK, Pipe ST-44 - ST-28						0.00				0.00				0.00				0.00	12.82													
	ST-28	ST-66			0.00	12.54			0.00	0.00			0.00	0.00			0.00	10.94	16.56	58.31	78.82	92.28	134.72	2204	1500	1500	CONC	0.15	25.0	2737.7609	1.5493	0.2689	0.805
To STREET No. 25, Pipe ST-66 - ST-56						12.54				0.00				0.00				10.94	16.83													
STREET No. 24																																
	149	150	0.61	0.70	1.19	1.19			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	91	600	600	CONC	0.15	87.5	237.8056	0.8411	1.7339	0.383
To STREET No. 10-23, Pipe 150 - ST-52						1.19				0.00				0.00				0.00	11.73													
	155	156	0.08	0.70	0.16	0.16			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	12	450	450	CONC	0.20	55.5	127.5033	0.8017	1.1538	0.094
	156	157	0.03	0.70	0.06	0.21			0.00	0.00			0.00	0.00			0.00	0.00	11.15	72.64	98.47	115.40	168.66	16	450	450	CONC	0.20	13.0	127.5033	0.8017	0.2703	0.122
	157	158	0.34	0.70	0.66	0.88			0.00	0.00			0.00	0.00			0.00	0.00	11.42	71.74	97.23	113.94	166.51	63	450	450	CONC	0.20	87.5	127.5033	0.8017	1.8191	0.493
To STREET No. 10-23, Pipe 158 - ST-54						0.88				0.00				0.00				0.00	13.24													
BLOCK 4																																
	162	164	2.19	0.80	4.87	4.87			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	374	600	600	CONC	0.55	22.0	455.3631	1.6105	0.2277	0.822
To STREET No. 25, Pipe 164 - 165						4.87				0.00				0.00				0.00	10.23													
	163	164	4.60	0.80	10.23	10.23			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	786	750	750	CONC	0.70	16.0	931.4344	2.1083	0.1265	0.844
To STREET No. 25, Pipe 164 - 165						10.23				0.00				0.00				0.00	10.13													
STREET No. 25																																
	161	164	0.54	0.70	1.05	1.05			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	81	450	450	CONC	1.05	63.5	292.1469	1.8369	0.5762	0.276
Contribution From BLOCK 4, Pipe 162 - 164						4.87				0.00				0.00				0.00	10.23													
Contribution From BLOCK 4, Pipe 163 - 164						10.23				0.00				0.00				0.00	10.13													
	164	165			0.00	16.15			0.00	0.00			0.00	0.00			0.00	0.00	10.58	74.66	101.24	118.67	173.46	1206	900	900	CONC	0.80	54.5	1619.1915	2.5452	0.3569	0.745

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed:	M.S.	PROJECT:	Abbott's Run Stage 2-3
Checked:	S.L.M.	LOCATION:	City of Ottawa
Dwg. Reference:	2	File Ref: 22-1295	Date: 04 Oct 2024
			Sheet No. SHEET 1 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Time of Conc.	Intensity 2 Year	Intensity 5 Year	Intensity 10 Year	Intensity 100 Year	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
Contribution From STREET No. 21, Pipe ST-28 - ST-66						12.54				0.00				0.00				10.94	16.83														
	ST-66	ST-56	0.24	0.70	0.47	13.00			0.00	0.00			0.00	0.00			0.00	10.94	16.83	57.75	78.07	91.40	133.42	2210	1500	1500	CONC	0.15	67.3	2737.7609	1.5493	0.7240	0.807
	ST-56	ST-50	0.21	0.70	0.41	13.41			0.00	0.00			0.00	0.00			0.00	10.94	17.56	56.32	76.11	89.10	130.05	2178	1500	1500	CONC	0.15	47.0	2737.7609	1.5493	0.5056	0.795
To STREET No. 10-23, Pipe ST-50 - 150						13.41				0.00				0.00				10.94	18.06														
STREET No. 11																																	
	83	84	0.68	0.70	1.32	1.32			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	102	600	600	CONC	0.15	90.5	237.8056	0.8411	1.7934	0.427
To POND INLET 2, Pipe 84 - ST40						1.32				0.00				0.00				0.00	11.79														
STREET No. 5																																	
	71	72	0.39	0.70	0.76	0.76			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	58	600	600	CONC	0.15	84.5	237.8056	0.8411	1.6745	0.245
To STREET No. 6, Pipe 72 - 76						0.76				0.00				0.00				0.00	11.67														
	73	74			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	450	450	CONC	0.20	33.5	127.5033	0.8017	0.6964	0.000
	74	75	0.10	0.70	0.19	0.19			0.00	0.00			0.00	0.00			0.00	0.00	10.70	74.23	100.65	117.97	172.43	14	450	450	CONC	0.20	12.5	127.5033	0.8017	0.2599	0.113
	75	76	0.48	0.70	0.93	1.13			0.00	0.00			0.00	0.00			0.00	0.00	10.96	73.32	99.40	116.50	170.27	83	600	600	CONC	0.15	84.0	237.8056	0.8411	1.6646	0.348
To STREET No. 6, Pipe 76 - 78						1.13				0.00				0.00				0.00	12.62														
STREET No. 6																																	
Contribution From STREET No. 2-4, Pipe 61 - 62						0.00				0.00				0.00				0.00	11.69														
Contribution From STREET No. 2-4, Pipe 63 - 62						0.00				0.00				0.00				0.00	10.53														
			0.25	0.70	0.49	0.49			0.00	0.00			0.00	0.00			0.00	0.00															
	62	65	0.39	0.70	0.76	1.25			0.00	0.00			0.00	0.00			0.00	0.00	11.69	70.86	96.02	112.52	164.42	88	600	600	CONC	0.15	9.0	237.8056	0.8411	0.1783	0.371
	65	70	0.11	0.70	0.21	1.46			0.00	0.00			0.00	0.00			0.00	0.00	11.87	70.29	95.24	111.60	163.08	103	825	825	CONC	0.10	70.0	453.9246	0.8492	1.3739	0.226
Contribution From STREET No. 2-4, Pipe 68 - 70						1.36				0.00				0.00				0.00	13.19														
	70	72	0.07	0.70	0.14	2.96			0.00	0.00			0.00	0.00			0.00	0.00	13.25	66.24	89.69	105.06	153.48	196	825	825	CONC	0.10	44.5	453.9246	0.8492	0.8734	0.432
Contribution From STREET No. 5, Pipe 71 - 72						0.76				0.00				0.00				0.00	11.67														
	72	76	0.08	0.70	0.16	3.87			0.00	0.00			0.00	0.00			0.00	0.00	14.12	63.93	86.51	101.33	148.00	248	825	825	CONC	0.10	51.5	453.9246	0.8492	1.0108	0.545
Contribution From STREET No. 5, Pipe 75 - 76						1.13				0.00				0.00				0.00	12.62														
	76	78	0.11	0.70	0.21	5.22			0.00	0.00			0.00	0.00			0.00	0.00	15.13	61.46	83.14	97.36	142.17	321	825	825	CONC	0.10	70.0	453.9246	0.8492	1.3739	0.706
To STREET No. 7, Pipe 78 - 80						5.22				0.00				0.00				0.00	16.50														
POND INLET 2																																	
Contribution From STREET No. 7, Pipe 78 - 80						7.10				1.10				0.00				0.00	18.24														
Contribution From STREET No. 7, Pipe 79 - 80						0.25				0.00				0.00				0.00	11.13														
	80	82	0.28	0.70	0.54	7.90			0.00	1.10			0.00	0.00			0.00	0.00	18.24	55.04	74.36	87.04	127.03	517	975	975	CONC	0.10	72.5	708.6833	0.9492	1.2730	0.729
Contribution From STREET No. 10-23, Pipe 81 - 82						1.52				0.00				0.00				0.00	11.91														
	82	84	0.37	0.70	0.72	10.14			0.00	1.10			0.00	0.00			0.00	0.00	19.52	52.82	71.33	83.48	121.81	614	1050	1050	CONC	0.10	79.5	863.5311	0.9973	1.3286	0.711
Contribution From STREET No. 11, Pipe 83 - 84						1.32				0.00				0.00				0.00	11.79														
	84	ST40	0.31	0.70	0.60	12.07			0.00	1.10			0.00	0.00			0.00	0.00	20.85	50.71	68.45	80.09	116.85	687	1350	1350	CONC	0.10	81.5	1687.8347	1.1792	1.1520	0.407
To POND INLET 2, Pipe ST40 - 87						12.07				1.10				0.00				0.00	22.00														
STREET No. 10-23																																	
	81	82	0.78	0.70	1.52	1.52			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	117	600	600	CONC	0.15	96.5	237.8056	0.8411	1.9123	0.490
To POND INLET 2, Pipe 82 - 84						1.52				0.00				0.00				0.00	11.91														
	57	58	0.40	0.70	0.78	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	60	600	600	CONC	0.15	70.5	237.8056	0.8411	1.3970	0.251
	58	ST-38	0.31	0.70	0.60	1.38			0.00	0.00			0.00	0.00			0.00	0.00	11.40	71.83	97.35	114.08	166.72	99	825	825	CONC	0.10	83.5	453.9246	0.8492	1.6389	0.219
To CRANESBILL, Pipe ST-38 - ST40						1.38				0.00				0.00				0.00	13.04														
	153	154	0.86	0.70	1.67	1.67			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	129	600	600	CONC	0.15	108.5	237.8056	0.8411	2.1501	0.541
	154	158	0.66	0.70	1.28	2.96			0.00	0.00			0.00	0.00			0.00	0.00	12.15	69.43	94.06	110.21	161.03	205	600	600	CONC	0.20	88.0	274.5943	0.9712	1.5102	0.748
Contribution From STREET No. 24, Pipe 157 - 158						0.88				0.00				0.00				0.00	13.24														
	158	ST-54			0.00	3.83			0.00	0.00			0.00	0.00			0.00	0.00	13.66	65.12	88.15	103.26	150.83	250	600	600	CONC	0.20	6.0	274.5943	0.9712	0.1030	0.909
	147	ST-50	1.71	0.70	3.33	3.33			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	256	900	900	CONC	0.15	16.5	701.1305	1.1021	0.2495	0.365

