TATHAM ENGINEERING

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File 113188

February 5, 2025

Justin Teakle BES, MCIP, RPP
Senior Planner
Town of Collingwood
P.O. Box 157, 97 Hurontario Street
Collingwood, Ontario L9Y 3Z5
jteakle@collingwood.ca

Re: 120 Mountain Road, Manorwood Commercial, Town of Collingwood
Functional Servicing Report (Sewage and Water): **Revision No. 1 to Addendum No. 1**

Dear Justin:

We are pleased to provide the following revised Addendum No. 1 to the Functional Servicing Report (FSR) dated November 24, 2021 for 120 Mountain Road as follows:

3 SANITARY SERVICING

3.1 Existing Sanitary Sewage System

The existing sanitary sewer system was confirmed through the review the *Town of Collingwood MSP*, 2019, by Cole Engineering and the *Preliminary Servicing Report for Mair Mills Estates*, 1999, the *Preliminary Servicing Report for Mair Mills Village*, 2006, and *the Functional Servicing Report for Side Launch Brewery*, 2012 all of which were prepared by Tatham. The sanitary sewer design sheets prepared by Tatham for the above-mentioned studies have been used as the basis for assessing the available sewer capacity.

3.2 Proposed Sanitary Sewage System

The proposed development will connect to an existing sanitary maintenance hole located at the northeast property corner in front of the site on Mountain Road, as shown on the Site Servicing Plan (SS-1) in the Engineering Drawings submitted for Site Plan Approval. The section of 525 diameter sanitary sewer along Mountain Road immediately downstream of the connection point has a length of approximately 30 metres, a slope of 0.48% and a full flow capacity 297.94 L/s. The average flow in this section has been determined to be 37.39 L/s with a peak flow of 63.02 L/s.

3.3 Sewage Demands and Capacity

To determine the sewage design flows from the subject property, an average daily demand rate for light industrial/commercial land use of 10.0 cu.m/ha/day is estimated based on the expected uses of the buildings. We note that the original reports submitted considered higher potential flows based on the Ministry guidelines for industrial lands published in 2008 at 35-55 cu.m/ha/d. These figures are overly conservative considering the small industrial/commercial units being offered in this proposed development. Based on our experience

with similar developments of this nature a more realistic value of 10 cu.m/ha/d is appropriate for use. An infiltration flow rate of 0.23 L/s/ha has been assumed per Town standards.

The proposed restaurant will have a gross floor area of 480 sq.m however, the dining area will be approximately 290 sq.m and will accommodate approximately 110 patrons based on available seating, and approximately 10 staff. Therefore, we have incorporated a total additional population for the restaurant to be 120 person, with a flow rate of 125 litres per person per day, as per the Ontario Building Code Section 3.1.17.1 (1) (c (1).

Using these flow rates, the average day flows for the subject property were calculated to be 0.77 L/s (Light Industrial) + 0.17 L/s (Restaurant) = 0.94 L/s (including infiltration) while the peak flow were calculated to be 2.29 L/s + 0.72 L/s + 0.301 L/s , respectively. Detailed sewage design flow calculations for the subject property are included Appendix A for reference.

It is our understanding that the Town maintains its own up to date sanitary flow conveyance model of this area, we expect this model will confirm reserve capacity is available in the downstream system through the development review process.

4 WATER SUPPLY & DISTRIBUTION

4.1 Existing Water Servicing

An existing 300 mm diameter watermain is located along the south side of Mountain Road, complete with one accessible fire hydrant located immediately in front of the proposed development.

4.2 Proposed Water Servicing

A 200 mm diameter watermain will be connected to the existing 300 mm diameter watermain on Mountain Road to service the site for both domestic and fire flows. The proposed water main will enter an above-ground heated enclosure located within the subject property where a backflow prevention device and water meter will be installed prior to any service connections per Town standards. The proposed watermain size will be verified following detailed building designs by the architect and mechanical engineer.

4.3 Water Demands

To determine the water demands for the subject property, an average daily demand rate for light industrial land use of 10.0 m^3/ha/day is estimated based on the expected uses of the buildings. We note that the original reports submitted considered higher potential flows based on the Ministry guidelines for industrial lands published in 2008 at 35-55 cu.m/ha/d. These figures are overly conservative considering the small industrial/commercial units being offered in this proposed development. Based on our experience with similar developments of this nature a more realistic value of 10 cu.m/ha/d is appropriate for use.

The proposed restaurant will have a gross floor area of 480 sq.m however, the seating and dining area will be approximately 290 sq.m and will accommodate approximately 110 patrons based on available seating, and approximately 10 staff. Therefor, we have incorporated a total additional population for the restaurant to be **120 person**, with a flow rate of 125 litres per person per day, as per the Ontario Building Code Section 3.1.17.1 (1) (c (1).

Maximum day and peak hour factors of 2.75 and 4.3 were from the previous report has been maintained for consistency purposes and still adequately represents the proposed peaking factor conditions. It is still assumed the buildings will be constructed of non-combustible

material and will be sprinklered. The minimum fire flow required by the Town's Development Standards for an industrial/commercial subdivision is 136 L/s. However, the Fire Underwriters Survey (FUS) fire flow calculations (included in Appendix B) determined the maximum required fire flow for the development to be 100 L/s. The FUS fire flow of 100 L/s was previously approved by the Town back in May of 2022 via email correspondence with the Manager of Environmental Service. Therefore, based on these demands, the Maximum Day Demand, Peak Hour Demand and Maximum Day + Fire Flow Demand were determined to be 1.76 L/s, 2.75 L/s, and 101.76 L/s respectively. Detailed demand calculations and the previous correspondence with the Town's Manager of Environmental Services dated May 6, 2022 are included in Appendix B for reference.

