

Jp2g No. 19-7059D

April 8, 2025

Village of Merrickville-Wolford
317 Brock Street West
P.O. Box 340
Merrickville, ON K0G 1N0

Attn Ms. Plumley

**Re Planning Report – Allocation of Uncommitted Reserve
Capacity of Sewage Treatment Plant**

Dear Ms. Plumley:

I am pleased to provide you with this report outlining the options available to Council in proceeding with the allocation of the remaining uncommitted reserve capacity of the Village Sewage Treatment Plant. This report provides recommendations to Council, consistent with MECP policy/regulations and best practices.

Based on the January 21, 2025, report prepared by Andrew MacDonald of Jp2g Consultants Inc. presented to the February 10, 2025, Committee of Whole, the Village sewage treatment plant has 41.8 m³/day uncommitted treatment capacity, which is equivalent to 119 people or 53 residential units (at 2.25 persons per household) (Attachment #1). Allocating the remaining 53 residential units will theoretically take the plant to 100% of the rated plant capacity. When plants reach 80% capacity, municipalities are to explore options for expansion/increased capacity of the plant and for managing future allocation of capacity.

At the March 10, 2025, Committee of Whole meeting, Council was presented with a chart which itemized approved development, allocated development, infill lots, along with McLean Landing Phase 2A and 2B greenfield development (Attachment #2). This chart presents Council with various options for consideration.

From Attachment #2 it is demonstrated that the treatment plant will theoretically operate at 85% capacity when approved development, allocated development and infill lots are accounted for. This does not account for servicing the north side of the Rideau River, treatment of septage or any greenfield development.

Attachment #2 also identifies that if McLean Landing Phase 2A was included, along with reserve allocation for the north side servicing and septage treatment would theoretically take the sewage treatment plant to 100% of the rated capacity. The chart also presents an option where both McLean Landing Phase 2A and 2B are included but that the reserve allocation for the north side and septage treatment are removed. This scenario would represent 94% of the rated capacity of the plant. It is important to acknowledge that there are additional greenfield development projects before Council, above and beyond McLean Landing Phase 2, that should be considered.



At the March 10 Committee of Whole, it was agreed that Council would undertake a Servicing Master Plan following the Municipal Class Environmental Assessment process, as part of its commitment to explore options for expansion/increased capacity of the sewage treatment plant to accommodate future growth. Greenfield developments will be included as part of the analysis of the existing systems under future demands and to identify system expansion and upgrade requirements. Property owners will be consulted as part of the master plan process.

Recommendations

Staff presents the following recommendations consistent with MECP policy/regulations and best practices for Council's consideration:

1. Given the nature of the Village's current MECP approval of the sewage treatment plant, it is recommended that only those "allocation options" which take into account the servicing of the north side of the river and/or the treatment of septage be supported by Council until such time as the Servicing Master Plan is completed and the preferred servicing method to address growth has been determined and/or until additional capacity is created by addressing stormwater infiltration/treatment plant efficiencies.
2. Until such time as the Servicing Master Plan is completed and the preferred servicing method to address growth has been determined and/or until additional capacity is created by addressing stormwater infiltration/treatment plant efficiencies, Council should defer consideration of sanitary allocation to all proposed greenfield developments (i.e. McLean Landing Phase 2a & 2b; Collar Hill Development; Southside of Lewis Street). These projects will be included in the Servicing Master Plan analysis.
3. That Council support the allocation of uncommitted reserve capacity to residential infill and intensification projects within the Village, on a case-by-case basis, up to the equivalent of 18 residential units.

All of which is respectfully submitted.

Sincerely,

Jp2g Consultants Inc.

ENGINEERS ▪ PLANNERS ▪ PROJECT MANAGERS

A handwritten signature in black ink, appearing to read 'F. Symon', with a long horizontal flourish extending to the right.

Forbes Symon, MCIP, RPP

Senior Planner

Cc Neil Caldwell, Jp2g Consultants Inc.
Chad Keen, Village Manager of Public Works



Attachment #1



Jp2g No. 19-5031B

January 21, 2025

Village of Merrickville-Wolford
317 Brock Street West
Merrickville, ON
K0G 1N0

Attention: Ms. Darlene Plumley, CAO

Re: **Village of Merrickville Uncommitted Reserve Capacity Calculations**

Dear Darlene:

Jp2g has performed a review of the capacity of the Merrickville Wastewater Treatment Plant to confirm reserve capacity available for future development. The reserve capacity has been calculated according to the MECP "Procedure D-5-1: Calculating and Reporting Uncommitted Reserve Capacity at Sewage and Water Treatment Plants" (March 1995). This procedure involves determining the rated capacity of the plant and then subtracting the average flows of the past 5 years and the number of lots approved for development (committed) and their associated flows.

Plant Capacity:

The Certificate of Approval for Municipal and Private Sewage Works # 1121-7YRQLF issued January 18, 2010 is for a rated capacity of **800 m³/day** and a peak flow rate of 3,800 m³/day.