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed:	M.S.	PROJECT:	Abbott's Run Stage 2-3
Checked:	S.L.M.	LOCATION:	City of Ottawa
Dwg. Reference:	2	File Ref: 22-1295	Date: 04 Oct 2024
			Sheet No. SHEET 2 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	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	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	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
Contribution From STREET No. 25, Pipe ST-56 - ST-50						13.41				0.00				0.00				10.94	18.06														
	ST-50	150	0.15	0.70	0.29	17.03			0.00	0.00			0.00	0.00			0.00	10.94	18.06	55.37	74.81	87.57	127.81	2341	1650	1650	CONC	0.15	72.2	3530.0106	1.6509	0.7289	0.663
Contribution From STREET No. 24, Pipe 149 - 150						1.19				0.00				0.00				0.00	11.73														
	150	ST-52			0.00	18.22			0.00	0.00			0.00	0.00			0.00	10.94	18.79	54.06	73.02	85.46	124.72	2349	1650	1650	CONC	0.15	9.3	3530.0106	1.6509	0.0939	0.665
Contribution From BLOCK 1, Pipe 151 - ST-52						0.00				1.03				0.00				0.00	10.31														
	ST-52	ST-54	0.12	0.70	0.23	18.45			0.00	1.03			0.00	0.00			0.00	10.94	18.89	53.90	72.80	85.20	124.33	2430	1650	1650	CONC	0.15	58.2	3530.0106	1.6509	0.5876	0.688
BLOCK 6																																	
	54	ST-58	1.39	0.80	3.09	3.09			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	237	600	600	CONC	0.25	23.0	307.0058	1.0858	0.3530	0.773
To CRANESBILL, Pipe ST-58 - ST-38						3.09				0.00				0.00				0.00	10.35														
	55	ST-58	1.31	0.80	2.91	2.91			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	224	600	600	CONC	0.25	16.0	307.0058	1.0858	0.2456	0.729
To CRANESBILL, Pipe ST-58 - ST-38						2.91				0.00				0.00				0.00	10.25														
BLOCK 5																																	
	48	ST-62	0.95	0.80	2.11	2.11			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	162	600	600	CONC	0.25	16.0	307.0058	1.0858	0.2456	0.529
To Unknown Road1 - 14, Pipe ST-62 - ST-20						2.11				0.00				0.00				0.00	10.25														
	49	ST-62	1.12	0.80	2.49	2.49			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	191	600	600	CONC	0.25	12.5	307.0058	1.0858	0.1919	0.623
To Unknown Road1 - 14, Pipe ST-62 - ST-20						2.49				0.00				0.00				0.00	10.19														
STREET No.20- 22																																	
	126	127	0.93	0.70	1.81	1.81			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	139	600	600	CONC	0.15	125.0	237.8056	0.8411	2.4770	0.585
To STREET No. 21, Pipe 127 - 133						1.81				0.00				0.00				0.00	12.48														
	122	123	0.50	0.70	0.97	0.97			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	75	600	600	CONC	0.15	46.0	237.8056	0.8411	0.9115	0.314
	123	127	0.48	0.70	0.93	1.91			0.00	0.00			0.00	0.00			0.00	0.00	10.91	73.47	99.61	116.75	170.63	140	600	600	CONC	0.15	77.0	237.8056	0.8411	1.5258	0.589
To STREET No. 21, Pipe 127 - 133						1.91				0.00				0.00				0.00	12.44														
	126	129	0.13	0.70	0.25	0.25			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	19	450	450	CONC	0.20	12.5	127.5033	0.8017	0.2599	0.152
	129	130	0.26	0.70	0.51	0.76			0.00	0.00			0.00	0.00			0.00	0.00	10.26	75.82	102.84	120.55	176.22	58	450	450	CONC	0.20	57.0	127.5033	0.8017	1.1850	0.451
	130	131	0.26	0.70	0.51	1.26			0.00	0.00			0.00	0.00			0.00	0.00	11.44	71.67	97.13	113.83	166.35	91	600	600	CONC	0.15	16.0	237.8056	0.8411	0.3171	0.381
	131	132	0.48	0.70	0.93	2.20			0.00	0.00			0.00	0.00			0.00	0.00	11.76	70.64	95.72	112.17	163.91	155	825	825	CONC	0.10	68.0	453.9246	0.8492	1.3347	0.342
	132	133	0.47	0.70	0.91	3.11			0.00	0.00			0.00	0.00			0.00	0.00	13.10	66.66	90.26	105.73	154.46	208	825	825	CONC	0.10	74.0	453.9246	0.8492	1.4524	0.457
To STREET No. 21, Pipe 133 - 136						3.11				0.00				0.00				0.00	14.55														
Contribution From STREET No. 19, Pipe 33 - 36						0.12				0.00				0.00				0.00	10.70														
	36	37	0.22	0.70	0.43	0.54			0.00	0.00			0.00	0.00			0.00	0.00	10.70	74.23	100.65	117.96	172.42	40	300	300	PVC	0.50	37.0	68.3778	0.9673	0.6375	0.591
	37	38			0.00	0.54			0.00	0.00			0.00	0.00			0.00	0.00	11.34	72.03	97.63	114.41	167.21	39	300	300	PVC	0.50	88.0	68.3778	0.9673	1.5162	0.574
	38	39	0.69	0.70	1.34	1.89			0.00	0.00			0.00	0.00			0.00	0.00	12.85	67.35	91.21	106.85	156.11	127	375	375	PVC	0.85	12.5	161.6464	1.4636	0.1423	0.787
	39	40	0.10	0.70	0.19	2.08			0.00	0.00			0.00	0.00			0.00	0.00	12.99	66.95	90.65	106.20	155.15	139	600	600	CONC	0.25	62.0	307.0058	1.0858	0.9517	0.454
To STREET No. 16-18, Pipe 40 - 47						2.08				0.00				0.00				0.00	13.95														
STREET No. 19																																	
	33	34	0.16	0.70	0.31	0.31			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	24	300	300	PVC	0.95	30.5	94.2522	1.3334	0.3812	0.254
To STREET No. 16-18, Pipe 34 - 35						0.31				0.00				0.00				0.00	10.38														
	33	36	0.06	0.70	0.12	0.12			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	9	300	300	PVC	0.50	40.5	68.3778	0.9673	0.6978	0.131
To STREET No.20- 22, Pipe 36 - 37						0.12				0.00				0.00				0.00	10.70														
	503	121	0.36	0.70	0.70	0.70			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	54	450	450	CONC	0.65	63.5	229.8599	1.4453	0.7323	0.234
	121	120	0.55	0.70	1.07	1.77			0.00	0.00			0.00	0.00			0.00	0.00	10.73	74.10	100.48	117.77	172.13	131	600	600	CONC	0.15	87.5	237.8056	0.8411	1.7339	0.552
To STM BLOCK, Pipe 120 - 501						1.77				0.00				0.00				0.00	12.47														
	502	32	0.27	0.70	0.53	0.53			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	40	450	450	CONC	0.65	67.5	229.8599	1.4453	0.7784	0.176
	32	31	0.03	0.70	0.06	0.58			0.00	0.00			0.00	0.00			0.00	0.00	10.78	73.94	100.25	117.50	171.74	43	450	450	CONC	0.20	10.0	127.5033	0.8017	0.2079	0.339
	31	30	0.10	0.70	0.19	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.99	73.21	99.26	116.33	170.02	57	450	450	CONC	0.65	23.5	229.8599	1.4453	0.2710	0.248

