

CITY OF BROCKVILLE Sewage Collection System

2023 ANNUAL REPORT

Peter Raabe, P. Eng., Director of Engineering and Infrastructure
Brandon Goddard, Supervisor – Wastewater Systems Division

DATE: March 19, 2024

EXECUTIVE SUMMARY

The enclosed 2023 Annual Report is prepared in accordance with the Environmental Compliance Approval (ECA) for the City of Brockville's Sewage Collection System for submission to the Ontario Ministry of the Environment, Conservation and Parks (MECP). A copy of this report is also made available at City Hall and on the City's website for public viewing. Included with this report is a summary of all monitoring data, operational issues, maintenance issues, complaints, system alterations, spills and efforts made to reduce collection system overflows, spills or bypasses.

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1. INTRODUCTION

We are pleased to present the 2023 Sewage Collection System Annual Report. The purpose of this report is to provide a summary on the sewage collection system for the period January 1st to December 31st, 2023, and is a legal requirement under Schedule E Section 4.6 of Environmental Compliance Approval (ECA) number 152-W601, made under section 20.3 of Part II.1 of the Environmental Protection Act R.S.O. 1990, c. E19 (Environmental Protection Act). This Annual Report must be forwarded to the Ontario Ministry of the Environment, Conservation and Parks (MECP) no later than March 31st, 2024.

2. SYSTEM DESCRIPTION

The City of Brockville Sewage Collection System consists of works for the collection and transmission of sewage, consisting of 113 kms of sewers including trunk sewers, separate sewers, forcemains and twelve (12) sewage pumping stations with discharge into the City of Brockville Water Pollution Control Centre.

3. APPROVALS AND CERTIFICATION

3.1 Environmental Compliance Approval

The City of Brockville's Sewage Collections System operates under Environmental Compliance Approval (ECA) Number 152-W601. The system is a Class III system in accordance with the Licensing of Sewage Works Operators Regulation (O. Reg. 129/04) made under the Ontario Water Resources Act.

3.2 Operator Certification

The Licensing of Sewage Works Operators Regulation (O. Reg. 129/04) requires owners to ensure that every operator employed in the facility holds a license applicable to that type of facility (s. 14 (1)). The City continues to ensure all operators employed at the WPCC hold a valid license for its facility.

O. Reg. 129/04 also requires the designation of an overall responsible operator (ORO) for the facility and that the ORO holds a license applicable to and of the same class as or higher than the class of the facility or one level below for no more than 150 days in a twelve month period. Brandon Goddard, Supervisor of Wastewater Systems, holds a Class 4 Wastewater Treatment License and Class 3 Wastewater Collection License and Patrick Brown, Chief Operator – Wastewater Systems holds a Class 3 Wastewater Treatment License and Class 3 Wastewater Collection License. Brandon and Patrick are on an ORO rotation schedule.

4. REPORTING REQUIREMENTS

4.1 Reporting Requirements

As a requirement of Environmental Compliance Approval (ECA) Number 152-W601, Schedule E Section 4.6 an annual performance report shall be prepared for the authorized system. The report shall be submitted to the MECP Director and the MECP District Manager on or before March 31st of each year and covers the period from January 1st to December 31st of the preceding calendar year. The report shall contain, but shall not be limited to, the following information:

- (a) ***A summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized system or system operations;***

N/A

- (b) ***A summary of any operating problems encountered and corrective actions taken;***

Nothing to report

The use of an operational logbook, as required under the Licensing of Sewage Works Operators Regulation (O. Reg. 129/04, s. 19 (1)), to record departures from normal operating procedures, unusual or abnormal conditions, and equipment that was taken out of service, ceased to operate, underwent maintenance or repair, is kept by the facility.

- (c) ***A summary of all calibration, maintenance, and repairs carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System;***

Appendix A: 2023 Capital Program contains the 2023 Capital projects, as well as some previous Capital projects that were carried over to 2023 for the WPCC, pumping stations and collection system. In 2023 the City allocated \$726,000 in Capital to replace various pieces of equipment at the WPCC and pumping stations that were nearing the end of their life cycle. These projects have been integral to refurbishing or replacing aging assets in order to maintain efficient operation and redundancy. This program utilizes risk analysis, maintenance costs and replacement analysis to give the best 10-year model possible. As always, not all risks are known and sometimes unforeseen breakdowns do occur. Excellent coordination between staff and various contractors and suppliers allows the work to be assessed and performed while keeping on track from a budget standpoint.

Additional preventative maintenance summary is available via the City's WorkTech maintenance program.

- **Main Line repairs** – 1 spot repair to a sanitary sewer main was made
- **Lateral repairs** – 10 sanitary lateral repairs made
- **Maintenance Hole Structure Repairs** – Conducted in house through the Public Works Division
- **CCTV Camera Inspections** – Contracted to outside companies through Engineering Division, 3,849 meters were completed in 2023
- **Calibration of Flow Meters** - Conducted as per regular annual maintenance by a third-party qualified contractor and results are as follows:

Meter	Location	Calibration Date	Calibration Result	Comments
E & H Promag 400	Leachate Pumping Station High Lift	September 21, 2023	Pass	None
E & H Promag 400	Leachate Pumping Station Overflow	September 21, 2023	Pass	None

(d) A summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints;

The number of complaints received during the Reporting Period, regarding the Wastewater Collection System, was one. If applicable, complaints are itemized below with corresponding steps taken to address the complaints.