We trust this is sufficient for the Town to complete their review. However, should you have any questions please do not hesitate to contact me.

Yours truly,
Tatham Engineering Limited

Kevin Sansom, B.A.Sc., P.Eng.
Senior Engineer
KRS:
copy: Kristine Loft Loft Planning kristine@loftplanning.com
O:\Collingwood\2013 Projects\113188 - 120 Mountain Road Industrial Site Plan\Documents\Reports\FSR (2021)\L - Teakle - Sewage and Water Demands - February 4 2025.docx

Appendix A:
Sanitary Servicing Analysis

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PROJECT	120 Mountain Road	FILE	113188
		DATE	Nov 2021
SUBJECT	Sewage Design Flow Calculations	NAME	J. Macdonald
		PAGE	1 OF 2

Demand Rate - Light Industrial = 10.0 m^3/ha/day (Gross ha site area)
= 0.12 L/ha/s

Infiltration Flow (I) = Infiltration Flow x Drainage Area
= 0.23 L/s/ha x 1.29 ha 0.23 L/s/ha Town Standard
= 0.30 L/s

Average Day Flow (ADF) = Site Area x Demand Rate + I
= 4.05 ha x 0.12 L/ha/s + 0.30 L/s
= 0.47 L/s + 0.30 L/s
= 0.77 L/s

Equivalent Population (P) = ADF - I / Avg Flow per Capita
= 0.47 L/s / 0.00521 L/cap/s 450 L/cap/d Town Standard
= 90 cap

Harmon Peaking Factor (PF) = $1 + \frac{14}{4 + (P/1000)^{0.5}}$
= 4.26

Peak Flow = (ADF) x PF + I
= 0.47 x 4.26 + 0.30
= 2.29 L/s

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Project:	120 Mountain Road	Date:	August 12 2024
File No.:	113186	Designed:	KRS
Subject:	Sanitary Flow Calculations: Restaurant	Page	2 of 2

Restaurant Gross Floor Area =	**480.0**	m^2	
Restaurant Seating Area =	288.0	m^2	
Area per person =	1.1	persons/m^2	(Table 3.1.17.1 Ontario Building Code - Dining Use)
Actual Occupancy =	**120**	persons (110 patrons + 10 staff)	**(Table 3.1.17.1 (1) (c) (1) OBC**
Average Daily Flow per person =	125	L/person/day	(Table 8.2.1.3.B Ontario Building Code - 12 A Food Service Operation)
Dining Room Occupancy =	120	persons (110 patrons + 10 staff)	
Average Daily Flow =	**15000**	L/day	
Average Flow =	0.17	L/s	
Total Average Flow (ADF) =	**14.69**	m^3/day	

Harmon Peaking Factor (PF) = $1 + \frac{14}{4 + (P/1000)^{0.5}}$

Harmon Peaking Factor (PF) = 4.2

Peak Flow Restaurant = (ADF Restaurant * PF)

= 0.17 * 4.2

Peak Flow Restaurant = 0.72

Peak Flow Restaurant + Light Industrial = 0.72 + 2.29 L/s (from 1 of 2)

3.01 L/s

MOUNTAIN ROAD SANITARY TRUNK SEWER DESIGN SHEET

C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood | Bracebridge | Orillia | Barrie

FLOW CRITERIA

Average Residential Flow Rate	450 L/cap/d	(B)
Average Proposed Commercial Flow Rate	28000 L/ha/d	(B)
Average Industrial Flow Rate	35000 L/ha/d	(B)
Residential Infiltration Rate	0.23 L/ha/s	
Com / Ind Infiltration Rate	0.11 L/ha/s	
Population	2.9 people per unit	
Residential Peaking Factor:	Harmon	
Com / Ind Peaking Factor	2.0	

Project Name:	Mair Mills Village
Project Number:	1110427
Municipality:	Town of Collingwood
Designed By:	PM
Date	August 23, 2012
Checked By	AEB
Date	February 22, 2013
Revision Number	1

Approved:

LICENSED PROFESSIONAL ENGINEER
A. E. BROWNRIDGE
100120565
FEB 22 '13
PROVINCE OF ONTARIO

LOCATION OF SECTION	AREA LABEL	UPSTREAM MAINTENANCE HOLE	DOWNSTREAM MAINTENANCE HOLE	NUMBER OF UNITS	POPULATION	ACCUMULATED POPULATION	RESIDENTIAL PEAKING FACTOR	COM / IND PEAKING FACTOR	RESIDENTIAL AREA	COM / IND AREA OF SITE	ACCUMULATED AREA	AVERAGE FLOW: RESIDENTIAL	AVERAGE FLOW: INDUSTRIAL / COMMERCIAL	AVERAGE FLOW: INFILTRATION	AVERAGE FLOW: TOTAL	PEAK FLOW: RESIDENTIAL	PEAK FLOW: INDUSTRIAL / COMMERCIAL	PEAK FLOW: INFILTRATION	PEAK FLOW: TOTAL	SEWER: LENGTH OF PIPE	SEWER: PIPE DIAMETER	SEWER: GRADE	SEWER: FULL FLOW CAPACITY	SEWER: FULL FLOW VELOCITY	SEWER: PEAK FLOW VELOCITY (ZERO INFILTRATION)
		MH No.	MH No.		cap.	cap.			ha	ha	ha	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	m	mm	%	L/s	m/s	m/s
EX MAIR MILLS ESTATES	MTN 1		EX MH	143	414.7	414.7	4.01	N/A	22.000		22.02	2.16	0.00	5.06	7.22	8.67	0.00	5.06	13.74	633.0	450	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH	EX MH 2A	0	0	414.7	4.01	N/A	1.481		23.50	2.16	0.00	5.41	7.57	8.67	0.00	5.41	14.08	742.5	450	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 2A	EX MH 1A	0	0	414.7	4.01	N/A	0.003		23.53	2.16	0.00	5.41	7.57	8.67	0.00	5.41	14.08	15.5	375	1.30%	195.59	1.81	0.89
MAIR MILLS VILLAGE	MTN 2		PR MH	302	875.8	875.8	3.84	2.0	19.800	0.43	20.23	4.56	0.14	4.65	9.35	17.50	0.28	4.65	22.43	N/A	200	0.50%	23.19	0.74	0.74
TENTH LINE		PR MH	EX MH 1A	0	0	875.8	3.84	N/A	0.469		20.71	4.56	0.14	4.79	9.49	17.50	0.28	4.79	22.57	249.0	375	0.50%	122.97	1.12	0.76
LEGENDARY LOGCRAFTERS (7 Employees)				0	0	0	N/A	2.0	N/A			0.00	0.01		0.01	0.00	0.01		0.01	N/A		N/A	N/A	N/A	N/A
TOWN OF COLLINGWOOD PARKS & REC OFFICE (5 Permanent + 20 Summer Employees)	MTN 3	EX SPS & EX FORCEMAIN	EX MH 3-1	0	0	0	N/A	2.0	N/A	8.00	8.00	0.00	0.01	0.68	0.21	0.00	0.03	0.68	0.03	N/A		N/A	N/A	N/A	N/A
COLLINGWOOD PUBLIC WORKS OFFICE (30 Employees)				0	0	0	N/A	2.0	N/A			0.00	0.03		0.03	0.00	0.05		0.05	N/A		N/A	N/A	N/A	N/A
GEORGIAN TRIANGLE HUMANE SOCIETY (20 Volunteers)				0	0	0	N/A	2.0	N/A			0.00	0.01		0.89	0.00	0.02		0.90	N/A	100	N/A	N/A	N/A	N/A
FUTURE COUNTY OF SIMCOE LANDFILL SITE (proposed SPS) (4)	MTN 3a	PROPOSED FORCEMAIN	EX MH 3-1	0	0	0	N/A	3.0	N/A	46.70	46.70	0.00	1.03	5.14	6.17	0.00	3.69	5.14	8.83	N/A	100	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 1A	EX MH 3-1	0	0	1,290.50	3.73	N/A	0.049		99.50	6.72	1.22	22.77	30.71	25.04	3.49	22.77	51.29	22.5	375	0.30%	84.28	0.67	0.70
MOUNTAIN ROAD / TENTH LINE		EX MH 3-1	EX MH 3-2	0	0	1,290.50	3.73	N/A	0.151		99.14	6.72	1.22	22.80	30.75	25.04	3.48	22.80	51.32	75.5	375	0.89%	145.63	1.32	0.94
CRS RENTAL SUPPLY (existing commercial) (Floor Area = 1,000 m²)	MTN 4		EX MH 3-2	0	0	0.00	N/A	2.0	N/A	0.59	0.59	0.00	0.06	12.00	12.06	0.00	9.12	0.06	9.18	N/A	200	N/A	N/A	N/A	N/A
EXISTING INDUSTRIAL (AGINDRA) (5)	MTN 5	EX MH 3-2A	EX MH 3-3	0	0	0.00	N/A	2.0	N/A	9.00	9.00	0.00	1.40	0.99	2.39	0.00	2.80	0.99	3.79	N/A	200	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-2	EX MH 3-3	0	0	1,290.50	3.73	N/A	0.139		108.86	6.72	2.62	25.04	34.61	25.04	9.39	25.04	59.47	64.9	375	0.79%	195.82	1.41	0.99
MOUNTAIN ROAD		EX MH 3-3	EX MH 3-4	0	0	1,290.50	3.73	N/A	0.223		109.09	6.72	2.65	25.09	34.45	25.04	9.39	25.09	59.52	111.7	375	0.84%	199.68	1.45	1.01
MOUNTAIN ROAD		EX MH 3-4	EX MH 3-5	0	0	1,290.50	3.73	N/A	0.219		109.32	6.72	2.66	25.14	34.55	25.04	9.39	25.14	59.57	119.4	375	3.19%	391.65	2.82	1.64
PROPOSED INDUSTRIAL (Side Launch Brewery) (3)	MTN 6		EX MH 3-5	0	0	0.00	N/A	3.0	N/A	4.00	4.00	0.00	1.80	0.44	2.24	0.00	5.40	0.44	5.84	N/A	200	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-5	EX MH 3-6	0	0	1,290.50	3.73	N/A	0.229		113.56	6.72	4.46	26.12	37.32	25.04	11.79	26.12	62.95	119.3	375	2.25%	382.58	2.38	1.42
MOUNTAIN ROAD		EX MH 3-6	EX MH 3-7	0	0.0	1,290.50	3.73	N/A	0.248		113.81	6.72	4.48	26.18	37.38	25.04	11.79	26.18	63.01	123.9	375	0.58%	134.49	1.22	0.85
MOUNTAIN ROAD		EX MH 3-7	EX MH 3-7A	0	0	1,290.50	3.73	N/A	0.058		113.87	6.72	4.48	26.18	37.38	25.04	11.79	26.18	63.02	29.1	525	0.48%	297.54	1.38	0.81
EX GEORGIAN MEADOWS	MTN 7		EX MH	460	1,334.0	1,334.00	3.72	N/A	38.400		38.40	8.36	0.00	8.83	19.19	29.82	0.00	8.83	34.65	N/A	450	N/A	N/A	N/A	N/A
PROPOSED CONSAR DEVELOPMENT (2)	MTN 8	EX MH	EX MH 3-7A	260	754.0	2,088.00	3.57	N/A	14.600		53.00	10.86	0.00	12.19	23.07	38.84	0.00	12.19	51.03	N/A	450	N/A	N/A	N/A	N/A