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed:	M.S.	PROJECT:	Abbott's Run Stage 2-3
Checked:	S.L.M.	LOCATION:	City of Ottawa
Dwg. Reference:	2	File Ref: 22-1295	Date: 04 Oct 2024
			Sheet No. SHEET 3 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Time of Conc.	Intensity 2 Year	Intensity 5 Year	Intensity 10 Year	Intensity 100 Year	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
	30	119	0.13	0.70	0.25	1.03			0.00	0.00			0.00	0.00			0.00	0.00	11.26	72.29	97.99	114.84	167.83	75	450	450	CONC	0.30	33.0	156.1591	0.9819	0.5602	0.477
To STM BLOCK, Pipe 119 - 120						1.03				0.00				0.00				0.00	11.82														
Unknown Road1 - 14																																	
Contribution From STREET No. 16-18, Pipe 40 - 47						4.71				1.80				0.00				0.00	14.94														
Contribution From STREET No. 16-18, Pipe 46 - 47						3.83				0.00				0.00				0.00	13.13														
	47	ST-62	0.08	0.70	0.16	8.70			0.00	1.80			0.00	0.00			0.00	0.00	14.94	61.92	83.77	98.10	143.25	690	1500	1500	CONC	0.20	47.0	3161.2940	1.7889	0.4379	0.218
Contribution From BLOCK 5, Pipe 48 - ST-62						2.11				0.00				0.00				0.00	10.25														
Contribution From BLOCK 5, Pipe 49 - ST-62						2.49				0.00				0.00				0.00	10.19														
			-4.58	0.70	-8.91	4.39			0.00	1.80			0.00	0.00			0.00	0.00	17.89														
					0.00	4.39			0.00	1.80			0.00	0.00	4.58	0.70	8.91	8.91	17.89														
	ST-62	ST-20	0.11	0.70	0.21	4.60			0.00	1.80			0.00	0.00			0.00	8.91	17.89	55.69	75.24	88.07	128.55	1538	1500	1500	CONC	0.10	56.2	2235.3724	1.2650	0.7405	0.688
To CRANESBILL, Pipe ST-20 - ST-58						4.60				1.80				0.00				8.91	18.63														
STREET No. 13																																	
	9	10	0.21	0.75	0.44	0.44			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	34	450	450	CONC	0.20	49.5	127.5033	0.8017	1.0291	0.264
	10	11	0.08	0.75	0.17	0.60			0.00	0.00			0.00	0.00			0.00	0.00	11.03	73.07	99.05	116.09	169.67	44	450	450	CONC	0.20	10.0	127.5033	0.8017	0.2079	0.347
	11	13			0.00	0.60			0.00	0.00			0.00	0.00			0.00	0.00	11.24	72.36	98.08	114.95	167.99	44	450	450	CONC	0.20	35.5	127.5033	0.8017	0.7380	0.343
Contribution From STREET No., Pipe 12 - 13						0.63				0.00				0.00				0.00	11.15														
	13	14	0.06	0.75	0.13	1.36			0.00	0.00			0.00	0.00			0.00	0.00	11.97	69.97	94.80	111.08	162.32	95	450	450	CONC	0.20	39.5	127.5033	0.8017	0.8212	0.744
	14	15	0.07	0.75	0.15	1.50			0.00	0.00			0.00	0.00			0.00	0.00	12.80	67.51	91.43	107.11	156.48	101	450	450	CONC	0.20	9.5	127.5033	0.8017	0.1975	0.795
	15	20	0.37	0.75	0.77	2.27			0.00	0.00			0.00	0.00			0.00	0.00	12.99	66.95	90.65	106.20	155.15	152	600	600	CONC	0.15	72.5	237.8056	0.8411	1.4367	0.640
To STREET No. 16-18, Pipe 20 - 25						2.27				0.00				0.00				0.00	14.43														
STREET No.																																	
	12	13	0.30	0.75	0.63	0.63			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	48	450	450	CONC	0.20	55.5	127.5033	0.8017	1.1538	0.377
To STREET No. 13, Pipe 13 - 14						0.63				0.00				0.00				0.00	11.15														
	16	19	0.11	0.75	0.23	0.23			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	18	450	450	CONC	1.90	56.0	392.9917	2.4710	0.3777	0.045
To STREET No. 16-18, Pipe 19 - 20						0.23				0.00				0.00				0.00	10.38														
STREET No. 16-18																																	
	44	45	0.40	0.70	0.78	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	60	300	300	PVC	1.10	55.5	101.4206	1.4348	0.6447	0.589
	45	46			0.00	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.64	74.42	100.91	118.27	172.87	58	300	300	PVC	0.60	5.5	74.9041	1.0597	0.0865	0.773
Contribution From STREET No. 12, Pipe 43 - 46						2.00				0.00				0.00				0.00	11.44														
	46	47	0.54	0.70	1.05	3.83			0.00	0.00			0.00	0.00			0.00	0.00	11.44	71.68	97.15	113.84	166.37	275	675	675	CONC	0.25	119.0	420.2941	1.1745	1.6887	0.654
To Unknown Road1 - 14, Pipe 47 - ST-62						3.83				0.00				0.00				0.00	13.13														
Contribution From STREET No. 19, Pipe 33 - 34						0.31				0.00				0.00				0.00	10.38														
	34	35	0.38	0.70	0.74	1.05			0.00	0.00			0.00	0.00			0.00	0.00	10.38	75.37	102.22	119.82	175.15	79	375	375	PVC	0.50	67.0	123.9771	1.1225	0.9948	0.639
	35	40	0.48	0.70	0.93	1.98			0.00	0.00			0.00	0.00			0.00	0.00	11.38	71.90	97.45	114.20	166.89	143	600	600	CONC	0.25	67.0	307.0058	1.0858	1.0284	0.465
Contribution From STREET No.20- 22, Pipe 39 - 40						2.08				0.00				0.00				0.00	13.95														
			0.33	0.70	0.64	4.71			0.00	0.00			0.00	0.00			0.00	0.00															
	40	47			0.00	4.71	1.62	0.40	1.80	1.80			0.00	0.00			0.00	0.00	13.95	64.37	87.13	102.05	149.06	460	750	750	CONC	0.30	82.0	609.7669	1.3802	0.9902	0.755
To Unknown Road1 - 14, Pipe 47 - ST-62						4.71				1.80				0.00				0.00	14.94														
	18	19	0.17	0.75	0.35	0.35			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	27	450	450	CONC	0.20	42.5	127.5033	0.8017	0.8835	0.214
Contribution From STREET No., Pipe 16 - 19						0.23				0.00				0.00				0.00	10.38														
	19	20	0.17	0.75	0.35	0.94			0.00	0.00			0.00	0.00			0.00	0.00	10.88	73.57	99.75	116.90	170.87	69	450	450	CONC	0.20	46.0	127.5033	0.8017	0.9563	0.541
Contribution From STREET No. 13, Pipe 15 - 20						2.27				0.00				0.00				0.00	14.43														
	20	25	0.27	0.75	0.56	3.77			0.00	0.00			0.00	0.00			0.00	0.00	14.43	63.15	85.44	100.07	146.15	238	675	675	CONC	0.15	75.5	325.5584	0.9098	1.3831	0.732
To STREET No. 12, Pipe 25 - 26						3.77				0.00				0.00				0.00	15.81														
STREET No. 12																																	
	41	42	0.58	0.70	1.13	1.13			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	87	375	375	PVC	0.80	73.0	156.8200	1.4199	0.8569	0.553
	42	43	0.20	0.70	0.39	1.52			0.00	0.00			0.00	0.00			0.00	0.00	10.86	73.66	99.87	117.06	171.09	112	375	375	PVC	1.30	14.0	199.9071	1.8100	0.1289	0.559
	43	46	0.25	0.70	0.49	2.00			0.00	0.00			0.00	0.00			0.00	0.00	10.99	73.22	99.26	116.33	170.02	147	375	375	PVC	2.10	63.0	254.0775	2.3005	0.4564	0.578
To STREET No. 16-18, Pipe 46 - 47						2.00				0.00				0.00				0.00	11.44														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed:	M.S.	PROJECT:	**Abbott's Run Stage 2-3**
Checked:	S.L.M.	LOCATION:	**City of Ottawa**
Dwg. Reference:	2	File Ref: 22-1295	Date: 04 Oct 2024
			Sheet No. SHEET 4 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				5 YEAR				10 YEAR				100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	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	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	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
	21	22	0.17	0.75	0.35	0.35			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	27	450	450	CONC	0.80	18.5	255.0067	1.6034	0.1923	0.107
	22	23	0.83	0.75	1.73	2.09			0.00	0.00			0.00	0.00			0.00	0.00	10.19	76.07	103.19	120.96	176.82	159	450	450	CONC	0.75	112.0	246.9092	1.5525	1.2024	0.642
	23	24	0.15	0.75	0.31	2.40			0.00	0.00			0.00	0.00			0.00	0.00	11.39	71.83	97.36	114.10	166.74	172	450	450	CONC	0.55	14.5	211.4404	1.3295	0.1818	0.815
	24	25	0.32	0.75	0.67	3.06			0.00	0.00			0.00	0.00			0.00	0.00	11.58	71.24	96.54	113.13	165.33	218	600	600	CONC	0.20	62.5	274.5943	0.9712	1.0726	0.795
Contribution From STREET No. 16-18, Pipe 20 - 25						3.77				0.00				0.00				0.00	15.81														
	25	ST-60	0.36	0.75	0.75	7.59			0.00	0.00			0.00	0.00			0.00	0.00	15.81	59.91	81.02	94.87	138.51	455	900	900	CONC	0.10	74.0	572.4707	0.8999	1.3706	0.794
			-3.64	0.75	-7.59	0.00			0.00	0.00			0.00	0.00			0.00	0.00	17.58														
					0.00	0.00			0.00	0.00			0.00	0.00	3.64	0.75	7.59	7.59	17.58														
	ST-60	ST-14			0.00	0.00	0.71	0.40	0.79	0.79			0.00	0.00			0.00	7.59	17.58	56.27	76.04	89.02	129.93	1046	1200	1200	CONC	0.10	21.0	1232.8868	1.0901	0.3211	0.848
To ROBERT GRANT, Pipe 27 - ST-16						0.00				0.79				0.00				7.59	17.90														
BLOCK 9																																	
	6	ST-10			0.00	0.00			0.00	0.00			0.00	0.00	2.39	0.75	4.98	4.98	10.00	76.81	104.19	122.14	178.56	890	1200	1200	CONC	0.10	21.5	1232.8868	1.0901	0.3287	0.722
To ROBERT GRANT, Pipe ST-10 - ST-12						0.00				0.00				0.00				4.98	10.33														
ROBERT GRANT																																	
	ST-24	ST-26			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	375	375	PVC	0.64	92.6	140.2641	1.2700	1.2152	0.000
	ST-26	ST-44			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	11.22	72.43	98.18	115.06	168.16	0	525	525	CONC	0.35	100.3	254.4283	1.1753	1.4223	0.000
To STM BLOCK, Pipe ST-44 - ST-28						0.00				0.00				0.00				0.00	12.64														
Contribution From BLOCK 2, Pipe 137 - ST-34						5.05				0.00				0.00				0.00	10.67														
	ST-34	ST-76			0.00	5.05			0.00	0.00			0.00	0.00			0.00	0.00	10.67	74.33	100.79	118.13	172.67	375	600	600	CONC	0.21	38.5	281.3754	0.9952	0.6448	1.334
	ST-76	ST-32			0.00	5.05			0.00	0.00			0.00	0.00			0.00	0.00	11.31	72.10	97.73	114.53	167.38	364	750	750	CONC	0.11	60.1	369.2322	0.8358	1.1985	0.986
	ST-32	ST-30			0.00	5.05			0.00	0.00			0.00	0.00			0.00	0.00	12.51	68.34	92.56	108.45	158.45	345	750	750	CONC	0.14	69.2	416.5501	0.9429	1.2232	0.828
	ST-30	ST-28	2.66	0.70	5.18	10.22			0.00	0.00			0.00	0.00			0.00	0.00	13.74	64.92	87.88	102.94	150.36	664	900	900	CONC	0.10	65.2	572.4707	0.8999	1.2076	1.160
To STREET No. 21, Pipe ST-28 - ST-66						10.22				0.00				0.00				0.00	14.94														
			0.19	0.62	0.33	0.33			0.00	0.00			0.00	0.00			0.00	0.00															
	ST-75243	ST-2			0.00	0.33			0.00	0.00	1.22	0.82	2.78	2.78			0.00	0.00	10.00	76.81	104.19	122.14	178.56	365	600	600	CONC	0.21	62.9	281.3754	0.9952	1.0534	1.297
	ST-2	ST-4			0.00	0.33			0.00	0.00			0.00	2.78			0.00	0.00	11.05	72.98	98.94	115.95	169.47	346	600	600	CONC	0.20	58.8	274.5943	0.9712	1.0091	1.261
	ST-4	ST-6			0.00	0.33			0.00	0.00	0.48	0.90	1.20	3.98			0.00	0.00	12.06	69.70	94.43	110.64	161.67	463	750	750	CONC	0.25	103.6	556.6385	1.2600	1.3704	0.833
			0.17	0.57	0.27	0.60			0.00	0.00			0.00	3.98			0.00	0.00															
	ST-6	ST-8			0.00	0.60			0.00	0.00	0.62	0.90	1.55	5.53			0.00	0.00	13.43	65.73	88.99	104.24	152.27	616	1050	1050	CONC	0.25	120.7	1365.3626	1.5768	1.2758	0.451
	ST-8	ST-10			0.00	0.60			0.00	0.00	0.37	0.81	0.83	6.37			0.00	0.00	14.71	62.46	84.51	98.97	144.54	667	1650	1650	CONC	0.25	32.9	4557.2242	2.1313	0.2573	0.146
Contribution From BLOCK 9, Pipe 6 - ST-10						0.00				0.00				0.00				4.98	10.33														
	ST-10	ST-12	0.93	0.40	1.03	1.63			0.00	0.00			0.00	6.37			0.00	4.98	14.97	61.85	83.67	97.98	143.08	1438	1650	1650	CONC	0.25	107.0	4557.2242	2.1313	0.8367	0.315
					0.00	1.63	6.06	0.66	11.12	11.12			0.00	6.37			0.00	4.98	15.00														
					0.00	1.63	0.00	0.00	0.00	11.12			0.00	6.37			0.00	4.98						1660									
	ST-12	ST-14			0.00	1.63			0.00	11.12			0.00	6.37			0.00	4.98	15.80	59.94	81.05	94.90	138.57	3954	1650	1650	CONC	0.20	95.1	4076.1052	1.9063	0.8315	0.970
Contribution From STREET No. 12, Pipe 26 - 27						0.00				0.79				0.00				7.59	17.90														
	ST-14	ST-16			0.00	1.64			0.00	11.91	1.22	0.90	3.05	9.42			0.00	12.57	17.90	55.67	75.21	88.04	128.50	5091	1800	1800	CONC	0.20	124.7	5140.6126	2.0201	1.0288	0.990
	ST-16	ST-18			0.00	1.64			0.00	11.91			0.00	9.42			0.00	12.57	18.93	53.81	72.68	85.07	124.14	4975	1800	1800	CONC	0.20	120.0	5140.6126	2.0201	0.9900	0.968
	ST-18	ST-20			0.00	1.64			0.00	11.91	1.11	0.90	2.78	12.20			0.00	12.57	19.92	52.16	70.42	82.41	120.24	5100	1950	1950	CONC	0.15	118.8	5511.1783	1.8454	1.0730	0.925
To CRANESBILL, Pipe ST-20 - ST-58						1.64				11.91				12.20				12.57	21.00					1660									
POND INLET 2																																	
Contribution From POND INLET 2, Pipe 84 - ST40						12.07				1.10				0.00				0.00	22.00														
Contribution From CRANESBILL, Pipe ST-38 - ST40						15.67				13.71				14.25				21.48	23.10					1660									
	ST40	87			0.00	27.73			0.00	14.81			0.00	14.25			0.00	21.48	23.10	47.52	64.10	74.98	109.36	7345	2250	2250	CONC	0.15	45.0	8071.8338	2.0301	0.3694	0.910
STREET No. 8																																	
	108	109	0.81	0.70	1.58	1.58			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	121	600	600	CONC	0.15	116.0	237.8056	0.8411	2.2987	0.509
	109	370	0.73	0.70	1.42	3.00			0.00	0.00			0.00	0.00			0.00	0.00	12.30	68.98	93.44	109.48	159.96	207	675	675	CONC	0.15	117.5	325.5584	0.9098	2.1526	0.635
To CRANESBILL, Pipe 370 - 369						3.00				0.00				0.00				0.00	14.45														
CRANESBILL																																	
	75250	370	0.40	0.70	0.78	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	60	600	600	CONC	0.15	66.5	237.8056	0.8411	1.3178	0.251