Date of Complaint	Address	Complaint	Steps Taken to Address Complaint
November 13, 2023	31 Murray St.	Odour	<ul style="list-style-type: none"> • Cleaned catch basin • Flushed sanitary mainline • Emailed investigation & remedy to complainant

- (e) ***A summary of all alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat;***

Appendix B Summary of Alterations contains the 2023 Alterations to the Authorized System with the reporting period that are authorized by this Approval. None of these are considered a significant drinking water threat.

- (f) ***A summary of all Collection System Overflow(s) and Spills(s) of Sewage, including:***
- a. Dates;***
 - b. Volumes and durations;***
 - c. If applicable, loadings for total suspended solids, BOD, total phosphorus and total kjeldahl nitrogen and sampling results for E. coli;***
 - d. Disinfection, if any; and***
 - e. Any adverse impact(s) and any corrective actions, applicable***

The Brockville Main Pumping Station, identified as SANPS01 – Main Pumping Station in ECA Number: 152-W601, experienced 3 separate Spills for the 2023 year. All 3 events were due to heavy rain events, with one during a reduced capacity for flow due to 1 pump being out of service.

A summary of the events can be found in **Appendix C: Collection System Overflows and Main Pumping Station Spill Analysis**

- (g) ***A summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable;***
- a. A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.***
 - **Wet well Cleanouts** - Through the City's Worktech Program, a biannual cleaning program is scheduled for the 12-pumping station wet wells of the Brockville collection system. Each wet well is cleaned out with the use of a Vacuum truck, with the purpose to remove sand, grit and other items that decrease the available wet well size.
 - **Main Pumping Station Design** – Currently the City is undertaking a design of a new Main Pumping Station which will, among other items, increase wet well capacity and pumping capacity.

- **Flow Monitoring** – Through the City’s Engineering Division, a flow monitoring program will be undertaken to study the City’s collection system and to identify possible Inflow and Infiltration (I&I) areas.

b. Details of the establishment and maintenance of a PPCP, including a summary of progresses compared to the PPCP’s timeline.

N/A

c. An assessment of the effectiveness of each action taken.

N/A

d. An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.

N/A

e. Public reporting approach including proactive efforts.

N/A

(h) Any other information the Director and/or District Manager requires from time to time.

Appendix D: 2012-2021 Wet Weather vs Dry Weather Flows contains the comparison of wet weather vs dry weather from the ten (10) year period starting January 1st, 2012 and ending December 31st, 2021 as stipulated in Environmental Compliance Approval (ECA) number 152-W601 Section 8.0.

5. KEY CONTACTS AND REFERENCES

For further information on this report, enquiries on a related topic, or to arrange a plant tour of the wastewater treatment facilities, please contact:

Peter Raabe, P. Eng.
Director of Engineering & Infrastructure
613-342-8772 ext. 3257
E-mail: praabe@brockville.com

Brandon Goddard
Supervisor – Wastewater Systems
613-342-8772 ext. 8301
E-mail: bgoddard@brockville.com

Ministry of the Environment, Conservation and Parks
Ontario Water Wastewater Certification Office

www.ene.gov.on.ca
www.owwco.ca

Appendix A

2023 CAPITAL PROGRAM

<u>PROJECT NAME:</u>	Water Pollution Control Centre Equipment Replacement Program	<u>YEAR PROPOSED</u> <u>ITEM NO:</u>	2023 6.2
<u>LOCATION:</u>	Sewage Treatment Plant, Pumping Stations & Collection System		
<u>HISTORY:</u>	LENGTH OF PROJECT: YEAR FIRST INTRODUCED:	Ongoing - through Sewer Rate Reserve 1997	
<u>SCOPE:</u>	Replacement of Capital Equipment for the Water Pollution Control Centre and associated structures and pumping stations. This is to be accomplished from the Sewer Rate Reserve Fund.		
		Budget	
	<u>Dewatering</u> Cake Conveyor System Refurbishment		500,000
	<u>WPCC BUILDING AND PROPERTY:</u> Substation Maintenance		15,000
	Front Gate		35,000
	OC Generator Control Box		25,000
	<u>UV Building</u> UV Hydraulic Ram		33,000
	<u>Pumping Stations</u> Arc Flash Deficiencies		25,000
	PS Pump Rebuilds		18,000
	Thomas Street PS Forcemain		75,000
			<u><u>726,000</u></u>
<u>WHY REQUIRED:</u> Advantages & Benefits	See the attached 10 Year Plan - Water Pollution Control Centre Capital Needs Routing such purchases through the WPCC Sewer Rate Reserve Fund provides the opportunity to account for all Capital Costs associated with the Water Pollution Control Centre in one place and to finance such work through the Sewer Use Rate User Fee. As well it allows the expenditure to take place while keeping the tax rate smooth.		
	Water Pollution Control Centre	<u>Year Proposed</u>	<u>Budget</u>
			(Remaining) (Original)
	<u>WPCC BUILDING AND PROPERTY:</u> Concrete Structure @ Entry to River (Rebuild)	2016	206,539 120,000
	HVAC Systems 900 Admin - Upper - Re-Engineering & Balancing	2022	40,000 40,000
	HVAC Systems - Bldg's 100, 700, 800	2022	13,373 25,000
	<u>Digester Operations:</u> Digester #1 Clean out	2021	70,000 70,000
	<u>PUMPING STATIONS:</u> Main Pump Station Design	2016	600,000 400,000
	<u>OTHER PROJECT:</u> Engineering - Rated Capacity Study	2021	15,134 20,000
	New Vehicle Purchase (3/4 Ton)	2021	57,600 57,600
	Purchase of 2500 Series Pick-up Truck	2022	65,000 65,000