LOCATION OF SECTION	AREA LABEL	UPSTREAM MAINTENANCE HOLE	DOWNSTREAM MAINTENANCE HOLE	NUMBER OF UNITS	POPULATION	ACCUMULATED POPULATION	RESIDENTIAL PEAKING FACTOR	COM / IND PEAKING FACTOR	RESIDENTIAL AREA	COM / IND AREA OF SITE	ACCUMULATED AREA	AVERAGE FLOW				PEAK FLOW				SEWER					
												RESIDENTIAL	INDUSTRIAL / COMMERCIAL	INFILTRATION	TOTAL	RESIDENTIAL	INDUSTRIAL / COMMERCIAL	INFILTRATION	TOTAL	LENGTH OF PIPE	PIPE DIAMETER	GRADE	FULL FLOW CAPACITY	FULL FLOW VELOCITY	PEAK FLOW VELOCITY (ZERO INFILTRATION)
		SAN MH	SAN MH		cap	cap			ha	ha	ha	L/s	L/s	L/s	L/s	L/s	L/s	L/s	L/s	m	mm	%	L/s	m/s	m/s
MOUNTAIN ROAD		EX MH 3-7A	EX MH 3-8	0	0	3,378.50	3.40	N/A	0.061		166.95	17.60	4.48	32.40	54.48	59.79	11.79	38.93	109.99	40.4	525	0.15%	166.56	0.77	0.87
EXISTING INDUSTRIAL (formerly Goodyear) (12)	MTN 9		EX MH 3-8	0	0	0.00	N/A	2.0	N/A	19.20	19.20	0.00	6.90	1.12	18.02	0.00	17.80	1.12	18.92	N/A	350	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-8	EX MH 3-9	0	0	3,378.50	3.40	N/A	0.035		177.16	17.60	13.38	40.75	71.72	59.79	29.90	40.75	130.43	37	500	-0.27%	N/A	N/A	N/A
100 MOUNTAIN ROAD (existing industrial) (Floor Area = 3 000 m²)	MTN 10		EX MH 3-9	0	0	0.00	N/A	2.0	N/A	1.30	1.30	0.00	0.16	0.14	0.30	0.00	0.31	0.14	0.46	N/A	200	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-9	EX MH 3-10	0	0	3,378.50	3.40	N/A	0.165		178.62	17.60	13.54	41.08	72.22	59.79	29.90	41.08	130.78	52.6	500	0.19%	163.56	0.86	0.73
90 MOUNTAIN ROAD (existing industrial) (Floor Area = 600 m²)	MTN 11		EX MH 3-9	0	0	0.00	N/A	2.0	N/A	0.83	0.83	0.00	0.03	0.06	0.10	0.00	0.07	0.06	0.14	N/A	200	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-10	EX MH 3-11	0	0	3,378.50	3.40	N/A	0.177		179.62	17.60	13.57	41.31	72.48	59.79	29.90	41.31	131.01	58.2	500	0.42%	244.69	1.25	0.85
MOUNTAIN ROAD		EX MH 3-11	EX MH 3-12	0	0	3,378.50	3.40	N/A	0.042		179.67	17.60	13.57	41.32	72.49	59.79	29.90	41.32	131.02	20.8	500	0.05%	84.43	0.42	0.43
MOUNTAIN ROAD		EX MH 3-12	EX MH 3-13	0	0	3,378.50	3.40	N/A	0.080		179.75	17.60	13.57	41.34	72.51	59.79	29.90	41.34	131.04	40.1	500	-0.06%	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-13	EX MH 3-14	0	0	3,378.50	3.40	N/A	0.141		179.89	17.60	13.57	41.37	72.54	59.79	29.90	41.37	131.07	70.6	500	0.15%	151.03	0.77	0.65
WALMART (Floor Area = 12,200 m²)	MTN 12	EX MH 3-14A	EX MH 3-14	0	0	0.00	N/A	2.0	N/A	4.55	4.55	0.00	0.71	0.51	1.22	0.00	1.41	0.51	1.92	N/A	250	N/A	N/A	N/A	N/A
MOUNTAIN VIEW MALL (Floor Area = 15,930 m²)	MTN 13		EX MH 3-14	0	0	0.00	N/A	2.0	N/A	3.10	3.10	0.00	0.92	12.69	13.62	0.00	1.84	0.34	2.18	N/A	200	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-14	EX MH 3-15	0	0	3,378.50	3.40	N/A	0.189		187.826	17.60	15.20	43.20	76.00	59.79	33.18	43.20	136.18	84.7	500	-0.02%	N/A	N/A	N/A
CRYSTAL BUFFET RESTAURANT (250 seats)	MTN 14		EX MH 3-15	0	0	0.00	N/A	2.0	N/A	0.22	0.22	0.00	0.06	0.02	0.08	0.00	0.12	0.02	0.13	N/A	250	N/A	N/A	N/A	N/A
MONTANA'S RESTAURANT (205 seats)				0	0	0.00	N/A	2.0	N/A			0.00	0.39		0.39	0.00	0.78		0.78	N/A		N/A	N/A	N/A	N/A
CANADIAN TIRE GAS STATION (8 fuel outlets)	MTN 15	EX MH	EX MH 3-16	0	0	0.00	N/A	2.0	N/A	1.00	1.00	0.00	0.05	0.01	0.05	0.00	0.10	0.11	0.10	N/A		N/A	N/A	N/A	N/A
CANADIAN TIRE CAR WASH				0	0	0.00	N/A	2.0	N/A			0.00	0.09		0.09	0.00	0.17		0.17	N/A		N/A	N/A	N/A	N/A
MARK'S WORK WAREHOUSE (Floor Area = 650 m²)				0	0	0.00	N/A	2.0	N/A			0.00	0.05		0.05	0.00	0.10		0.21	N/A	250	N/A	N/A	N/A	N/A
MOUNTAIN ROAD		EX MH 3-15	EX MH 3-16	0	0	3,378.50	3.40	N/A	0.199		189.249	17.60	15.13	43.53	77.26	59.79	35.03	43.53	138.35	99.5	500	0.09%	113.27	0.58	0.56
MOUNTAIN ROAD		EX MH 3-16	EX H25N-31	0	0	3,378.50	3.40	N/A	0.174		189.420	17.60	15.13	43.57	77.30	59.79	35.03	43.57	138.39	87.2	500	0.15%	148.03	0.74	0.67
MOUNTAIN ROAD (12)		**EX MH 3-8**	**EX H25N-31**	**0**	**0**	**3,378.50**	**3.40**	**N/A**	**1.175**		**189.420**	**17.60**	**15.13**	**43.57**	**77.30**	**59.79**	**35.03**	**43.57**	**138.39**	**987.5**	**500**	**0.15%**	**141.29**	**0.72**	**0.66**