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed:	M.S.	PROJECT:	**Abbott's Run Stage 2-3**
Checked:	S.L.M.	LOCATION:	**City of Ottawa**
Dwg. Reference:	2	File Ref: 22-1295	Date: 04 Oct 2024
			Sheet No. SHEET 5 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	SEWER DATA DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
Contribution From STREET No. 8, Pipe 109 - 370						3.00				0.00				0.00				0.00	14.45													
	370	369	0.22	0.70	0.43	4.20			0.00	0.00			0.00	0.00			0.00	0.00	14.45	63.09	85.37	99.99	146.03	265	825	825	CONC	0.10	40.0	453.9246	0.8492	0.7851	0.584
			0.03	0.70	0.06	4.26			0.00	0.00			0.00	0.00			0.00	0.00														
	369	ST46	0.20	0.70	0.39	4.65			0.00	0.00			0.00	0.00			0.00	0.00	15.24	61.22	82.80	96.96	141.59	285	1050	1050	CONC	0.10	38.5	863.5311	0.9973	0.6434	0.330
To POND INLET 3, Pipe ST46 - 118						4.65				0.00				0.00				0.00	15.88													
Contribution From ROBERT GRANT, Pipe ST-18 - ST-20						1.64				11.91				12.20				12.57	21.00					1660								
Contribution From Unknown Road1 - 14, Pipe ST-62 - ST-20						4.60				1.80				0.00				8.91	18.63													
			0.13	0.70	0.25	6.49			0.00	13.71			0.00	12.20			0.00	21.48														
	ST-20	ST-58			0.00	6.49			0.00	13.71	0.82	0.90	2.05	14.25			0.00	21.48	21.00	50.48	68.14	79.73	116.31	6556	2100	2100	CONC	0.15	87.5	6715.3752	1.9388	0.7522	0.976
Contribution From BLOCK 6, Pipe 54 - ST-58						3.09				0.00				0.00				0.00	10.35													
Contribution From BLOCK 6, Pipe 55 - ST-58						2.91				0.00				0.00				0.00	10.25													
	ST-58	ST-38	0.12	0.70	0.23	12.73			0.00	13.71			0.00	14.25			0.00	21.48	21.75	49.38	66.63	77.96	113.72	6756	2100	2100	CONC	0.15	53.1	6715.3752	1.9388	0.4565	1.006
Contribution From STREET No. 10-23, Pipe 58 - ST-38						1.38				0.00				0.00				0.00	13.04													
	ST-38	ST40	0.80	0.70	1.56	15.67			0.00	13.71			0.00	14.25			0.00	21.48	22.20	48.73	65.76	76.93	112.21	6832	2100	2100	CONC	0.15	104.7	6715.3752	1.9388	0.9000	1.017
To POND INLET 2, Pipe ST40 - 87						15.67				13.71				14.25				21.48	23.10					1660								
STREET No. 7																																
			0.12	0.70	0.23	0.23			0.00	0.00			0.00	0.00			0.00	0.00														
	105	106			0.00	0.23	2.83	0.60	4.72	4.72			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	510	900	900	CONC	0.15	42.0	701.1305	1.1021	0.6351	0.727
To STREET No. 1, Pipe 106 - 107						0.23				4.72				0.00				0.00	10.64													
	79	80	0.13	0.70	0.25	0.25			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	19	600	600	CONC	0.15	57.0	237.8056	0.8411	1.1295	0.082
To POND INLET 2, Pipe 80 - 82						0.25				0.00				0.00				0.00	11.13													
	77	78	0.46	0.70	0.90	0.90			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	69	600	600	CONC	0.15	97.5	237.8056	0.8411	1.9321	0.289
Contribution From STREET No. 6, Pipe 76 - 78						5.22				0.00				0.00				0.00	16.50													
			0.51	0.70	0.99	7.10			0.00	0.00			0.00	0.00			0.00	0.00														
	78	80			0.00	7.10	0.99	0.40	1.10	1.10			0.00	0.00			0.00	0.00	16.50	58.43	78.99	92.48	135.02	502	900	900	CONC	0.15	115.0	701.1305	1.1021	1.7391	0.716
To POND INLET 2, Pipe 80 - 82						7.10				1.10				0.00				0.00	18.24													
STREET No. 2-4																																
	61	62			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	450	450	CONC	0.20	81.5	127.5033	0.8017	1.6943	0.000
To STREET No. 6, Pipe 62 - 65						0.00				0.00				0.00				0.00	11.69													
	63	62			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	0	450	450	CONC	0.20	25.5	127.5033	0.8017	0.5301	0.000
To STREET No. 6, Pipe 62 - 65						0.00				0.00				0.00				0.00	10.53													
	93	94	0.83	0.70	1.62	1.62			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	124	600	600	CONC	0.15	87.5	237.8056	0.8411	1.7339	0.522
	94	95	0.72	0.70	1.40	3.02			0.00	0.00			0.00	0.00			0.00	0.00	11.73	70.73	95.85	112.31	164.12	213	675	675	CONC	0.15	91.0	325.5584	0.9098	1.6671	0.655
	66	67	0.25	0.70	0.49	0.49			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	37	450	450	CONC	0.20	58.5	127.5033	0.8017	1.2162	0.293
	67	68	0.03	0.70	0.06	0.54			0.00	0.00			0.00	0.00			0.00	0.00	11.22	72.43	98.18	115.06	168.16	39	450	450	CONC	0.20	12.5	127.5033	0.8017	0.2599	0.310
	68	70	0.42	0.70	0.82	1.36			0.00	0.00			0.00	0.00			0.00	0.00	11.48	71.57	96.99	113.66	166.11	97	600	600	CONC	0.15	86.5	237.8056	0.8411	1.7141	0.410
To STREET No. 6, Pipe 70 - 72						1.36				0.00				0.00				0.00	13.19													
	88	89	0.88	0.70	1.71	1.71			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	132	525	525	CONC	0.20	104.0	192.3297	0.8885	1.9509	0.684
	89	90	0.45	0.70	0.88	2.59			0.00	0.00			0.00	0.00			0.00	0.00	11.95	70.05	94.91	111.21	162.50	181	525	525	CONC	0.25	56.0	215.0311	0.9933	0.9396	0.843
	90	91	0.27	0.70	0.53	3.11			0.00	0.00			0.00	0.00			0.00	0.00	12.89	67.24	91.06	106.67	155.84	209	600	600	CONC	0.20	16.5	274.5943	0.9712	0.2832	0.762
	91	92	0.29	0.70	0.56	3.68			0.00	0.00			0.00	0.00			0.00	0.00	13.17	66.44	89.96	105.39	153.95	244	675	675	CONC	0.15	66.5	325.5584	0.9098	1.2183	0.751
	92	95			0.00	3.68			0.00	0.00			0.00	0.00			0.00	0.00	14.39	63.24	85.57	100.22	146.38	233	675	675	CONC	0.15	7.0	325.5584	0.9098	0.1282	0.714
	95	97			0.00	6.69			0.00	0.00			0.00	0.00			0.00	0.00	14.52	62.92	85.14	99.71	145.63	421	750	750	CONC	0.25	26.0	556.6385	1.2600	0.3439	0.757
	97	101	0.27	0.70	0.53	7.22			0.00	0.00			0.00	0.00			0.00	0.00	14.86	62.09	84.00	98.37	143.66	448	825	825	CONC	0.15	46.0	555.9418	1.0400	0.7372	0.806
To STREET No. 1, Pipe 101 - 102						7.22				0.00				0.00				0.00	15.60													
STREET No. 1																																
	318	100	0.31	0.70	0.60	0.60			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	46	450	450	CONC	1.50	26.0	349.1823	2.1955	0.1974	0.133
	100	99			0.00	0.60			0.00	0.00			0.00	0.00			0.00	0.00	10.20	76.06	103.16	120.93	176.77	46	450	450	CONC	2.60	16.0	459.7198	2.8905	0.0923	0.100

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.
Checked: S.L.M.
Dwg. Reference: 2

PROJECT: **Abbott's Run Stage 2-3**
LOCATION: **City of Ottawa**
File Ref: 22-1295
Date: 04 Oct 2024
Sheet No. SHEET 6 OF 7

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha) 2 YEAR				5 YEAR				10 YEAR				100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	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	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	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
	99	98			0.00	0.60			0.00	0.00			0.00	0.00			0.00	0.00	10.29	75.71	102.69	120.37	175.95	46	450	450	CONC	0.20	20.0	127.5033	0.8017	0.4158	0.358
	318	101	0.42	0.70	0.82	0.82			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	63	600	600	CONC	0.15	89.5	237.8056	0.8411	1.7735	0.264
Contribution From STREET No. 2-4, Pipe 97 - 101						7.22				0.00				0.00				0.00	15.60														
	101	102			0.00	8.04			0.00	0.00			0.00	0.00			0.00	0.00	15.60	60.38	81.66	95.62	139.63	485	900	900	CONC	0.15	14.5	701.1305	1.1021	0.2193	0.692
	102	103	0.20	0.70	0.39	8.43			0.00	0.00			0.00	0.00			0.00	0.00	15.82	59.90	81.00	94.84	138.48	505	975	975	CONC	0.10	80.0	708.6833	0.9492	1.4047	0.712
	103	104	0.18	0.70	0.35	8.78			0.00	0.00			0.00	0.00			0.00	0.00	17.23	56.97	77.00	90.14	131.57	500	975	975	CONC	0.10	80.0	708.6833	0.9492	1.4047	0.706
	104	106	0.13	0.70	0.25	9.03			0.00	0.00			0.00	0.00			0.00	0.00	18.63	54.34	73.41	85.92	125.39	491	975	975	CONC	0.10	63.0	708.6833	0.9492	1.1062	0.692
Contribution From STREET No. 7, Pipe 105 - 106						0.23				4.72				0.00				0.00	10.64														
	106	107	0.55	0.70	1.07	10.33			0.00	4.72			0.00	0.00			0.00	0.00	19.74	52.46	70.84	82.90	120.96	876	1200	1200	CONC	0.10	118.0	1232.8868	1.0901	1.8041	0.711
	107	355	0.52	0.70	1.01	11.35			0.00	4.72			0.00	0.00			0.00	0.00	21.54	49.68	67.04	78.44	114.42	880	1200	1200	CONC	0.10	99.5	1232.8868	1.0901	1.5213	0.714
			-8.22	0.70	-16.00	-4.65			0.00	4.72			0.00	0.00			0.00	0.00	16.26														
					0.00	-4.65			0.00	4.72			0.00	0.00	8.22	0.70	16.00	16.00	16.26														
	355	ST46			0.00	-4.65			0.00	4.72			0.00	0.00			0.00	16.00	23.06	47.58	64.18	75.08	109.49	1833	1500	1500	CONC	0.15	16.0	2737.7609	1.5493	0.1721	0.670
To POND INLET 3, Pipe ST46 - 118						-4.65				4.72				0.00				16.00	23.23														
POND INLET 3																																	
Contribution From STREET No. 1, Pipe 355 - ST46						-4.65				4.72				0.00				16.00	23.23														
Contribution From CRANESBILL, Pipe 369 - ST46						4.65				0.00				0.00				0.00	15.88														
	ST46	118			0.00	0.00			0.00	4.72			0.00	0.00			0.00	16.00	23.23	47.35	63.87	74.71	108.96	2044	1500	1500	CONC	0.10	80.5	2235.3724	1.2650	1.0606	0.915

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.
Checked: S.L.M.
Dwg. Reference: 2

PROJECT: **Abbott's Run Stage 2-3**
LOCATION: **City of Ottawa**
File Ref: 22-1295
Date: 04 Oct 2024
Sheet No. SHEET 7 OF 7

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
5.	CITY SUBMISSION	JUL 19/23	MAB
4.	REVISIONS PER CITY COMMENTS	APR 26/23	MAB
3.	ISSUED FOR TENDER	JAN 17/23	MAB
2.	CITY SUBMISSION	JAN 9/23	MAB
1.	CITY SUBMISSION	OCT 4/22	MAB

SCALE 1:2000

DESIGN LRW
CHECKED MAB
DRAWN DTD
CHECKED MAB
APPROVED JGR

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER L. R. WILSON 100160065 PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER M.A. BISSETT PROVINCE OF ONTARIO

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Website www.novatech-eng.com

CITY OF OTTAWA
ABBOTT'S RUN SUBDIVISION - POND 1

STORM DRAINAGE AREA PLAN (POST DEVELOPMENT)