PREPARED BY (PROJECT MANAGER):
DATE:

Brandon Goddard
April 11, 2023



Ministry of the Environment,
Conservation and Parks

Form SS1
Record of Future Alteration Authorized
for Separate Sewers/Nominally
Separate Sewers/Forcemains

RETAIN COMPLETED FORM - DO NOT SEND TO THE MINISTRY

Part 1 - Environmental Compliance Approval Number

(Insert the Environmental Compliance Approval number authorizing the alteration of Separate Sewers/Nominally Separate Sewers/Forcemains)

152-W601

Part 2 - Description of separate sewer/nominally separate sewer/force main alteration (Use attachments if required)

This application is in support of continued development of the site at 468 Laurier Blvd. This project will complete the existing subdivision and include residential units fully serviced with sanitary and storm services. The work will include installation of new sanitary and storm sewers. Extending from the existing buried infrastructure at Flanders Rd and Laurier Blvd for approximately 410 m to complete the underground servicing for the site. Previous approved C of A expired CofA# 3861-64ELRW.

The description shall include:

- 1) A brief description above of the undertaking (e.g. street name(s); subdivision name; project name); and
- 2) An attachment including plan and profile drawings identifying at a minimum:
 - a) location(s) of the undertaking (e.g. showing street names, easements, discharge points, slope (separate sewer only), etc.); and
 - b) nominal diameter of the sewers/force main(s), associated with the alteration.

Part 3 - Verification by Licensed Engineering Practitioner

I hereby verify that I am a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario and the design of the separate sewer/nominally separate sewer/force main alteration:

- 1) Has been prepared by a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario;
- 2) Has been documented in a design report and any other applicable design forms;
- 3) Has been designed only to collect and transmit sewage and has not been designed to treat sewage;
- 4) Satisfies the design criteria set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documented the reasons for this opinion; and
- 5) Is consistent with, or otherwise addresses, the design objectives contained within the Ministry of the Environment, Conservation and Parks publication "Design Guidelines for Sewage Works", as amended;

Name (Print)	PEO Licence Number	
Colin Jardine	100085569	
Signature		Date (yyyy/mm/dd)
		2023/04/13

Part 4 - Verification by Owner

I hereby verify that:

- 1) The maximum wastewater discharge by users who will be serviced by the addition, modification, replacement or extension of the separate sewer/nominally separate sewer/force main will not result in:
 - a) An exceedance of the municipal sewage collection system hydraulic capacity, sewage treatment plant uncommitted reserve hydraulic capacity, or the downstream pumping station capacity;
 - b) Adverse effects;
 - c) Any increase in collection system overflows that is not offset by measures, and have documented any offset measures used; or,
 - d) Any increase in the frequency and/or volume of Sewage Treatment Plant (STP) bypasses or STP overflows that is not offset by measures, and have documented any offset measures used. (Alternatively, if the wastewater flows to a STP not owned by the Owner, then the wastewater volume or flow rate is as agreed to with the Owner of the STP.)

- 2) The separate sewer, nominally separate sewer or forcemain alteration will:
 - a) Not cause overflows or backups, nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g. basements) within the municipal sewage collection system or any municipal sewage collection system connected to it; and
 - b) Provide smooth flow transition to existing gravity sewers.
- 3) An assessment of the proposed works has been completed to determine if the works pose a significant drinking water threat. The proposed works do not pose any threats to sources of drinking water or design includes features that mitigate the threat to sources of drinking water, such as those included in: Ministry's Standard Operating Policy for Sewage Works, as amended from time to time; and Source Protection Plan policies pertaining to the works;
- 4) The separate sewer/nominally separate sewer/forcemain alteration is wholly located within the municipal boundary over which the owner has jurisdiction except where there is an agreement existed between municipalities;
- 5) The owner consents to the separate sewer/nominally separate sewer/forcemain alteration; and
- 6) I am an authorized representative of the owner to complete this verification.

Name of Owner (Print) City of Brockville	Name of Owner Representative (Print) Peter Raabe
Signature Peter Raabe	Date (yyyy/mm/dd) 2023/06/01

Part 5 - Post Construction Verification by Owner for Inspection and Testing

I hereby verify that:

- 1) The separate sewer, nominally separate sewer or forcemain alteration has complied with inspection and testing requirements set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documentation of the inspection and testing results.

Name of Owner (Print) City of Brockville	Name of Owner Representative (Print)
Signature	Date (yyyy/mm/dd)

Note: Parts 1 to 4 above shall be completed before construction.
Part 5 is to be completed after the inspection and testing have been undertaken.