Notes:

1. Refer to FIG 3 (Rev 1 - Feb 2013) 'Sanitary Servicing Plan for location of Area Labels
2. Number of lots for the proposed Condor Development based on a draft Plan of Subdivision prepared by Lucas & Associates dated April 12, 2012
3. Areas for infiltration along Mountain Road are based on the right-of-way width (20 m)
4. Existing pipe slopes based on sewer inverts surveyed by CCTA in February 2006
5. Various lengths and slopes of existing services and sewers connecting to the Mountain Road sanitary trunk sewer are unknown
6. The proposed 375 Dia. sanitary sewer on the Tenth Line has been designed to accommodate future development along the Tenth Line, south of the Blue Mountain Golf and Country Club
7. The composite slope in the 600 mm dia. Sanitary trunk sewer along Mountain Road between SAN MH 3-8 and SAN MH H25N-31 is 0.14%, which has a full flow capacity of 141.29 L/s.
8. Average flow for residential and commercial lands based on MOE Design Guidelines for Sewage Works
9. Average flow for the Agiona industrial lands (formerly occupied by Alcoa) is based on actual data collected for Alcoa between 2000 to 2003 by COLLUS Power Corp and provided to CCTA in September 2003
10. Average flow for the industrial lands formerly occupied by Goodyear is based on actual data collected between 2000 to 2003 by COLLUS Power Corp and provided to CCTA in September 2003
11. Average flow for industrial lands (where historical data is not available) based on 35 m^3/ha/d for light industry & 55 m^3/ha/d for heavy industry. We have assumed an average of 45 m^3/ha/d for this assessment
12. Average flow and peaking factor for proposed Side Launch Brewery based on Functional Servicing Report, prepared by CCTA dated July 2012
13. Average flow for the Canadian Tire Car Wash based on 200 l/wash. We have assumed an average of 25 washes per day.
14. Average flow and peaking factor of the County of Simcoe Landfill Site provided in letter dated October 28, 2011 to Town of Collingwood
15. Average flow for the following usages based on flows provided in Division B of Part 8 of the OBC:
    - Restaurant = 125 L / seat
    - Gas station = 560 L / fuel outlet
    - Stores/Shopping Centre = 5 L / sq.m for floor area
    - Office = 75 L / employee for Legendary Logocaltins, Town of Collingwood Parks & Rec and Public Works Building
    - Veterinary Clinic = 75 L / employee for Georgian Triangle Humane Society

Appendix B:
Water Demand Calculations

TATHAM ENGINEERING

PROJECT	120 Mountain Road	FILE	113188
		DATE	Feb 5, 2025
SUBJECT	FUS Fire Flow Calculations Building A	NAME	KRS
		CHECKED	KRS
		PAGE	1 OF 4

Fire Underwriters Survey Fire Flow Calculations - Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated With Option	Choose	Value Used	Unit	Total Fire Flow (L/min)
1	Frame Use for Construction of Unit	**Framing Material**						
		Coefficient related to type of construction (C)	Wood Frame	1.5	**Non-combustible construction**	**0.8**	-	N/A
			Ordinary Construction	1				
			Non-combustible construction	0.8				
			Fire resistive construction (<2 hrs)	0.7				
			Fire resistive construction (>2 hrs)	0.6				
2	Type of Occupancy	**Floor Space Area**						
		Type of Occupancy	Single Family	1	**Other (Comm., Ind., etc.)**	**1**	Units	N/A
			Townhouse/Apartment-inform # of units	1				
			Other (Comm., Ind., etc.)	1				
2.1	No. of Storeys	Number of Floors/Storeys in the unit (do not include basement)				**1**	Storeys	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement			m^2	**3590**	m^2	N/A
		Measurement Units	Square Feet (ft^2)	0.09290304	**3,590**			
			Square Metres (m^2)	1				
			Hectares (ha)	10000				
4	Required Fire Flow without Reductions or Increases	Required Fire Flow without Reductions or Increases per FUS:			($FF=220xCxA^{0.5}$)		L/min	11,000
5	Factors Affecting Burning	**Reductions / Increases Due to Factors Affecting Burning**						
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	**Non-combustible**	**-0.25**	N/A	8,250
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	**Sprinklered**	**-0.4**	N/A	-3,300
			Standard hoses for both system & Fire Department	-0.1				
			Supervised system	-0.1				
5.3	Separation Distance Between Units	Exposure distance between units	North Side	> 45 m	**0.00**	**0.1**	N/A	825
			East Side	> 45 m	**0.00**			
			South Side	20.1 to 30 m	**0.10**			
			West Side	> 45 m	**0.00**			
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow of 6,000 L/min (hrs):						2
		Required Volume of Fire Flow of 6,000 L/min (m^3):						720