PROJECT No. 122039
REV # 5
DRAWING No. 122039-STM

D07-16-16-0020 PLAN #17320

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method)

LOCATION			AREA											FLOW									PROPOSED SEWER									
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr)					Peak Flow	Total Peak Flow (Q) (L/s)	Pipe	Size		Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
																	2yr	5yr	10yr	25yr	100yr			Type	Nominal (mm)	Actual (mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
			0.80	0.90	0.76	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)										
POND 1: Inlet 1																																
P1-16, P1-17, P1-23	ST-28	ST-66					2.34					2.34	0.80	5.20	5.20	15.00	61.77					321.4	**1974.2**	CONC	1500	1524	0.15	25.0	2979.6	1.58	0.26	66.3%
										1.02		1.02	0.40	1.13	1.13	15.00		83.56				94.8										
				1.49								1.49	0.90	3.73	3.73	15.00			97.9			364.8										
								3.39				3.39	0.70	6.60	6.60	15.00				115.8		764.1										
				1.20								1.20	0.90	3.00	3.00	15.00					142.9	429.0										
P1-18b	ST-66	ST-56										0.00		0.00	5.20	15.00	61.77					321.4	**2401.6**	CONC	1650	1676	0.15	67.3	3839.4	1.69	0.67	62.6%
			2.30									2.30	0.80	5.12	6.25	15.00		83.56				522.2										
												0.00		0.00	3.73	15.00			97.9			364.8										
												0.00		0.00	6.60	15.00				115.8		764.1										
												0.00		0.00	3.00	15.00					142.9	429.0										
P1-19d	ST-56	ST-50					1.36					1.36	0.80	3.02	8.23	15.00	61.77					508.3	**2588.4**	CONC	1650	1676	0.15	47.0	3839.4	1.69	0.46	67.4%
												0.00		0.00	6.25	15.00		83.56				522.2										
												0.00		0.00	3.73	15.00			97.9			364.8										
												0.00		0.00	6.60	15.00				115.8		764.1										
												0.00		0.00	3.00	15.00					142.9	429.0										
P1-18a	ST-50	ST-52				1.71						1.71	0.80	3.80	12.03	15.00	61.77					743.2	**2823.3**	CONC	1650	1676	0.15	81.5	3839.4	1.69	0.81	73.5%
												0.00		0.00	6.25	15.00		83.56				522.2										
												0.00		0.00	3.73	15.00			97.9			364.8										
												0.00		0.00	6.60	15.00				115.8		764.1										
												0.00		0.00	3.00	15.00					142.9	429.0										
P1-19b	ST-52	ST-54										0.00		0.00	12.03	15.00	61.77					743.2	**2899.5**	CONC	1650	1676	0.15	58.3	3839.4	1.69	0.58	75.5%
										0.82		0.82	0.40	0.91	7.16	15.00		83.56				598.4										
												0.00		0.00	3.73	15.00			97.9			364.8										
												0.00		0.00	6.60	15.00				115.8		764.1										
												0.00		0.00	3.00	15.00					142.9	429.0										
P1-19c	ST-54	101						2.71				2.71	0.70	5.27	17.31	15.00	61.77					1068.9	**3225.2**	CONC	1650	1676	0.15	96.9	3839.4	1.69	0.96	84.0%
												0.00	0.00	0.00	7.16	15.00		83.56				598.4										
												0.00	0.00	0.00	3.73	15.00			97.9			364.8										
												0.00		0.00	6.60	15.00				115.8		764.1										
												0.00		0.00	3.00	15.00					142.9	429.0										

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

Q = (1/n) A R^(2/3)So^(1/2)

WHERE :

Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Project: Fernbank Pond 1 (122039)
Designed: LRW
Checked: MAB
Date: June 26 2023

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method)

LOCATION			AREA											FLOW										PROPOSED SEWER									
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr)					Peak Flow	Total Peak Flow (Q) (L/s)	Pipe	Size		Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
																	2yr	5yr	10yr	25yr	100yr			Type	Nominal (mm)	Actual (mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
			0.80	0.90	0.78	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)										
POND 1: Inlet 2																																	
												0.00		0.00	0.00	10.00						0.0										
												0.00		0.00	0.00	10.00						0.0										
B-1	*433*	*435*			0.20							0.20	0.86	0.48	0.48	10.00			122.1			58.4	**58.4**	CONC	300	300	1.00	85.0	100.9	1.38	1.02	57.9%
												0.00		0.00	0.00	10.00						0.0										
												0.00		0.00	0.00	10.00						0.0										
												0.00		0.00	0.00	11.02						0.0										
												0.00		0.00	0.00	11.02						0.0										
B-2	*435*	*437*			0.15							0.15	0.77	0.32	0.80	11.02			116.1			92.8	**92.8**	CONC	375	375	0.30	105.0	100.2	0.88	1.99	92.6%
												0.00		0.00	0.00	11.02						0.0										
												0.00		0.00	0.00	11.02						0.0										
												0.00		0.00	0.00	13.02						0.0										
												0.00		0.00	0.00	13.02						0.0										
B-3	*437*	*439*			0.35							0.35	0.75	0.73	1.53	13.02			106.1			162.2	**162.2**	CONC	525	525	0.18	80.9	190.3	0.85	1.58	85.2%
												0.00		0.00	0.00	13.02						0.0										
												0.00		0.00	0.00	13.02						0.0										
												0.00		0.00	0.00	14.60						0.0										
												0.00		0.00	0.00	14.60						0.0										
B-4	*439*	ST-2		0.17								0.17	0.90	0.43	1.95	14.60			99.4			194.3	**194.3**	CONC	600	600	0.20	63.5	286.5	0.98	1.08	67.8%
												0.00		0.00	0.00	14.60						0.0										
												0.00		0.00	0.00	14.60						0.0										
												0.00		0.00	0.00	15.68						0.0										
												0.00		0.00	0.00	15.68						0.0										
P1-1	ST-2	ST-4		0.39				0.07				0.46	0.87	1.11	3.07	15.68			95.4			292.4	**292.4**	CONC	675	686	0.20	58.8	409.5	1.07	0.91	71.4%
												0.00		0.00	0.00	15.68						0.0										
												0.00		0.00	0.00	15.68						0.0										
												0.00		0.00	0.00	16.59						0.0										
												0.00		0.00	0.00	16.59						0.0										
P1-2	ST-4	ST-6		0.48				0.10				0.58	0.87	1.40	4.46	16.59			92.2			411.4	**411.4**	CONC	750	762	0.20	103.6	541.9	1.15	1.50	75.9%
												0.00		0.00	0.00	16.59						0.0										
												0.00		0.00	0.00	16.59						0.0										
												0.00	0.00	0.00	0.00	18.09						0.0										
									6.01			6.01	0.60	10.02	10.02	18.09		74.7				749.3										
P1-3, P1-25	ST-6	ST-8		0.61				0.13				0.74	0.86	1.78	6.24	18.09			87.5			546.0	**1295.3**	CONC	1050	1067	0.25	120.7	1486.7	1.61	1.25	87.1%
												0.00		0.00	0.00	18.09						0.0										
												0.00		0.00	0.00	18.09						0.0										
Granite Ridge/Industrial Park																							**2652.0**										
												0.00	0.00	0.00	0.00	19.34						0.0										
Granite Ridge/Industrial Park	ST-8	ST-10										0.00		0.00	10.02	19.34		71.7				719.1										
												0.00		0.00	6.24	19.34			84.0			524.0	**3895.1**	CONC	1650	1676	0.20	32.9	4433.4	1.95	0.28	87.9%
												0.00		0.00	0.00	19.34						0.0										
												0.00		0.00	0.00	19.34						0.0										
												0.00	0.00	0.00	0.00	19.62						0.0										
										0.26		0.26	0.40	0.29	10.31	19.62		71.1				733.2										
P1-4, P1-10	ST-10	ST-12		0.37				0.02				0.39	0.89	0.96	7.21	19.62			83.2			599.5	**4390.9**	CONC	1650	1676	0.25	107.0	4956.7	2.18	0.82	88.6%
								2.12				2.12	0.70	4.13	4.13	19.62				98.4		406.1										
												0.00		0.00	0.00	19.62						0.0										
												0.00	0.00	0.00	0.00	20.44						0.0										
												0.00		0.00	10.31	20.44		69.3				714.7										
P1-5, P1-24	ST-12	ST-14		0.68				0.09				0.77	0.88	1.88	9.08	20.44			81.1			736.5	**4560.2**	CONC	1650	1676	0.26	95.1	5054.8	2.22	0.71	90.2%
												0.00		0.00	4.13	20.44				95.9		395.7										
											0.93	0.93	0.20	0.52	0.52	20.44					118.3	61.2										
												0.00	0.00	0.00	0.00	21.15						0.0										
										0.80		0.80	0.40	0.89	11.20	21.15		67.81				759.8										
P1-6	ST-14	ST-16										0.00		0.00	9.08	21.15			79.3			720.7	**5112.8**	CONC	1800	1830	0.20	124.7	5604.6	2.06	1.01	91.2%
								2.80				2.80	0.73	5.68	9.81	21.15				93.9		920.5										
												0.00		0.00	0.52	21.15					115.8	59.9										

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method)

LOCATION			AREA										FLOW								Total Peak Flow (Q) (L/s)	PROPOSED SEWER								
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr) 2yr	5yr	10yr	25yr	100yr	Peak Flow		Pipe	Size Nominal	Size Actual	Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
			0.80	0.90	0.78	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)		Type	(mm)	(mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
												0.00		0.00	0.00	22.16						0.0									
												0.00		0.00	11.20	22.16		65.8				737.6									
	ST-16	ST-18										0.00		0.00	9.08	22.16			77.0			699.6	5040.8	CONC	1800	1830	0.20	120.0	5604.6	2.06	0.97	89.9%
												0.00		0.00	9.81	22.16				91.1		893.5									
												0.00		0.00	0.52	22.16					112.4	58.1									
												0.00		0.00	0.00	23.13						0.0									
												0.00		0.00	11.20	23.13		64.1				717.6									
P1-7	ST-18	ST-20		1.66				0.12				1.78	0.89	4.39	13.47	23.13			74.9			1009.3	5304.5	CONC	1950	1981	0.15	118.8	5996.4	1.88	1.05	88.5%
												0.00		0.00	9.81	23.13				88.6		869.1									
												0.00		0.00	0.52	23.13					109.3	56.5									
							4.41					4.41	0.80	9.81	9.81	24.18	46.15					452.6									
												0.00		0.00	11.20	24.18		62.24				697.3									
P1-8, P1-9, P1-11c&d	ST-20	ST-58		0.83								0.83	0.90	2.08	15.55	24.18			72.8			1131.7	6909.9	CONC	2100	2134	0.17	88.6	7784.5	2.11	0.70	88.8%
								6.43				6.43	0.70	12.51	22.32	24.18				86.1		1921.4									
												0.00		0.00	0.52	24.18					106.2	54.9									
												0.00	0.00	0.00	9.81	24.88	45.31					444.4									
												0.00		0.00	11.20	24.88		61.1				684.4									
	ST-58	ST-38										0.00		0.00	15.55	24.88			71.4			1110.7	6831.0	CONC	2100	2134	0.17	53.1	7784.5	2.11	0.42	87.8%
												0.00		0.00	22.32	24.88				84.5		1885.7									
												0.00		0.00	0.52	24.88					104.2	53.9									
												0.00	0.00	0.00	9.81	25.30	44.82					439.6									
								1.24				1.24	0.70	2.41	13.62	25.30		60.4				822.7									
P1-11a	ST-38	ST-40										0.00		0.00	15.55	25.30			70.7			1098.5	6931.0	CONC	2100	2134	0.17	104.7	7784.5	2.11	0.83	89.0%
												0.00		0.00	22.32	25.30				83.6		1864.9									
												0.00		0.00	0.52	25.30					103.0	53.3									
								6.20				6.20	0.71	12.24	22.05	26.13	43.89					967.5									
										0.99		0.99	0.40	1.10	14.72	26.13		59.2				870.6									
P1-11	ST-40	201										0.00		0.00	15.55	26.13			69.2			1075.4	7443.1	CONC	2250	2286	0.15	53.6	8784.9	2.07	0.43	84.7%
												0.00		0.00	22.32	26.13				81.8		1825.5									
												0.00		0.00	0.52	26.13					100.8	52.1									