Ministry of the Environment,
Conservation and Parks

Form SS1
Record of Future Alteration Authorized
for Separate Sewers/Nominally
Separate Sewers/Forcemains

RETAIN COMPLETED FORM - DO NOT SEND TO THE MINISTRY

Part 1 - Environmental Compliance Approval Number

(Insert the Environmental Compliance Approval number authorizing the alteration of Separate Sewers/Nominally Separate Sewers/Forcemains)

152- W601

Part 2 - Description of separate sewer/nominally separate sewer/forcemain alteration (Use attachments if required)

Proposed sanitary and storm sewer replacement on Sherwood Street from Granite Street to King Street. The sanitary sewer is proposed to be 200 mm diameter PVC pipe. The storm sewer is proposed to be 250 mm and 375 mm diameter pipe.

The description shall include:

- 1) A brief description above of the undertaking (e.g. street name(s); subdivision name; project name); and
- 2) An attachment including plan and profile drawings identifying at a minimum:
 - a) location(s) of the undertaking (e.g. showing street names, easements, discharge points, slope (separate sewer only), etc.); and
 - b) nominal diameter of the sewers/forcemain(s), associated with the alteration.

Part 3 - Verification by Licensed Engineering Practitioner

I hereby verify that I am a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario and the design of the separate sewer/nominally separate sewer/forcemain alteration:

- 1) Has been prepared by a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario;
- 2) Has been documented in a design report and any other applicable design forms;
- 3) Has been designed only to collect and transmit sewage and has not been designed to treat sewage;
- 4) Satisfies the design criteria set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documented the reasons for this opinion; and
- 5) Is consistent with, or otherwise addresses, the design objectives contained within the Ministry of the Environment, Conservation and Parks publication "Design Guidelines for Sewage Works", as amended;

Name (Print)	PEO Licence Number
Peter E. Raabe, P.Eng.	90410325
Signature	Date (yyyy/mm/dd)
	2023/06/29


Part 4 - Verification by Owner

I hereby verify that:

- 1) The maximum wastewater discharge by users who will be serviced by the addition, modification, replacement or extension of the separate sewer/nominally separate sewer/forcemain will not result in:
 - a) An exceedance of the municipal sewage collection system hydraulic capacity, sewage treatment plant uncommitted reserve hydraulic capacity, or the downstream pumping station capacity;
 - b) Adverse effects;
 - c) Any increase in collection system overflows that is not offset by measures, and have documented any offset measures used; or,
 - d) Any increase in the frequency and/or volume of Sewage Treatment Plant (STP) bypasses or STP overflows that is not offset by measures, and have documented any offset measures used. (Alternatively, if the wastewater flows to a STP not owned by the Owner, then the wastewater volume or flow rate is as agreed to with the Owner of the STP.)

Appendix B

- 2) The separate sewer, nominally separate sewer or forcemain alteration will:
 - a) Not cause overflows or backups, nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g. basements) within the municipal sewage collection system or any municipal sewage collection system connected to it; and
 - b) Provide smooth flow transition to existing gravity sewers.
- 3) An assessment of the proposed works has been completed to determine if the works pose a significant drinking water threat. The proposed works do not pose any threats to sources of drinking water or design includes features that mitigate the threat to sources of drinking water, such as those included in: Ministry's Standard Operating Policy for Sewage Works, as amended from time to time; and Source Protection Plan policies pertaining to the works;
- 4) The separate sewer/nominally separate sewer/forcemain alteration is wholly located within the municipal boundary over which the owner has jurisdiction except where there is an agreement existed between municipalities;
- 5) The owner consents to the separate sewer/nominally separate sewer/forcemain alteration; and
- 6) I am an authorized representative of the owner to complete this verification.

Name of Owner (Print) Corporation of the City of Brockville	Name of Owner Representative (Print) Phil Wood, P.Eng.
Signature 	Date (yyyy/mm/dd) 2023/07/03

Part 5 - Post Construction Verification by Owner for Inspection and Testing

I hereby verify that:

- 1) The separate sewer, nominally separate sewer or forcemain alteration has complied with inspection and testing requirements set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documentation of the inspection and testing results.

Name of Owner (Print)	Name of Owner Representative (Print)
Signature	Date (yyyy/mm/dd)

Note: Parts 1 to 4 above shall be completed before construction.
Part 5 is to be completed after the inspection and testing have been undertaken.

RETAIN COMPLETED FORM - DO NOT SEND TO THE MINISTRY

Part 1 - Environmental Compliance Approval Number

(Insert the Environmental Compliance Approval number authorizing the alteration of Separate Sewers/Nominally Separate Sewers/Forcemains)

112-W601

Part 2 - Description of separate sewer/nominally separate sewer/force main alteration (Use attachments if required)

The 300 mm diameter gravity sanitary sewer network within the Wellings of Brockville development is proposed to extend for approximately 10 m from the northwest property boundary to Chelsea Street where a new maintenance hole (SAN 2) will be established. From SAN 2, approximately 30.4 m of 375 mm diameter PVC pipe will extend and connect to the existing sanitary network (EX.SAN) within Chelsea Street. All sanitary servicing within the private development has been submitted under ECA Reference No. 4671-CQ5J8M. See attachment 160401602-SSP - SSP-5_Alteration markup.pdf.

The description shall include:

- 1) A brief description above of the undertaking (e.g. street name(s); subdivision name; project name); and
- 2) An attachment including plan and profile drawings identifying at a minimum:
 - a) location(s) of the undertaking (e.g. showing street names, easements, discharge points, slope (separate sewer only), etc.); and
 - b) nominal diameter of the sewers/force main(s), associated with the alteration.