TATHAM ENGINEERING

PROJECT	120 Mountain Road	FILE	113188
		DATE	2/5/2025
SUBJECT	FUS Fire Flow Calculations Building B	NAME	KRS
		CHECKED	KRS
REVISIONS		PAGE	2 OF 4

Fire Underwriters Survey Fire Flow Calculations - Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated With Option	Choose	Value Used	Unit	Total Fire Flow (L/min)
1	Frame Use for Construction of Unit	**Framing Material**						
		Coefficient related to type of construction (C)	Wood Frame	1.5	**Non-combustible construction**	**0.8**	-	N/A
			Ordinary Construction	1				
			Non-combustible construction	0.8				
			Fire resistive construction (<2 hrs)	0.7				
			Fire resistive construction (>2 hrs)	0.6				
2	Type of Occupancy	**Floor Space Area**						
		Type of Occupancy	Single Family	1	**Other (Comm., Ind., etc.)**	**1**	Units	N/A
			Townhouse/Apartment-inform # of units	1				
			Other (Comm., Ind., etc.)	1				
2.1	No. of Storeys	Number of Floors/Storeys in the unit (do not include basement)				**1**	Storeys	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement			m^2	**2380**	m^2	N/A
		Measurement Units	Square Feet (ft^2)	0.09290304	**2,380**			
			Square Metres (m^2)	1				
			Hectares (ha)	10000				
4	Required Fire Flow without Reductions or Increases	Required Fire Flow without Reductions or Increases per FUS:			($FF=220xCxA^{0.5}$)		L/min	9,000
5	Factors Affecting Burning	**Reductions / Increases Due to Factors Affecting Burning**						
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	**Non-combustible**	**-0.25**	N/A	6750
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	**Sprinklered**	**-0.4**	N/A	-2,700
			Standard hoses for both system & Fire Department	-0.1				
			Supervised system	-0.1				
5.3	Separation Distance Between Units	Exposure distance between units	North Side	20.1 - 30 m	**0.10**	**0.3**	N/A	2,025
			East Side	20.1 - 30 m	**0.10**			
			South Side	20.1 - 30 m	**0.10**			
			West Side	> 45 m	**0.00**			
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow of 6,000 L/min (hrs):						2
		Required Volume of Fire Flow of 6,000 L/min (m^3):						720

Demand Rate - Light Industrial 10.0 m^3/ha/day (Gross ha site area)

Average Day Demand (ADD)
= Site Area x Demand Rate
= 4.05 ha x 10.0 m^3/ha/day
= 40.5 m^3/day
= 40500 L/day
= 0.47 L/s

Peak Factors
Maximum Day = 2.75
Peak Hour = 4.3

Maximum Day Demand (MDD)
= ADD x Maximum Day Peak Factor
= 0.47 x 2.75
= 1.29 L/s

Peak Hour Demand (PHD)
= ADD x Peak Hour Peak Factor
= 0.47 x 4.3
= 2.02 L/s

MDD + Fire Demand = Refer to page 4 of 4 which includes Restaurant

TATHAM ENGINEERING

PROJECT	120 Mountain Road	FILE:	113188
		DATE:	Feb 5 2025
SUBJECT	**Water Demand Calculations: Development + Resturant**	NAME:	KRS
		PAGE:	4 OF 4

Restaurant Gross Area =	480.0	m^2	
Restaurant Seating Area	288	m^2	
Area per person =	1.1	m^2	(Table 3.1.17.1 OBC - Dining Use)
Actual Occupancy	**120**	**perso**	**(Table 3.1.17.1 (1) (c) (1 OBC - 110 patrons and 10 staff)**
Average Daily Flow per person =	125	L/person/day	(Table 8.2.1.3.B OBC - 12 A Food Service Operation)

Restaurnat as per OBC Section 3

Number of persons =	262	persons	
Actual Occupancy for Restaurant =	**120**	**persons**	**(Table 3.1.17.1 (1) (c) (1 OBC - 110 patrons and 10 staff)**
Restaurant Average Daily Flow =	15000	L/day	
Restaurant Total Average Flow =	**0.17**	**L/s**	
Restaurant ADD=	14.688	**m^3/day**	
Total Developmment ADD=	1269.0432	**m^3/day**	

Peak Factors

Maximum Day	=	2.75	(as per MOE Guidelines for Drinking Water Systems)
Peak Hour	=	4.3	(as per MOE Guidelines for Drinking Water Systems)

Fire Flow (Calculated by FUS)	=	**100.00**	**L/s**	**(See Updated 2025 FUS Calculations on Pages 1 and 2 of 4)**
Fire Flow (Min as per Town Standards)	=	136.00	L/s	(As per Town Development Standards for Convience Commercial, Sec. 4.4.3.1)

Maximum Day Demand (MDD)

= ADD x Maximum Day Peak Factor + Light Industrial

= 0.17 x 2.75

= 0.47 L/s + 1.29 L/s = **1.76** **L/s**

= **152.1** **m^3/day**

Peak Hour Demand (PHD)

= ADD x Peak Hour Peak Factor

= 0.17 x 4.3

= 0.73 L/s + 2.02 L/s = **2.75** **L/s**

MDD + Fire Demand

= MDD + Fire Flow

= 1.76 + 100.0

= **101.76** **L/s**

Kevin Sansom

From: Kevin Sansom
Sent: May 6, 2022 11:21 AM
To: Heather McGinnity
Cc: Evan Orser; Justin Teakle; Dan Hurley; Evan Lundquist
Subject: RE: 120 Mountain Rd Fire Flows

Thanks Heather. The client will be pleased. Have a nice weekend!