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

Q = (1/n) A R^(2/3)So^(1/2)

WHERE : Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Project: Fernbank Pond 1 (122039)
Designed: LRW
Checked: MAB
Date: June 26 2023

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method Fixed Tc of 15 min)

LOCATION			AREA											FLOW										PROPOSED SEWER									
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr)					Peak Flow	Total Peak Flow (Q) (L/s)	Pipe	Size		Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
																	2yr	5yr	10yr	25yr	100yr			Type	Nominal (mm)	Actual (mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
			0.80	0.90	0.78	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)										
POND 1: Inlet 2																																	
B-1	433	435			0.20							0.00		0.00	0.00	15.00						0.0	**46.8**	CONC	300	300	1.00	85.0	100.9	1.38	1.02	46.4%
												0.00		0.00	0.00	15.00						0.0										
												0.20	0.86	0.48	0.48	15.00			97.9			46.8										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
B-2	435	437										0.00		0.00	0.00	15.00						0.0	**78.2**	CONC	375	375	0.30	105.0	100.2	0.88	1.99	78.1%
												0.00		0.00	0.00	15.00						0.0										
					0.15							0.15	0.77	0.32	0.80	15.00			97.9			78.2										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
B-3	437	439										0.00		0.00	0.00	15.00						0.0	**149.6**	CONC	525	525	0.18	80.9	190.3	0.85	1.58	78.6%
												0.00		0.00	0.00	15.00						0.0										
					0.35							0.35	0.75	0.73	1.53	15.00			97.9			149.6										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
B-4	439	ST-2										0.00		0.00	0.00	15.00						0.0	**191.2**	CONC	600	600	0.20	63.5	286.5	0.98	1.08	66.8%
												0.00		0.00	0.00	15.00						0.0										
				0.17								0.17	0.90	0.43	1.95	15.00			97.9			191.2										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
P1-1	ST-2	ST-4										0.00		0.00	0.00	15.00						0.0	**300.0**	CONC	675	686	0.20	58.8	409.5	1.07	0.91	73.3%
												0.00		0.00	0.00	15.00						0.0										
				0.39				0.07				0.46	0.87	1.11	3.07	15.00			97.9			300.0										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
P1-2	ST-4	ST-6										0.00		0.00	0.00	15.00						0.0	**436.6**	CONC	750	762	0.20	103.6	541.9	1.15	1.50	80.6%
												0.00		0.00	0.00	15.00						0.0										
				0.48				0.10				0.58	0.87	1.40	4.46	15.00			97.9			436.6										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
P1-3, P1-25	ST-6	ST-8										0.00	0.00	0.00	0.00	15.00						0.0	**1448.3**	CONC	1050	1067	0.25	120.7	1486.7	1.61	1.25	97.4%
									6.01			6.01	0.60	10.02	10.02	15.00		83.6				837.6										
				0.61				0.13				0.74	0.86	1.78	6.24	15.00			97.9			610.7										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
Granite Ridge/Industrial Park																							**2652.0**										
Granite Ridge/Industrial Park	ST-8	ST-10										0.00	0.00	0.00	0.00	15.00						0.0	**4100.3**	CONC	1650	1676	0.20	32.9	4433.4	1.95	0.28	92.5%
												0.00		0.00	10.02	15.00		83.6				837.6										
												0.00		0.00	6.24	15.00			97.9			610.7										
												0.00		0.00	0.00	15.00						0.0										
												0.00		0.00	0.00	15.00						0.0										
P1-4, P1-10	ST-10	ST-12								0.26		0.26	0.40	0.29	10.31	15.00		83.6				861.8	**4696.7**	CONC	1650	1676	0.25	107.0	4956.7	2.18	0.82	94.8%
				0.37				0.02				0.39	0.89	0.96	7.21	15.00			97.9			705.1										
								2.12				2.12	0.70	4.13	4.13	15.00				115.8		477.9										
												0.00		0.00	0.00	15.00						0.0										
												0.00	0.00	0.00	0.00	15.00						0.0										
P1-5, P1-24	ST-12	ST-14										0.00		0.00	10.31	15.00		83.6				861.8	**4954.3**	CONC	1650	1676	0.26	95.1	5054.8	2.22	0.71	98.0%
				0.68				0.09				0.77	0.88	1.88	9.08	15.00			97.9			888.7										
												0.00		0.00	4.13	15.00				115.8		477.9										
											0.93	0.93	0.20	0.52	0.52	15.00					142.9	73.9										
P1-6	ST-14	ST-16										0.00	0.00	0.00	0.00	15.00						0.0	**5686.8**	CONC	1800	1830	0.20	124.7	5604.6	2.06	1.01	101.5%
										0.80		0.80	0.40	0.89	11.20	15.00		83.56				936.1										
												0.00		0.00	9.08	15.00			97.9			888.7										
								2.80				2.80	0.73	5.68	9.81	15.00				115.8		1136.0										
												0.00		0.00	0.52	15.00					142.9	73.9										

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method Fixed Tc of 15 min)

LOCATION			AREA										FLOW									PROPOSED SEWER									
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr)					Peak Flow	Total Peak Flow (Q) (L/s)	Pipe	Size		Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
																	2yr	5yr	10yr	25yr	100yr			Type	Nominal (mm)	Actual (mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
			0.80	0.90	0.78	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)									
												0.00		0.00	0.00	15.00						0.0									
												0.00		0.00	11.20	15.00		83.6				936.1									
	ST-16	ST-18										0.00		0.00	9.08	15.00			97.9			888.7	5686.8	CONC	1800	1830	0.20	120.0	5604.6	2.06	0.97	101.5%
												0.00		0.00	9.81	15.00				115.8		1136.0									
												0.00		0.00	0.52	15.00					142.9	73.9									
												0.00		0.00	0.00	15.00						0.0									
												0.00		0.00	11.20	15.00		83.6				936.1									
P1-7	ST-18	ST-20		1.66				0.12				1.78	0.89	4.39	13.47	15.00			97.9			1318.0	6116.0	CONC	1950	1981	0.15	118.8	5996.4	1.88	1.05	102.0%
												0.00		0.00	9.81	15.00				115.8		1136.0									
												0.00		0.00	0.52	15.00					142.9	73.9									
							4.41					4.41	0.80	9.81	9.81	15.00	61.77					605.8									
												0.00		0.00	11.20	15.00		83.56				936.1									
P1-8, P1-9, P1-11c&d	ST-20	ST-58		0.83								0.83	0.90	2.08	15.55	15.00			97.9			1521.2	8374.4	CONC	2100	2134	0.17	88.6	7784.5	2.11	0.70	107.6%
								6.43				6.43	0.70	12.51	22.32	15.00				115.8		2585.4									
												0.00		0.00	0.52	15.00					142.9	73.9									
												0.00	0.00	0.00	9.81	15.00	61.77					605.8									
												0.00		0.00	11.20	15.00		83.6				936.1									
	ST-58	ST-38										0.00		0.00	15.55	15.00			97.9			1521.2	8374.4	CONC	2100	2134	0.17	53.1	7784.5	2.11	0.42	107.6%
												0.00		0.00	22.32	15.00				115.8		2585.4									
												0.00		0.00	0.52	15.00					142.9	73.9									
												0.00	0.00	0.00	9.81	15.00	61.77					605.8									
								1.24				1.24	0.70	2.41	13.62	15.00		83.6				1137.8									
P1-11a	ST-38	ST-40										0.00		0.00	15.55	15.00			97.9			1521.2	8576.0	CONC	2100	2134	0.17	104.7	7784.5	2.11	0.83	110.2%
												0.00		0.00	22.32	15.00				115.8		2585.4									
												0.00		0.00	0.52	15.00					142.9	73.9									
								6.20				6.20	0.71	12.24	22.05	15.00	61.77					1361.7									
										0.99		0.99	0.40	1.10	14.72	15.00		83.6				1229.7									
P1-11	ST-40	201										0.00		0.00	15.55	15.00			97.9			1521.2	9423.9	CONC	2250	2286	0.15	53.6	8784.9	2.07	0.43	107.3%
												0.00		0.00	22.32	15.00				115.8		2585.4									
												0.00		0.00	0.52	15.00					142.9	73.9									

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

Q = (1/n) A R^(2/3)So^(1/2)

WHERE : Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Project: Fernbank - Pond 1 (122039)
Designed: LRW
Checked: MAB
Date: June 26 2023

Fernbank Community - Pond 1 (Minto Lands): Storm Sewer Design Sheet (Rational Method)

LOCATION			AREA											FLOW									PROPOSED SEWER									
Location	From Node	To Node	Park N' Ride	Arterial Road ROW	Abbott Street ROW	Mixed Use	High Density / Medium Block	Low Density	Schools	Park	Hydro Corridor	Total Area	Weighted Runoff Coefficient	Indivi 2.78 AR	Accum 2.78 AR	Time of Concentration	Rain Intensity (mm/hr)					Peak Flow	Total Peak Flow (Q) (L/s)	Pipe	Size		Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
																	2yr	5yr	10yr	25yr	100yr			Type	Nominal (mm)	Actual (mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
			0.80	0.90	0.76	0.80	0.80	0.70	0.60	0.40	0.20	(ha)										(L/s)										
POND 1: Inlet 3																																
P1-13	113	111										0.00	0.00	0.00	0.00	15.00						0.0	**881.6**	CONC	1050	1067	0.20	116.7	1329.8	1.44	1.35	66.3%
												0.00	0.00	0.00	0.00	15.00						0.0										
								4.63				4.63	0.70	9.01	9.01	15.00			97.85			881.6										
												0.00	0.00	0.00	0.00	15.00						0.0										
												0.00	0.00	0.00	0.00	15.00						0.0										
P1-14	111	109										0.00	0.00	0.00	0.00	15.00						0.0	**1333.2**	CONC	1200	1220	0.15	120.1	1646.2	1.36	1.47	81.0%
									3.24			3.24	0.60	5.40	5.40	15.00		83.56				451.6										
												0.00		0.00	9.01	15.00			97.9			881.6										
												0.00		0.00	0.00	15.00						0.0										
												0.00	0.00	0.00	0.00	15.00						0.0										
P1-15	109	ST-46										0.00	0.00	0.00	0.00	15.00						0.0	**1607.4**	CONC	1350	1372	0.10	233.7	1838.4	1.20	3.23	87.4%
												0.00	0.00	0.00	5.40	15.00		83.56				451.6										
								1.44				1.44	0.70	2.80	11.81	15.00			97.9			1155.8										
												0.00	0.00	0.00	0.00	15.00						0.0										
												0.00	0.00	0.00	0.00	15.00						0.0										
P1-12	ST-46	301										0.00	0.00	0.00	0.00	15.00						0.0	**2066.3**	CONC	1500	1524	0.10	79.6	2432.9	1.95	0.68	84.9%
												0.00	0.00	0.00	0.00	15.00		83.6				451.6										
								2.41				2.41	0.70	4.69	16.50	15.00			97.85			1614.8										
												0.00	0.00	0.00	0.00	15.00						0.0										
												0.00	0.00	0.00	0.00	15.00						0.0										