Part 3 - Verification by Licensed Engineering Practitioner

I hereby verify that I am a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario and the design of the separate sewer/nominally separate sewer/force main alteration:

- 1) Has been prepared by a Licensed Engineering Practitioner who is licensed to practice in the Province of Ontario;
- 2) Has been documented in a design report and any other applicable design forms;
- 3) Has been designed only to collect and transmit sewage and has not been designed to treat sewage;
- 4) Satisfies the design criteria set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documented the reasons for this opinion; and
- 5) Is consistent with, or otherwise addresses, the design objectives contained within the Ministry of the Environment, Conservation and Parks publication "Design Guidelines for Sewage Works", as amended;

Name (Print)	PEO Licence Number
Peter Moroz	90493552
Signature	Date (yyyy/mm/dd)
Peter Moroz Digitally signed by Peter Moroz Date: 2023.05.02 14:47:57 -04'00'	2023/05/02

Part 4 - Verification by Owner

I hereby verify that:

- 1) The maximum wastewater discharge by users who will be serviced by the addition, modification, replacement or extension of the separate sewer/nominally separate sewer/force main will not result in:
 - a) An exceedance of the municipal sewage collection system hydraulic capacity, sewage treatment plant uncommitted reserve hydraulic capacity, or the downstream pumping station capacity;
 - b) Adverse effects;
 - c) Any increase in collection system overflows that is not offset by measures, and have documented any offset measures used; or,
 - d) Any increase in the frequency and/or volume of Sewage Treatment Plant (STP) bypasses or STP overflows that is not offset by measures, and have documented any offset measures used. (Alternatively, if the wastewater flows to a STP not owned by the Owner, then the wastewater volume or flow rate is as agreed to with the Owner of the STP.)

Appendix B

- 2) The separate sewer, nominally separate sewer or forcemain alteration will:
 - a) Not cause overflows or backups, nor increase surcharging at any maintenance holes or privately owned infrastructure (e.g. basements) within the municipal sewage collection system or any municipal sewage collection system connected to it; and
 - b) Provide smooth flow transition to existing gravity sewers.
- 3) An assessment of the proposed works has been completed to determine if the works pose a significant drinking water threat. The proposed works do not pose any threats to sources of drinking water or design includes features that mitigate the threat to sources of drinking water, such as those included in: Ministry's Standard Operating Policy for Sewage Works, as amended from time to time; and Source Protection Plan policies pertaining to the works;
- 4) The separate sewer/nominally separate sewer/forcemain alteration is wholly located within the municipal boundary over which the owner has jurisdiction except where there is an agreement existed between municipalities;
- 5) The owner consents to the separate sewer/nominally separate sewer/forcemain alteration; and
- 6) I am an authorized representative of the owner to complete this verification.

Name of Owner (Print) The Corporation of the City of Brockville	Name of Owner Representative (Print) <i>Peter Raulh</i>
Signature <i>Peter Raulh</i>	Date (yyyy/mm/dd) 2023/06/01

Part 5 - Post Construction Verification by Owner for Inspection and Testing

I hereby verify that:

- 1) The separate sewer, nominally separate sewer or forcemain alteration has complied with inspection and testing requirements set out in the Ministry of the Environment, Conservation and Parks publication "Design Criteria for Sanitary Sewers, Storm Sewers and Forcemains for Alterations Authorized under Environmental Compliance Approval", as amended, and have documentation of the inspection and testing results.

Name of Owner (Print)	Name of Owner Representative (Print)
Signature	Date (yyyy/mm/dd)

Note: Parts 1 to 4 above shall be completed before construction.

Part 5 is to be completed after the inspection and testing have been undertaken.

CLI-ECA Number: 152-W601

Report Year: 2023[illegible]

Y=Yes	<u>Reason Codes</u>	
N=No	1 = Heavy Precipitation	6 = Power Failure
U=Unknown	2 = Snow Melt	7 = Exceed Design Capacity
	3 = Equipment Failure	8 = research/training
	4 = Eq. Maintenance	0 = Others
	5 = Sewer Problems	

Spill: If an SSO occurs for any other unplanned reason (such as a wet weather event) it would be considered a spill and be required to follow conditions 4.3 of the CLI-ECA 152-W601.

Collection System Overflows

CLI-ECA Number: 152-W601

Pumping Station Name: Main Pumping Station Report Year: 2023

Sanitary System Overflow (SSO) Monthly Summary:

MONTH	Class 1 Approved Discharge - Planned Event(s)			Spill - Unplanned Event(s)			
	No. of Days (days)	Duration (hours)	Volume (1,000 m³)	No. of Days (days)	Duration (hours)	Volume (1,000 m³)	
January				1	8.95	9.970	
February							
March							
April				1	4.68	8.093	
May							
June							
July							
August				1	7.80	21.287	
September							
October							
November							
December							
TOTAL	0	0	0	3	21.43	39.35	
Volume of Class 1 Approved Discharge as % of * Average Daily Flow (ADF)			0.00%	Volume of Spill as % of * Average Daily Flow (ADF)			0.65%

ADF = (m³/d) (1,000 m³/d)

Note: % = Volume of Bypass divided by ADF divided by 365

Comments:

Class 1 Approved Discharge - Planned Event:

SSO's are only considered Class 1 approved discharges if they are scheduled for either repair/maintenance or research/training activities and the district has been informed at least 15 days in advance and be required to follow condition 4.2 of the CLI-ECA 152-W601.