Kevin

From: Heather McGinnity <HMcGinnity@collingwood.ca>
Sent: May 6, 2022 10:12 AM
To: Kevin Sansom <ksansom@tathameng.com>
Cc: Evan Orser <eorser@collingwood.ca>; Justin Teakle <jteakle@collingwood.ca>; Dan Hurley <dhurley@tathameng.com>; Evan Lundquist <elundquist@tathameng.com>
Subject: RE: 120 Mountain Rd Fire Flows

Hi Kevin,

I think we can move forward with what you have outlined below. Evan and I will update our comments to Planning and refer to your email in our response.

Thanks,

Heather McGinnity P.Eng.
Manager, Environmental Services
705-445-1581 Ext. 3301 | hmcginnity@collingwood.ca

From: Kevin Sansom <ksansom@tathameng.com>
Sent: April 28, 2022 12:16 PM
To: Heather McGinnity <HMcGinnity@collingwood.ca>
Cc: Evan Orser <eorser@collingwood.ca>; Justin Teakle <jteakle@collingwood.ca>; Dan Hurley <dhurley@tathameng.com>; Evan Lundquist <elundquist@tathameng.com>
Subject: RE: 120 Mountain Rd Fire Flows

Hello Heather. Further to our March 8, 2022 meeting we wanted circulate this to you for review/discussion. We reviewed the C3 Report dated July 28, 2021 and offer the following response to your concerns related to the calculated and available fire flows for 120 Mountain Road.

We confirm there will be two new internal hydrants within the development as shown on draft SS-1 attached.

As per Table 2-3 of Section 2.2 of the C3 report, we recognize the Town's existing water distribution system can not provide the fire flows as per FUS calculation of 133 L/s in our original FSR or as stated in the Town standards (136 L/s minimum or 154 L/s preferred). Section 2.2 of the C3 report also states the model, under a minimum pressure of 20 psi and under "current" conditions (2020), the maximum available internal fire flow was calculated to be 119 L/s (which is below previously calculated FUS and/or Towns minimum of 136 L/s and preferred flow of 154 L/s). We also note these available flows decrease or increase depending on the various scenarios also outlined in the report i.e. Near Future (2024 A), Near Future (2024 B) and Future (2032).

That said, we have been in discussions with the architect on the proposed units and have revised our FUS calculations to incorporate the proposed buildings' based on the type of construction which has switched from Ordinary Construction to Non-combustible Construction (steel frame) which results in a reduction to the calculated FUS requirements from 133 L/s to 100 L/s for all the buildings (see revised FUS calculations revised April 26, 2022 attached). While we recognize this reduced calculation still does not satisfy the Town's minimum flow of 136 L/s, it illustrates the calculated FUS fire flow demands of 100 L/s are less than previously calculated and can be met. We believe this should be the overarching criteria that should apply

Furthermore, the buildings are proposed to be sprinklered and before being constructed as part of the building permit approval process fire system design calculations from a certified designer for the sprinkler system(s) for each building, will be provided as per OBC and NFPA 13. The minimum flows typically necessary for sprinkler systems within buildings of these sizes are traditionally much lower than FUS and/or Town standards (i.e. 50 L/s or less).

In summary, we acknowledge under current conditions (2020) the Town's water distribution system can not supply the fire flows as per Town standards (136 L/s minimum or 156 L/s preferred). However, the current water distribution system can supply the revised calculated fire flows per FUS of 100 L/s, which is less than all the available flows under current and future conditions i.e. Near Future (2024 A), Near Future (2024 B) and Future (2032). Recognizing we are satisfying revised FUS requirements, the buildings will be sprinklered and there will be two hydrants within the development, we respectfully request the Town's Environmental Services approve the proposed development as it relates to available and required fire flow demands. Thank you.

Kevin Sansom, B.A.Sc., P.Eng.
Senior Engineer

Tatham Engineering Limited
115 Sandford Fleming Drive, Suite 200 | Collingwood | Ontario | L9Y 5A6
T 705-444-2565 x2075 | **C** 705-443-0801 | ksansom@tathameng.com | tathameng.com

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2. It is agreed that only those hard copy documents bearing the professional seal and signature of the Tatham Engineering Limited project engineer will govern the work of the project. In the event of any dispute concerning an electronic document, the appropriately dated hard copy will be the document used by Tatham Engineering Limited to govern and resolve the dispute.

From: Heather McGinnity <HMcGinnity@collingwood.ca>
Sent: March 8, 2022 11:19 AM
To: Dan Hurley <dhurley@tathameng.com>; Kevin Sansom <ksansom@tathameng.com>
Cc: Evan Orser <eorser@collingwood.ca>; Justin Teakle <jteakle@collingwood.ca>
Subject: RE: 120 Mountain Rd Fire Flows

CAUTION: This email originated from outside of Tatham Engineering. Do not click on links or open attachments unless you know the sender and have verified the sender's email address and know the content is safe.