Q = 2.78 AIR WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

Q = (1/n) A R^(2/3)So^(1/2) WHERE : Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Project: Fernbank Pond 1 (122039)
Designed: LRW
Checked: MAB
Date: June 26 2023

LICENSED PROFESSIONAL ENGINEER
L. R. WILSON
100160065
2023.07.19
PROVINCE OF ONTARIO

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Fernbank Community - Pond 1
SWMF Design Critera

Required storage Volumes (Quality)

Drainage Area	**73.41**	ha
% Impervious:	**73%**	
Enhanced protection (80% TSS removal):		
Treatment Volume	230	m^3/ha
Extended Detention Storage:	80	m^3/ha required
	5,873	m^3 required
	6,750	m^3 provided
	91.9	m^3/ha provided
Perm Pool:	190	m^3/ha required
	13,923	m^3 required
	26,514	m^3 provided
	361.2	m^3/ha provided
Extended Detention:	67.97	L/s average
	169.93	L/s max (2.5 x avg)
	170.00	L/s max (350mm orifice)

(% impervious was calculated as the average imperviousness for the drainage areas tributary to the SWM facility)

Velocity Check:		
Top Width =	18.20	m
Forebay Side Slopes =	3	:1
Bottom Width =	11	m
Flow Area =	17.52	m^2
Average Velocity =	**0.11**	**m/s**

** Must be less than 0.15m/s

Required Forebay Length and width (Inlet 1)

Parameters:

Length to width ratio of forebay, r =	5.0:1	
Peak outflow rate during 25 mm storm, Q	0.170	m^3/s (24hr ext. det)
Target particle size =	150	µm
Settling velocity, V_s =	0.0003	m/s

Forebay Settling Length, Dist

$$Dist = \sqrt{\frac{rQ_P}{V_S}}$$

= 53 m

Check Dispersion Length, Dist $_2$

Desired velocity in forebay, V_f =	0.5	m/s
Inlet flow rate , Q_{25mm} =	1.990	m^3/s
Depth in forebay, d =	1.2	m

$$Dist_2 = \frac{8Q}{dV_f}$$

= 27 m

Therefore, the settling length of 53 m governs the design.

Required Length	**= 53 m**
Provided Length	**= 53 m**

Minimum Forebay width:

Length of Forebay, L =	53	m
Minimum width, W =	L/5	
W =	10.6	m

Required Width	**= 10.6 m**
Provided Width	**= 11.0 m**

Fernbank Community - Pond 1
SWMF Design Critera

Required storage Volumes (Quality)

Drainage Area	**73.41**	ha
% Impervious:	**73%**	
Enhanced protection (80% TSS removal):		
Treatment Volume	230	m^3/ha
Extended Detention Storage:	80	m^3/ha required
	5,873	m^3 required
	6,750	m^3 provided
	91.9	m^3/ha provided
Perm Pool:	190	m^3/ha required
	13,923	m^3 required
	26,514	m^3 provided
	361.2	m^3/ha provided
Extended Detention:	67.97	L/s average
	169.93	L/s max (2.5 x avg)
	170.00	L/s max (350mm orifice)

(% impervious was calculated as the average imperviousness for the drainage areas tributary to the SWM facility)

Velocity Check:		
Top Width =	23.50	m
Forebay Side Slopes =	3	:1
Bottom Width =	14.5	m
Flow Area =	28.5	m^2
Average Velocity =	**0.148**	**m/s**

** Must be less than 0.15m/s

Required Forebay Length and width (Inlet 2)

Parameters:

Length to width ratio of forebay, r = 5.0:1

Peak outflow rate during 25 mm storm, C 0.170 m^3/s (24hr ext. det)

Target particle size = 150 µm

Settling velocity, V_s = 0.0003 m/s

Forebay Settling Length, Dist

$$Dist = \sqrt{\frac{rQ_P}{V_S}}$$

= 53 m

Check Dispersion Length, Dist $_2$

Desired velocity in forebay, V_f = 0.5 m/s

Inlet flow rate , Q_{25mm} = 4.208 m^3/s

Depth in forebay, d = 1.50 m

$$Dist_2 = \frac{8Q}{dV_f}$$

= 45 m

Therefore, the settling length of 53 m governs the design.

Required Length	**= 53 m**
Provided Length	**= 53 m**

Minimum Forebay width:

Length of Forebay, L = 53 m

Minimum width, W = L/5

W = 10.6 m

Required Width	**= 10.6 m**
Provided Width	**= 14.5 m**

Fernbank Community - Pond 1
SWMF Design Critera (Inlet 1)

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Sediment Loading Estimate

Table 6.3 - MOE SWM Planning & Design Manual

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m³)	Annual Loading (m³/ha)
	50	1,230	0.05
35%	770	1,230	0.6
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

Catchment Area:	18.94	ha
% Impervious:	77%	
Annual Sediment Loading:	4,048	kg/ha/yr
	3.29	m^3/ha/yr
	62.3	m^3/yr

Sediment Removal Efficiency:	80%	
	49.87	m^3/yr

Sediment Accumulation:		
10yrs	499	m^3

Forebay Volume:	766	m^3
@ depth:	1.20	m

(Depth to top of Forebay Berm)

City of Ottawa-average precipitation and TSS data

Drainage Area:	18.9	ha
Runoff Coefficient:	0.74	
Estimate Influent TSS Level (max):	250	mg/L
(Long-term average):	150	mg/L
Sediment Density:	1,230	kg/m^3
Total Annual Precipitation:	907	mm
Total Annual Rain (Ice Free Period):	686	mm
Total Annual Runoff:	126,950	m^3
Runoff during Ice-free period:	96,017	m^3
Max Annual TSS Loading:	31,737	kg
(total precipitation)	25.8	m^3/yr
Max Annual TSS Loading:	24,004	kg
(precipitation during ice-free period)	19.5	m^3/yr
Average Annual TSS Loading:	19,042	kg
(total precipitation)	15.5	m^3/yr
Average Annual TSS Loading:	14,403	kg
(precipitation during ice-free period)	11.7	m^3/yr

Target 80% TSS Removal:		
Max:	20.6	m^3/yr
Min:	9.4	m^3/yr

Sediment Accumulation:		
10yrs	206	m^3

Fernbank Community - Pond 1
SWMF Design Critera (Inlet 2)

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Sediment Loading Estimate

Table 6.3 - MOE SWM Planning & Design Manual

Catchment Imperviousness	Annual Loading (kg/ha)	Wet Density (kg/m³)	Annual Loading (m³/ha)
	50	1,230	0.05
35%	770	1,230	0.6
55%	2,300	1,230	1.9
70%	3,495	1,230	2.8
85%	4,680	1,230	3.8

Catchment Area:	50.35	ha
% Impervious:	70%	
Annual Sediment Loading:	3,495	kg/ha/yr
	2.84	m^3/ha/yr
	143.1	m^3/yr

Sediment Removal Efficiency:	80%	
	114.45	m^3/yr

Sediment Accumulation:		
10yrs	1145	m^3

Forebay Volume:	1225	m^3
@ depth:	1.50	m

(Depth to top of Forebay Berm)

City of Ottawa-average precipitation and TSS data

Drainage Area:	50.4	ha
Runoff Coefficient:	0.69	
Estimate Influent TSS Level (max):	250	mg/L
(Long-term average):	150	mg/L
Sediment Density:	1,230	kg/m^3
Total Annual Precipitation:	907	mm
Total Annual Rain (Ice Free Period):	686	mm
Total Annual Runoff:	315,105	m^3
Runoff during Ice-free period:	238,327	m^3
Max Annual TSS Loading:	78,776	kg
(total precipitation)	64.0	m^3/yr
Max Annual TSS Loading:	59,582	kg
(precipitation during ice-free period)	48.4	m^3/yr
Average Annual TSS Loading:	47,266	kg
(total precipitation)	38.4	m^3/yr
Average Annual TSS Loading:	35,749	kg
(precipitation during ice-free period)	29.1	m^3/yr

Target 80% TSS Removal:		
Max:	51.2	m^3/yr
Min:	23.3	m^3/yr

Sediment Accumulation:		
10yrs	512	m^3

Fernbank Community - Pond 1
SWMF Design Critera

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SWM Facility - Stage-Storage-Discharge

Stage	Elevation (m)	Stage (m)	Total Volume (m^3)	Outflow (L/s)*		
				Orifice 1	Weir 1	Total
NWL	97.55	0.00	29,380	0	0	0
Extended Det.	97.85	0.30	36,167	92	0	92
2-year	98.32	0.77	47,700	201	1,719	1,920
5-year	98.53	0.98	52,970	233	2,992	3,225
10-year	98.66	1.11	56,035	251	3,890	4,141
100-year	99.04	1.49	66,251	298	6,927	7,225

**Approximate outflows have been calculated based on the equations below*
Actual outflows, based on the Ultimate PCSWMM model are provided in the body of the SWM report

Orifice 1

Quantity	1	
C	0.61	
Diameter	350	mm
Area	0.0962	m^2
Invert	97.55	m
C/L	97.725	m

Q orifice = C x A x (2 x g x H)(1/2)

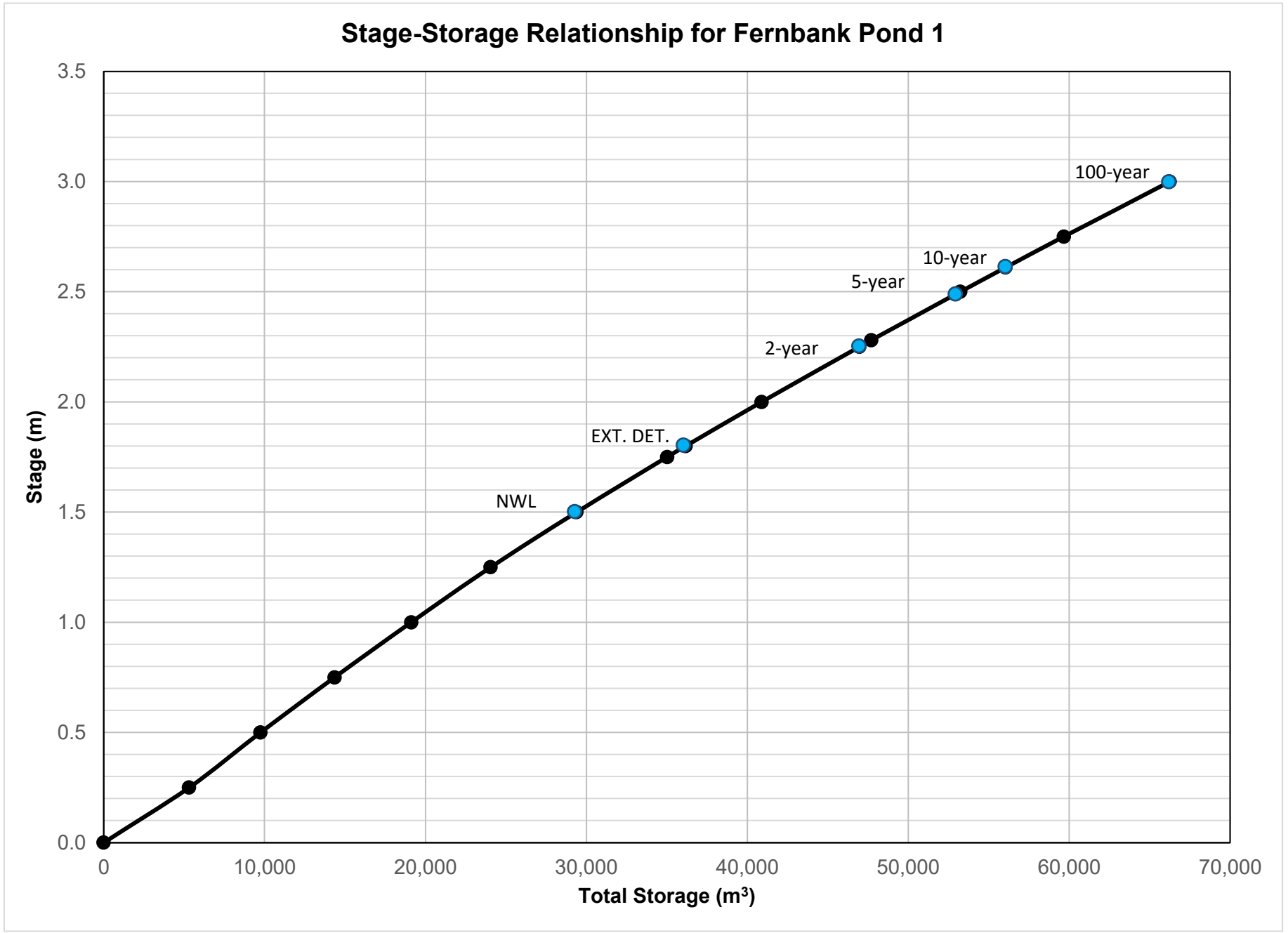
Extended Detention Draw-Down Time

Ex. Det Volume =	6,787	m^3
Flow Rate =	91.9	L/s
Time =	**20.5**	**hours**

Broad Crested Weir 1

$Q\ (m^3/s) = C \times L \times H^{(3/2)}$

Weir Coefficeint	1.84
Bottom Width (m)	2.9
Bottom of Weir Elevation (m)	97.85


Stage-Storage Relationship for Fernbank Pond 1
Stage (m)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
Total Storage (m³)
100-year
10-year
5-year
2-year
EXT. DET.
NWL