Spill - Unplanned Event: If an SSO occurs for any other unplanned reason (such as a wet weather event) it would be considered a spill and be required to follow conditions 4.3 of the CLI-ECA 152-W601.

Main Pumping Station Spill Analysis

Facility:	Brockville Wastewater Collection System
Sampling Point:	Main Pumping Station Spill (By-pass)

BOD Loading(Calculated)			Criteria	
01-05-2023	392.87	kg		
04-05-2023	230.64	kg		
08-07-2023	819.57	kg		
# samples:	3	min:	230.64	kg
# detects:	3	max:	819.57	kg
# non-detects:	0	avg:	456.41	kg (based on 3 numerical results)
# exceedances:	0	total:	1,369.24	kg

Escherichia coli / E. coli (counts)(Lab Data			Criteria	
01-04-2023 11:00	300000	CFU/100ml		
01-05-2023 01:41	260000	CFU/100ml		
01-05-2023 02:51	200000	CFU/100ml		
01-05-2023 04:16	90000	CFU/100ml		
01-05-2023 08:26	960000	CFU/100ml		
01-05-2023 11:16	810000	CFU/100ml		
04-05-2023 03:10	OG	CFU/100ml		
04-05-2023 03:10	139000	CFU/100ml		
08-07-2023 08:49	1070000	CFU/100ml		
08-07-2023 08:49	19800	CFU/100ml		
# samples:	10	min:	19,800	CFU/100ml
# detects:	10	max:	1,070,000	CFU/100ml
# non-detects:	0	Geometric Mean:	210,785	CFU/100ml (based on 9 numerical results)
# exceedances:	0			n/a

TKN Loading(Calculated)			Criteria	
01-05-2023	76.77	kg		
04-05-2023	53.41	kg		
08-07-2023	144.75	kg		
# samples:	3	min:	53.41	kg
# detects:	3	max:	144.75	kg
# non-detects:	0	avg:	88.58	kg (based on 3 numerical results)
# exceedances:	0	total:	265.75	kg

Appendix C

TP Loading(Calculated)			Criteria	
01-05-2023	8.92	kg		
04-05-2023	6.68	kg		
08-07-2023	21.93	kg		
# samples:	3	min:	6.68	kg
# detects:	3	max:	21.93	kg
# non-detects:	0	avg:	11.99	kg (based on 3 numerical results)
# exceedances:	0	total:	35.97	kg

TSS Loading(Calculated)			Criteria	
01-05-2023	612.41	kg		
04-05-2023	550.29	kg		
08-07-2023	3001.53	kg		
# samples:	3	min:	388.82	kg
# detects:	3	max:	3,001.53	kg
# non-detects:	0	avg:	1,313.55	kg (based on 3 numerical results)
# exceedances:	0	total:	3,940.64	kg

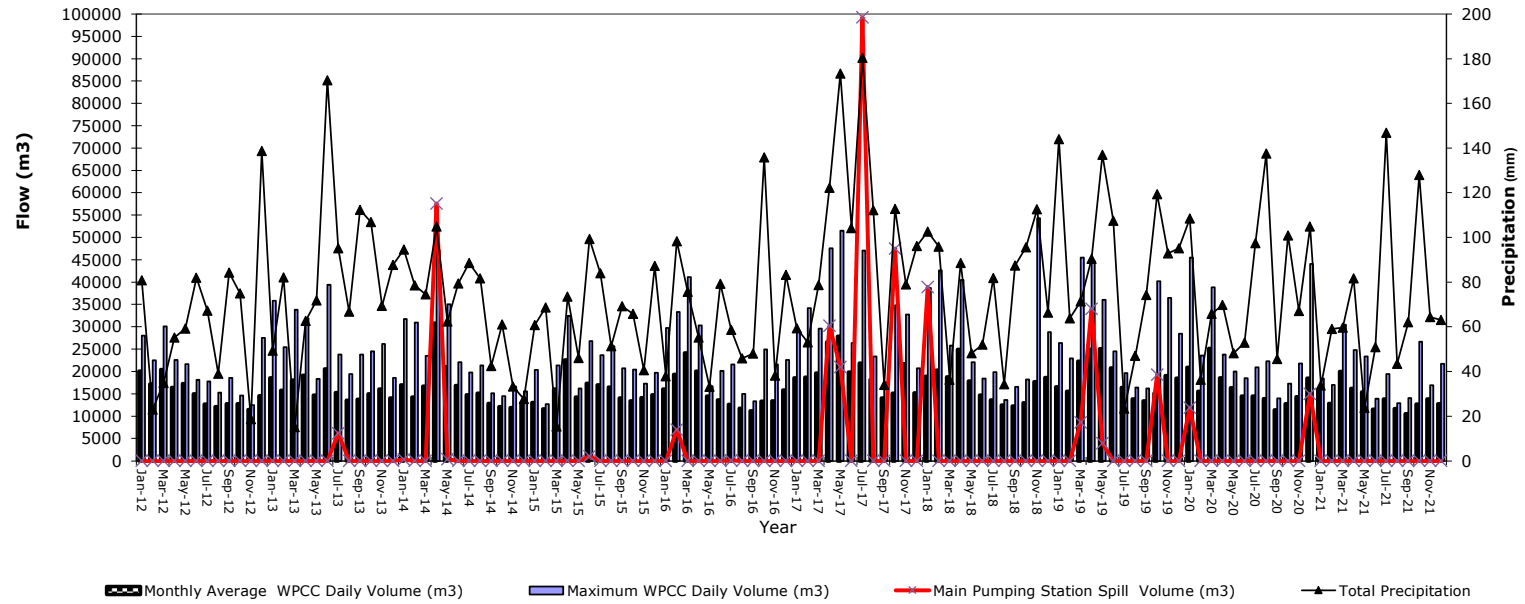
Result Legend:

P=present, A=absent, PR=presumptive, ND=non-detect, OR=over-range, OG=overgrown, Y=yes, N=no, TNTC=too numerous to count, NR=no result, NT=not tested, IG=ignore, ER=external report, SC=see comment

- < means less than lower detection limit shown
- > means greater than upper detection limit shown
- « means detected & less than number shown
- » means detected & greater than number shown

* Indicates Criteria is exceeded

Brockville Wet Weather Flows vs Dry Weather Flows
Monthly Average and Maximum WPCC Daily Volume & Main Pumping Station (MPS) Spill Volume
vs Total Precipitation
2012 - 2021



Appendix D

Brockville Wet Weather Flows vs Dry Weather Flows Monthly Average and Maximum WPCC Daily Volume & Main Pumping Station (MPS) Spill Volume vs Total Precipitation 2012 - 2021

Month	Monthly Average WPCC Daily Volume (m3)	Maximum WPCC Daily Volume (m3)	Total Precipitation (mm)	Main Pumping Station Spill Volume (m3)	Comments
Jan-12	20,115	28,013	80.74	-	
Feb-12	17,204	22,511	22.9	-	
Mar-12	20,443	30,085	34.8	-	
Apr-12	16,450	22,566	55.2	-	
May-12	17,304	21,651	59.2	-	
Jun-12	14,989	18,109	82	-	
Jul-12	12,716	17,809	67.2	-	
Aug-12	12,125	15,268	39	-	
Sep-12	12,792	18,531	84.3	-	
Oct-12	12,754	14,607	74.9	-	
Nov-12	11,503	12,498	18.6	-	
Dec-12	14,555	27,490	138.7	-	
Jan-13	18,625	35,801	49.3	-	
Feb-13	15,827	25,448	82.1	-	
Mar-13	18,071	33,826	15	-	
Apr-13	19,192	31,867	62.6	-	
May-13	14,723	18,319	71.8	-	
Jun-13	20,604	39,405	170.3	-	
Jul-13	15,313	23,819	95.2	6,150	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains (44 mm fell in 20 - 30 minutes).
Aug-13	13,584	19,399	66.7	-	
Sep-13	13,758	23,786	112.3	-	
Oct-13	15,018	24,493	106.9	-	
Nov-13	16,084	26,183	69.3	-	
Dec-13	14,064	18,543	87.64	-	
Jan-14	16,998	31,776	94.5	271	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains/snow melt (26 mm of rain in approximately a 10 hour period).
Feb-14	14,329	30,917	78.5	-	
Mar-14	16,727	23,534	74.5	-	
Apr-14	30,821	47,211	104.8	57,625	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains/snow melt (26 mm of rain in approximately a 12 hour period).
May-14	21,120	35,047	62.3	384	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains (Estimated in excess of 20 mm of rain in approximately a 1 hour period).
Jun-14	16,885	22,056	79.4	-	
Jul-14	14,787	19,802	88.6	-	
Aug-14	15,182	21,340	81.6	-	
Sep-14	12,839	15,151	42.4	-	
Oct-14	12,173	14,480	61	-	
Nov-14	11,910	16,604	33.2	-	
Dec-14	13,019	15,580	27.6	-	
Jan-15	13,099	20,349	60.8	-	
Feb-15	11,655	12,678	68.6	-	
Mar-15	16,084	21,327	15.4	-	
Apr-15	22,596	32,470	73.55	-	
May-15	14,297	16,170	46	-	