Past Flows:

The following flows recorded at the plant influent flow meter have been reported by OCWA:

PLANT FLOW SUMMARY			
Year	Plant Average (m ³ /day)	Peak (m ³ /day)	Total Precipitation (mm/year)
2014	625	2706	
2015	516	1403	
2016	556	1783	
2017	810	3058	
2018	590	1830	
2019	577	2257	
2020	618	1743	861
2021	473	1635	710
2022	443	1692	909
2023	561	3129	961
2024	497	1240	877
5-year average	518 m³/day		

Hydraulic Reserve:

Hydraulic reserve is calculated from the MOE Procedure D-5-1 as follows: Plant capacity (800 m³/day) – 5 Year Average Day Flow (518 m³/day) = **282 m³/day**



Committed Reserve:

The attached spreadsheet, Table 1, provides a property parcel breakdown of vacant lots within the serviced south side area. The noted north side lot counts are based on a desk top assessment. The MAP# numbering at the left of the vacant lots in the tables refers to the corresponding Infill Lands Merrickville map, also attached.

Table 1 includes the allocation for connections based on a literal interpretation of MECP D-5-1 at one connection per lot and a calculation based on the submitted development plan where available or a single-family allocation where there is no accepted plan. An allowance of 6.5 m³/d for septage based on the 2009 preliminary design brief is included.

There are 176 connections in draft approved subdivisions and/or unconnected lots, with an estimated population of 667.7 people (see Table 1). Projected flows for this population is based on 0.35 m³/day, per MECP Design Guidelines for Sewage Works 2008. Resulting flows are:

Table 1: 667.7 people x 0.35m³/day/cap = **233.7 m³/day**

Uncommitted Capacity

Subtracting the committed capacity and the septage allowance from the hydraulic reserve determines the final uncommitted capacity available for development:

Table 1: 282 m³/day hydraulic reserve - 233.7 m³/day committed reserve - 6.5 m³/day septage = **41.8 m³/day**

Summary:

Based on the calculations completed in Table 1, the uncommitted reserve capacity is approximately 41.8 m³/day, which equates to 119 additional people or 53 units at 2.25 persons per unit which would result in an allocation of 100% of the rated plant capacity. In recent discussions with MECP it was noted that once the plant reaches 80% of its rated capacity then a class EA process should be initiated to consider options for expanding and/or managing capacity.

Sincerely,

Jp2g Consultants Inc.

Andrew MacDonald, P.Eng. C.E.M.

Senior Mechanical Engineer

- cc. Forbes Symon, MCIP, RPP Senior Planner- Jp2g Consultants Inc.
- Chad Kean, Village of Merrickville-Wolford
- Julia McCaugherty-Jansman, Village of Merrickville-Wolford

- Encl. Table 1 Village of Merrickville Sewage Allocation Approved Plus Existing Vacant Lots at One Single Family Dwelling
- Map Infill Merrickville December 2, 2024



TABLE 1. VILLAGE OF MERRICKVILLE SEWAGE ALLOCATION APPROVED PLUS EXISTING VACANT LOTS AT ONE SINGLE FAMILY DWELLING

Jan. 16, 2025

MAP #	Plant Capacity	Connections	D-5-1 Total	Single 3.4	Semi- detached 2.7	Duplex 2.3	Townhouse 2.7	Apartment					Other 1	Total Population	Notes
								Bachelor 1.4	1 Bedroom 1.4	2 Bedroom 2.1	3 Bedroom 3.1	Average 1.8			
	Merrickville Grove Townhouses (Allocated)	84	84				84						226.8	in process	
	Merrickville Grove Apartment (Allocated)	1	1								15		27		
	Conway Lewis Street Townhouses (Allocated)	14	14				14						37.8	in process	
	Conway Lewis Street Apartment (Allocated)	1	1					16	27				79.1	in process	
	105 Drummond (Allocated)	1	1							6		4	16.6	in process	
	206 Brock East (Allocated)	2	2	1	2								8.8	in process	
	224 Lewis	1	2		4								10.8	in process	
	212 Main Street	1	1					2	4			8	19.2	in process	
1	217 Main Street East	1	1	1									3.4	no intensification	
2	218 Main Street East	1	1	1									3.4	no intensification	
3	216 Wellington West	1	1	1									3.4	no intensification	
4	205 Wellington East	1	1	1									3.4	no intensification	
5	300 Wellington East	1	1	1									3.4	no intensification	
6	315 Wellington East	1	1	1									3.4	no intensification	
7	350 Wellington East	1	1	1									3.4	no intensification	
8	Rear Charlotte 1-4	1	1	1									3.4	no intensification	
9	312 Brock West	1	1	1									3.4	no intensification	
10	405 Drummond West	1	1	1									3.4	no intensification	
11	418 Lewis West	1	1	1									3.4	no intensification	
12	116 Lewis West	1	1	1									3.4	no intensification	
	North Side of Rideau River Existing Res	49	49	49									166.6		
	North Side of Rideau River Existing Comy/Ind	6	6									24	24	assume 4 per equivalent	
	North Side of Rideau River Vacant	3	3	3									10.2		
	Total Committed		176	65	6	0	98	0	18	37	0	15	36	667.7	
	Daily flow based on 1.34m3/connection		235.84												
	Daily flow based on 0.35m3/c/d													233.70	m3/d
	Current 5yr average flow		518											518	m3/d
	Uncommitted Reserve		46.16											48.31	m3/d
	Less Septage from 2009 Brief		6.5											6.5	m3/d
	Uncommitted Reserve with Septage		39.66											41.81	m3/d
														119	people