Fernbank Community - Pond 1
SWM Facility Stage-Storage Table

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Stage	Elevation (m)	Active Volume (m^3)	Total Stage (m)	Total Volume (m^3)	Area (m^2)
Bottom	**96.05**	**-**	**0.00**	**0**	**16,832**
	96.30	-	0.25	5,303	17,446
	96.55	-	0.50	9,746	18,079
	96.80	-	0.75	14,346	18,720
	97.05	-	1.00	19,107	19,380
	97.30	-	1.25	24,045	20,253
NWL	**97.55**	**29,380**	**1.50**	**29,380**	**22,002**
	97.80	-	1.75	35,014	23,043
ED	**97.85**	**6,788**	**1.80**	**36,167**	**23,209**
	98.05	-	2.00	40,879	23,901
	98.30	-	2.25	46,959	24,724
2-year	**98.32**	**18,320**	**2.27**	**47,700**	**24,807**
5-year	**98.53**	**23,590**	**2.48**	**52,970**	**25,383**
	98.55	-	2.50	53,224	25,410
10-year	**98.66**	**26,656**	**2.61**	**56,035**	**25,709**
	98.80	-	2.75	59,664	24,724
100-year	**99.04**	**36,872**	**2.99**	**66,251**	**26,666**

Fernbank Community - Pond 1
Drawdown Calculation

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Calculations per MOE Stormwater Planning & Design Manual (2003)
Page 4-58, Equation 4.10: Drawdown Time

$$t = \frac{2A_p}{CA_o(2g)^{0.5}}(h_1{}^{0.5} - h_2{}^{0.5})$$

Ap =	23,248	m^2		
C =	0.62			
Ao =	0.096	m^2		
g =	9.8	$2g^{0.5}$ =	4.427189	
h1 =	97.85	m		**0.3 m**
h2 =	97.55	m		**0 m**

2Ap =	46,496
Cao(2g)^0.5 =	0.2635
H1^0.5-h2^0.5 =	0.5477

Drawdown time =	96646	seconds
=	**27**	**hours**

The developer would be responsible for initiation of any monitoring programs and the associated costs until such time as the City accepts ownership of the associated SWM facilities and/or watercourses. Continuation of the monitoring program would then become the responsibility of the City. It is anticipated that monitoring would be an open-ended program as part of an ongoing adaptive management strategy.

6.3 SWM Criteria - Carp River Subwatershed

Stormwater management criteria for the Fernbank Community lands tributary to the Carp River subwatershed have been developed based on the recommendations of the Carp River Subwatershed Study, the recommendations of the Carp River 3rd Party Review, and input from MVC:

- The proposed stormwater management strategy will need to adhere to all applicable policies and guidelines of Mississippi Valley Conservation; the City of Ottawa, MOE, and other approvals agencies.

Quality Control / Fish Habitat

- Level 2 - Normal protection for lands tributary to the Carp River (70% long term TSS removal);
- End-of-pipe SWM facilities are to provide extended detention storage for both baseflow enhancement and water quality control;
- The proposed development must have no adverse impacts on downstream fish habitat;
- The Carp River and the West Tributary have been classified as tolerant warmwater fish communities (Type 3 Communities), based on classifications from the *Carp River Watershed / Subwatershed Study*. Temperature mitigation measures are to be incorporated into all proposed SWM facilities, with the goal of ensuring that the temperature of discharged stormwater does not exceed the following target values:
    - Maximum Discharge Temperature = 25ºC
    - Preferred Discharge Temperature = 22ºC

Quantity Control

- Increases in runoff volume resulting from development are not to exceed an additional 40,000 m^3 above existing conditions for the 100-year event;
- All development within the Fernbank Community tributary to the Carp River accommodate a per hectare share of the 85,600 m3 deficit volume identified in the Third Party Review until data is available to confirm the model.
- The proposed development must not result in any increase in downstream flood risk in the Carp River. Any proposed increases in flood elevations will need to be reviewed to ensure that they do not represent an increase in flood risk. Provided this criterion is met, the following design criteria are to be applied to proposed SWM facilities:
    - For SWM Facilities outletting directly to the Carp River, peak flow control is not required for major storm events (> 10 year event).
    - For SWM facilities outletting to tributaries of the Carp River, peak flow control is required for all storms up to the 100-year event.
    - **Pre-Development Peak Flow targets are listed in Table 4-2.**

Erosion control / Fluvial Geomorphology

- Continuous hydrologic modeling should be used to demonstrate that the proposed development will not result in an adverse change to the geomorphology of the Carp River West Tributary. The number of exceedences of the erosion thresholds established by the fluvial geomorphic analysis should not increase under post-development conditions.
    - **Critical flow (Erosion) targets for watercourses are listed in Table 3-7.**

Table 8-2: Existing vs. Post-Development Peak Flows

Location		Peak Flow (m^3/s)					
		2yr	5yr	10yr	25yr	50yr	100yr
Jock River Subwatershed (24 hr SCS Distribution)							
Monahan Drain @ Terry Fox Drive	Existing	1.21	1.88	2.42	3.06	3.58	**4.29**
	Post (Uncontrolled)	6.99	10.3	12.5	15.5	17.8	**20.4**
	Post (Controlled)	1.16	1.86	2.49	3.07	3.56	**4.27**
	Post (With BMPs)	1.09	1.76	2.34	2.97	3.44	**4.13**
Flewellyn Drain @ Fernbank Road	Existing	1.13	1.76	2.29	2.90	3.39	**4.06**
	Post (Uncontrolled)	3.78	5.69	7.11	8.74	10.28	**12.15**
	Post (Controlled)	1.13	1.67	2.39	2.90	3.23	**3.70**
	Post (With BMPs)	1.09	1.61	2.36	2.88	3.21	**3.67**
Faulkner Tributary @ Fernbank Road	Existing	0.48	0.76	0.98	1.25	1.46	**1.75**
	Post (Uncontrolled)	1.67	2.46	3.05	3.82	4.41	**5.30**
	Post (Controlled)	0.28	0.45	0.66	1.04	1.34	**1.74**
	Post (With BMPs)	0.27	0.42	0.61	0.96	1.26	**1.67**
Carp River Subwatershed (12 hr SCS Distribution)							
Carp River West Tributary Pond 1	Existing	1.71	2.67	3.32	4.25	4.77	**5.43**
	Post (Uncontrolled)	4.71	7.16	8.79	10.49	10.82	**12.53**
	Post (Controlled)	1.50	2.34	4.60	4.89	5.09	**5.41**
	Post (With BMPs)	1.44	2.18	4.39	4.84	5.02	**5.31**
Fernbank north of West Tributary Areas 3536 pre-development Pond 2 out post-development	Existing	0.36	0.66	**0.87**	1.18	1.35	1.58
	Post (Uncontrolled)	1.17	1.76	**2.15**	2.41	2.41	2.86
	Post (Controlled)	0.34	0.60	**0.89**	2.41	2.41	2.77
	Post (With BMPs)	0.32	0.53	**0.68**	2.13	2.23	2.66
Hazeldean Creek @ Carp River Pond 3	Existing	1.09	1.85	**2.37**	3.12	3.54	4.08
	Post (Uncontrolled)	3.79	5.80	**7.13**	8.50	8.50	8.50
	Post (Controlled)	0.53	1.13	**1.57**	5.71	8.50	8.50
	Post (With BMPs)	0.50	1.09	**1.54**	6.38	6.77	8.50

Table 8-3: Existing vs. Post-Development Runoff Volumes

Location		Runoff Volume (ha.m)					
		2yr	5yr	10yr	25yr	50yr	100yr
Jock River Subwatershed (24 hr SCS Distribution)							
Monahan Drain Ponds 6,7,8	Existing	5.31	6.94	10.33	12.95	15.10	18.05
	Post (no BMPs)	7.05	9.74	11.56	13.86	15.72	18.28
	Post (With BMPs)	6.65	9.30	11.10	13.38	15.22	17.75
Flewellyn Drain Pond 5	Existing	3.52	4.60	6.85	8.59	10.01	11.97
	Post (no BMPs)	4.45	6.19	7.37	8.86	10.07	11.73
	Post (With BMPs)	4.13	5.84	7.00	8.48	9.67	11.31
Faulkner Drain Tributary Pond 4	Existing	1.09	1.42	2.11	2.65	3.09	3.69
	Post (no BMPs)	1.99	2.76	3.28	3.94	4.47	5.20
	Post (With BMPs)	1.86	2.61	3.13	3.78	4.31	5.03
Carp River Subwatershed (12 hr SCS Distribution)							
Carp Tributary Headwater Pond 1	Existing	3.72	5.66	6.97	8.86	9.91	11.27
	Post (Uncontrolled)	4.70	6.66	7.96	9.82	10.84	12.21
	Post (With BMPs)	4.56	6.50	7.80	9.65	10.67	12.02
Carp North Pond 2	Existing	0.44	0.76	1.00	1.34	1.53	1.79
	Post (Uncontrolled)	0.79	1.10	1.31	1.61	1.77	2.00
	Post (With BMPs)	0.75	1.06	1.27	1.56	1.73	1.95
Carp South Pond 3	Existing	1.46	2.40	3.03	3.95	4.47	5.13
	Post (Uncontrolled)	2.62	3.72	4.45	5.49	6.09	6.84
	Post (With BMPs)	2.54	3.65	4.40	5.48	6.06	6.85

Pre vs. Post Development Runoff Volumes to Carp River (100 year event)

Pre and post-development runoff volumes to the Carp River for the 100-year storm event have been calculated based on the results of the analysis (refer to **Table 8-4**). This analysis has been completed to demonstrate that the proposed development will meet the following criterion.

- Increases in runoff volume resulting from development are not to exceed an additional 40,000 m^3 above existing conditions for the 100-year event;

Table 8-4: 100yr Runoff Volumes to Carp River

Development Condition	100yr Runoff Volume (m3)				
	Pond 1	Pond 2	Pond 3	Total	Increase
Pre-Development	112,700	17,900	51,300	181,900	-
Post-Development (no BMPs)	122,100	20,000	68,400	210,500	**28,600**
Post-Development (with BMPs)	120,200	19,500	68,500	208,200	**26,300**