Appendix D

Month	Monthly Average WPCC Daily Volume (m3)	Maximum WPCC Daily Volume (m3)	Total Precipitation (mm)	Main Pumping Station Spill Volume (m3)	Comments
Jun-15	17,387	26,777	99.3	983	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains. June 9 estimated in excess of 22 mm of rain in approximately a 1 hour period and June 12 estimated 30 mm of rain in approximately 6 1/2 hr period. Pump station flow capacity diminished by failed pump drive.
Jul-15	16,987	23,617	84	-	
Aug-15	16,507	25,644	51.3	-	
Sep-15	14,101	20,690	69.2	-	
Oct-15	13,429	20,458	65.8	-	
Nov-15	14,141	17,262	40.5	-	
Dec-15	14,815	19,689	87.2	-	
Jan-16	16,068	29,755	37.8	-	
Feb-16	19,359	33,330	98.3	6,973	Spill (Bypass) due to high Wet Well Level at Main Pumping Station as a result of heavy rains and melting snow. Estimated 30 to 50 mm mixed precipitation fell in the 24 hour period (Environment Canada Website states 49 mm).
Mar-16	24,203	41,116	75.7	-	
Apr-16	20,071	30,321	55.2	-	
May-16	14,528	16,674	33.1	-	
Jun-16	13,624	20,156	79.2	-	
Jul-16	12,613	21,592	58.6	88	Spill (Bypass) during heavy rain event. Measured rainfall of 45.6 mm over the 24 hour period.
Aug-16	11,802	14,966	45.8	-	
Sep-16	11,180	13,315	48	-	
Oct-16	13,344	24,917	135.8	-	
Nov-16	13,409	21,555	38.1	-	
Dec-16	15,878	22,589	83.2	-	
Jan-17	18,563	28,792	59.3	-	
Feb-17	18,716	34,169	53	-	
Mar-17	19,680	29,577	78.6	-	
Apr-17	26,613	47,588	122.2	30,240	Spill (Bypass) during heavy rain event. Measured rainfall of 48.2 mm over the 24 hr period.
May-17	27,899	51,513	173.4	21,017	Spill (Bypass) during heavy rain events. Measured rainfall of 34.5 mm over 24 hr period. Measured rainfall of 21.4 mm over 24 hr period. Measured rainfall of 18.4 mm over 24 hr period.
Jun-17	19,861	26,400	104.2	-	
Jul-17	21,890	47,039	180.3	99,289	Spill (Bypass) during heavy rain event. Measured rainfall of 120 mm over the 24 hr period.
Aug-17	18,213	23,393	112.2	-	
Sep-17	14,072	17,586	34	-	
Oct-17	15,168	34,800	112.8	47,525	Spill (Bypass) during heavy rain event. Measured rainfall of 93.4 mm over the 24 hr period.
Nov-17	21,729	32,760	78.9	-	
Dec-17	15,211	20,726	96.2	-	
Jan-18	18,973	38,692	102.6	38,910	Spill (Bypass) during heavy rain event associated snow melt. Measured rainfall of 43.6 mm over the 24 hr period.
Feb-18	20,340	42,628	95.8	-	
Mar-18	18,789	25,796	36.2	-	
Apr-18	24,990	40,510	88.5	-	
May-18	17,907	22,072	48.2	-	
Jun-18	14,749	18,442	52	-	
Jul-18	13,660	19,819	81.8	-	
Aug-18	12,501	13,620	34.2	-	
Sep-18	12,319	16,566	87.4	-	
Oct-18	12,989	18,203	95.6	-	
Nov-18	17,721	54,336	112.6	-	

Appendix D

Month	Monthly Average WPCC Daily Volume (m3)	Maximum WPCC Daily Volume (m3)	Total Precipitation (mm)	Main Pumping Station Spill Volume (m3)	Comments
Dec-18	18,696	28,805	66.4	-	
Jan-19	16,553	26,387	144	-	
Feb-19	15,592	22,926	63.8	-	
Mar-19	22,323	45,500	71.4	8,594	Spill (Bypass) due to rain event associated with spring run-off. Measured rainfall 33.4 mm over 24 hr period.
Apr-19	24,945	44,701	90.4	34,062	Spill (Bypass) due to rain event associated with spring run-off. Measured rainfall 48.0 mm over 24 hr period.
May-19	25,118	36,036	137	3,949	Spill (Bypass) due to rain event in addition to normally high seasonal flow. Measured rainfall of 41 mm over 24 hr period
Jun-19	20,830	24,520	107.5	-	
Jul-19	16,455	19,654	23.4	-	
Aug-19	13,869	16,379	47	-	
Sep-19	13,453	16,165	74.2	-	
Oct-19	15,142	40,224	119.4	19,250	Spill (Bypass) due to rain event. Measured rainfall of 47.2 mm of rain over 24 hr period
Nov-19	19,067	36,446	92.8	-	
Dec-19	18,486	28,431	95.1	-	
Jan-20	20,948	45,470	108.5	11,915	Spill (Bypass) due to rain event. Measured rainfall of 58.2 mm of rain over 24 hr period
Feb-20	15,612	23,540	36.2	-	
Mar-20	25,197	38,801	65.8	-	
Apr-20	18,556	23,805	69.8	-	
May-20	16,386	20,026	48.2	-	
Jun-20	14,499	18,517	52.9	-	
Jul-20	14,532	20,961	97.4	-	
Aug-20	13,967	22,267	137.6	-	
Sep-20	11,397	13,969	45.5	-	
Oct-20	12,799	17,252	100.8	-	
Nov-20	14,399	21,808	67	-	
Dec-20	18,490	44,053	104.8	15,000	Spill (Bypass) due to rain event. Measured rainfall of 63.4 mm of rain over 24 hr period
Jan-21	15,704	18,414	33.7	-	
Feb-21	12,832	16,982	59	-	
Mar-21	20,057	30,442	59.6	-	
Apr-21	16,260	24,783	81.6	-	
May-21	15,436	23,363	23.6	-	
Jun-21	11,554	13,933	50.8	-	
Jul-21	13,883	19,457	146.9	-	
Aug-21	11,748	12,935	43.4	-	
Sep-21	10,601	14,060	62.1	-	
Oct-21	12,747	26,622	128	-	
Nov-21	13,832	16,922	64.4	-	
Dec-21	12,804	21,744	63	-	