Attachment #2

Plant Capacity = 800m³/day
5 Year Average Daily Flow = 518m³/day
Available Reserve Capacity = 282m³/day

Approved Developments

	Apartments	Houses	Population	Daily Flow in m ³	% Plant Capacity
Merrickville Grove Townhomes		83	224.1	78.44	9.81%
Merrickville Grove Apartments	15		27	9.45	1.18%
Lewis St. Townhomes Phase 1		14	37.8	13.23	1.65%
Total	15	97	288.9	101.12	12.64%

Allocated Developments (undergoing approval process)

	Apartments	Houses	Population	Daily Flow in m ³	% Plant Capacity
Lewis St. Apartments	43		79.1	27.69	3.46%
185 Drummond St. Apartments	10		16.6	5.81	0.73%
206 Brock St. Semi's		3	8.8	3.08	0.39%
224 Lewis St. Semi's		4	10.8	3.78	0.47%
212 Main St. Apartments	14		19.2	6.71	0.84%
Total	67	7	134.5	47.07	5.88%

Infill Lots (single family home could be built with no required planning approval)

	Apartments	Houses	Population	Daily Flow in m ³	% Plant Capacity
217 Main St.		1	3.4	1.19	0.15%
218 Main St.		1	3.4	1.19	0.15%
216 Wellington St. W		1	3.4	1.19	0.15%
205 Wellington St. E		1	3.4	1.19	0.15%
300 Wellington St. E		1	3.4	1.19	0.15%
315 Wellington St. E		1	3.4	1.19	0.15%
350 Wellington St. E		1	3.4	1.19	0.15%
Rear Charlotte 1-4		1	3.4	1.19	0.15%
312 Brock St. W		1	3.4	1.19	0.15%
405 Drummond St. W		1	3.4	1.19	0.15%
418 Lewis St. W		1	3.4	1.19	0.15%
116 Lewis St. W		1	3.4	1.19	0.15%
Total	0	12	40.8	14.28	1.79%

McLean Landing Phase 2A

	Population	Daily Flow in m ³	% Plant Capacity
36 Townhomes	97.2	34.02	4.25%
4 Semi's	10.8	3.78	0.47%
Total	108	37.8	4.73%

McLean Landing Phase 2B

	Population	Daily Flow in m ³	% Plant Capacity
31 Townhomes	83.7	29.30	3.66%
4 Semi's	10.8	3.78	0.47%
1 Single	3.4	1.19	0.15%
Total	94.5	33.08	4.13%

	Daily Flow in m ³	% Plant Capacity
Total North Side Allocation	70.28	8.79%
Septage Per 2009 Brief	6.5	0.81%
Total	76.78	9.60%

	New Apartments	New Homes	Population	Daily Flow in m ³
Average Daily Flow of 518m ³ represents plant operating at 64.8% capacity	0	0	938	518
Average Daily Flow plus approved developments represents plant operating at 77.4% capacity	15	97	1226.9	619.12
Average Daily Flow plus approved developments and allocated developments represents plant operating at 83.3% capacity	82	104	1361.4	666.19
Average Daily Flow plus approved developments, allocated developments and infill lots represents plant operating at 85.1% capacity	82	116	1402.2	680.47
Average Daily Flow plus approved developments, allocated developments, infill lots and McLean Landing Phase 2A represents plant operating at 89.8% capacity	82	156	1510.2	718.27
Average Daily Flow plus approved developments, allocated developments, infill lots and McLean Landing Phase 2A & B represents plant operating at 93.9% capacity	82	192	1604.7	751.35
Average Daily Flow plus approved developments, allocated developments, infill lots, McLean Landing Phase 2A, North side and Septage represents plant operating at 99.4% capacity	82	208	1687	795.05

Alternative Scenario

Average Daily Flow plus approved developments, allocated developments, infill lots and McLean Landing Phase 2A & B represents plant operating at 93.9% capacity	82	192	1604.7	751.35
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Jan. 2025 flow was 8299m³ over 31 days, which represents an average flow of 268m³/day. When subtracting this from the 5 year average flow of 518m³/day it identifies 250m³/day of infiltration. This represents the potential for approximately 250 new homes.

Notes

- The above calculations represent the potential for a 5 to 10 year buildout timeline to construct 156 new homes and 82 new rental units, while keeping the plant operating below 90% capacity.
- Aligns with JP2g's planning recommendations as it includes the development of infill lots.
- This would help to provide needed revenue and afford the necessary time to address infiltration issues in the existing infrastructure which would in turn free up additional capacity for future development.
- This approach also keeps sufficient capacity in reserve for the future inclusion of the North side and septage from the 2009 brief
- Aligns with multiple criteria of the Villages 2022 Sewage Allocation Policy
- The addition of wastewater from a watertight system will reduce the infiltration dilution levels and aid in more efficient plant operation.