Hi Dan and Kevin,

Here is a copy of the report from C3 that identifies the fire flow concerns. Please let me know when you would like to meet again to discuss your proposed solution.

Sincerely,

Heather McGinnity P.Eng.
Manager, Environmental Services
705-445-1581 Ext. 3301 | hmcginnity@collingwood.ca

Due to preventative measures being taken to limit the spread of the COVID19 VIRUS, the Town of Collingwood's offices are currently closed but we remain open for business by phone and by email. Please visit www.collingwood.ca for updates on the Town's status.

-----Original Appointment-----
From: Heather McGinnity
Sent: March 7, 2022 11:34 AM
To: Heather McGinnity; Dan Hurley; Kevin Sansom
Cc: Evan Orser; Justin Teakle
Subject: 120 Mountain Rd Fire Flows
When: March 8, 2022 11:00 AM-11:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

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TATHAM ENGINEERING

PROJECT	120 Mountain Road	FILE	113188
		DATE	2022-04-21
SUBJECT	FUS Fire Flow Calculations Building A	NAME	KRS
		CHECKED	DJH/ANM
REVISIONS	Apirl 26 2022		

Fire Underwriters Survey Fire Flow Calculations - Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated With Option	Choose	Value Used	Unit	Total Fire Flow (L/min)
		Framing Material						
1	Frame Use for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.5	**Non-combustible construction**	**0.8**	-	N/A
			Ordinary Construction	1				
			Non-combustible construction	0.8				
			Fire resistive construction (<2 hrs)	0.7				
			Fire resistive construction (>2 hrs)	0.6				
		Floor Space Area						
2	Type of Occupancy	Type of Occupancy	Single Family	1	**Other (Comm., Ind., etc.)**	**1**	Units	N/A
			Townhouse/Apartment-inform # of units	1				
			Other (Comm., Ind., etc.)	1				
2.1	No. of Storeys	Number of Floors/Storeys in the unit (do not include basement)				**1**	Storeys	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement			m^2	**3590**	m^2	N/A
		Measurement Units	Square Feet (ft^2)	0.09290304	**3,590**			
			Square Metres (m^2)	1				
			Hectares (ha)	10000				
4	Required Fire Flow without Reductions or Increases	Required Fire Flow without Reductions or Increases per FUS:			(FF=220xCxA$^{0.5}$)		L/min	11,000
5	Factors Affecting Burning	**Reductions / Increases Due to Factors Affecting Burning**						
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	**Non-combustible**	**-0.25**	N/A	8,250
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	**Sprinklered**	**-0.4**	N/A	3,300
			Standard hoses for both system & Fire Department	-0.1				
			Supervised system	-0.1				
5.3	Separation Distance Between Units	Exposure distance between units	North Side	> 45 m	**0.00**	**0.1**	N/A	825
			East Side	> 45 m	**0.00**			
			South Side	20.1 to 30 m	**0.10**			
			West Side	> 45 m	**0.00**			
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow of			6,000		L/min (hrs):	2
		Required Volume of Fire Flow of			6,000		L/min (m^3):	720

TATHAM ENGINEERING

PROJECT	120 Mountain Road	FILE	113188
		DATE	2021-11-23
SUBJECT	FUS Fire Flow Calculations Building B	NAME	JM
		CHECKED	DJH/ANM
REVISIONS	April 26 2022		

Fire Underwriters Survey Fire Flow Calculations - Long Method

Calculation Based on 1999 Publication "Water Supply for Public Fire Protection" by Fire Underwriters Survey (FUS).

Step	Description	Term	Options	Multiplier Associated With Option	Choose	Value Used	Unit	Total Fire Flow (L/min)
1	Frame Use for Construction of Unit	**Framing Material**						
		Coefficient related to type of construction (C)	Wood Frame	1.5	**Non-combustible construction**	**0.8**	-	N/A
			Ordinary Construction	1				
			Non-combustible construction	0.8				
			Fire resistive construction (<2 hrs)	0.7				
			Fire resistive construction (>2 hrs)	0.6				
2	Type of Occupancy	**Floor Space Area**						
		Type of Occupancy	Single Family	1	**Other (Comm., Ind., etc.)**	**1**	Units	N/A
			Townhouse/Apartment-inform # of units	1				
			Other (Comm., Ind., etc.)	1				
2.1	No. of Storeys	Number of Floors/Storeys in the unit (do not include basement)				**1**	Storeys	
3	Floor Area	Total Floor Area (A) - for all storeys excluding basement			m^2	**2380**	m^2	N/A
		Measurement Units	Square Feet (ft^2)	0.09290304	**2,380**			
			Square Metres (m^2)	1				
			Hectares (ha)	10000				
4	Required Fire Flow without Reductions or Increases	Required Fire Flow without Reductions or Increases per FUS:			$(FF=220xCxA^{0.5})$		L/min	9,000
5	Factors Affecting Burning	**Reductions / Increases Due to Factors Affecting Burning**						
5.1	Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	**Non-combustible**	**-0.25**	N/A	6750
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete automatic sprinkler protection	-0.3	**Sprinklered**	**-0.4**	N/A	-2,700
			Standard hoses for both system & Fire Department	-0.1				
			Supervised system	-0.1				
5.3	Separation Distance Between Units	Exposure distance between units	North Side	20.1 - 30 m	**0.10**	**0.3**	N/A	2,025
			East Side	20.1 - 30 m	**0.10**			
			South Side	20.1 - 30 m	**0.10**			
			West Side	> 45 m	**0.00**			
6	Required Fire Flow, Duration and Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow of 6,000 L/min (hrs):						2
		Required Volume of Fire Flow of 6,000 L/min (m^3):						720