

Williamsburg Wastewater System

Waterworks # 120002013

Annual Report

Prepared For: Municipality of South Dundas

Reporting Period of January 1st – December 31st 2023

Issued: March 15th, 2024

Revision: 0

Operating Authority:



This report has been prepared to meet the requirements set out in:

Document	Document #	Issue Date	Issue Number
Facility ECA	3-0456-84-887	January 28, 1992	N/A
ECA for Municipal Sewage Collection System	165-W601	June 2, 2023	1.0

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1 Revision History

Date	Rev#	Revisions	Revised By
March 15, 2024	0	Annual Report Issued	Kurtis Winkenweder, OCWA

2 Operations and Compliance Reliability Indices

Compliance Event	# of Events
Ministry of Environment Inspections	No MECP inspection in 2023.
Ministry of Labour Inspections	No MOL inspection in 2023.
Non-Compliance	1 Non-compliance in 2023 <ul style="list-style-type: none"> • Details reference in report
Community Complaints	No community complaints in 2023.
Spills	No spills reported in 2023.
Overflows	No overflow events reported in 2023.
Bypass	No bypass events reported in 2023.
Sewer Main Blockages	No sewer main blockages in 2023.

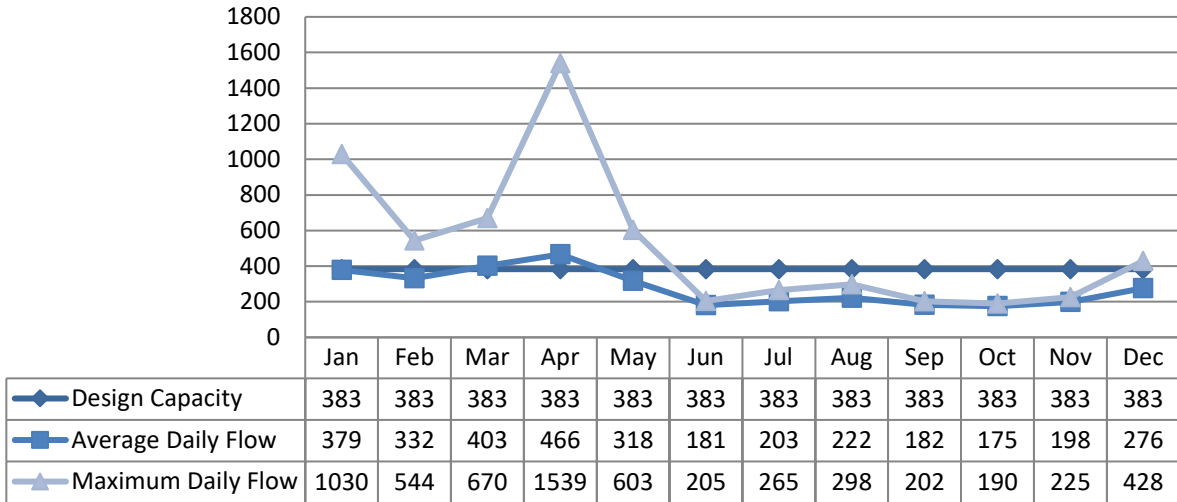
3 Process Description

Williamsburg's wastewater system is owned and operated by the Municipality of South Dundas. It consists of a gravity fed collection system, two sewage pumping stations and a wastewater treatment lagoon. The two-cell facultative lagoon system is a Class I wastewater treatment system. Effluent from the lagoon is discharged annually to the McMartin Drain between March 15th and April 21st in accordance with the facility's Certificate of Approval.

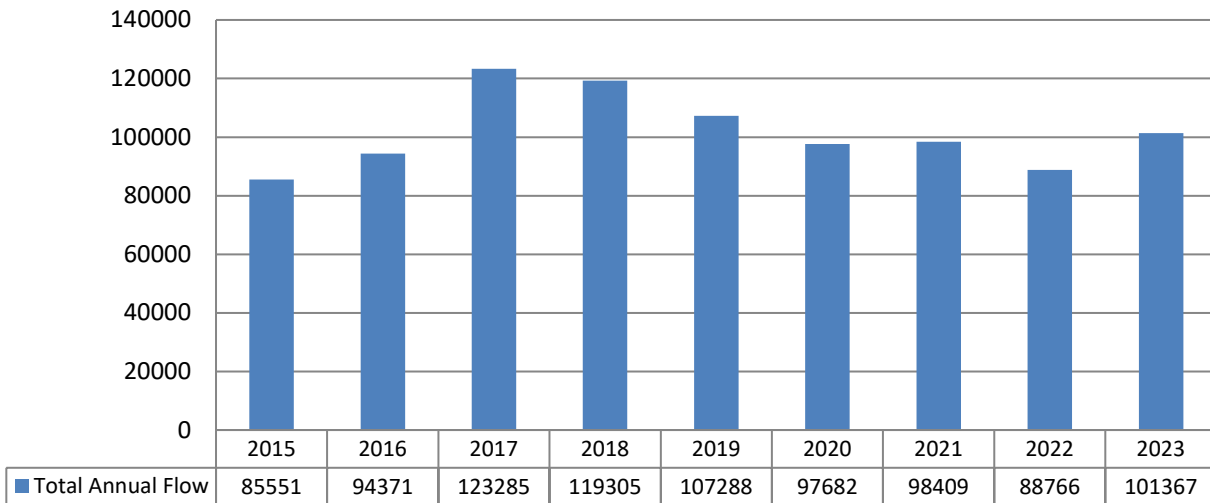
4 Treatment Flows

The hydraulic flows reaching the sewage lagoons in 2023 averaged 278 m³/day which represents 72.6% of the 383 m³/day design capacity.

4.1 Raw Flow (m³/d)



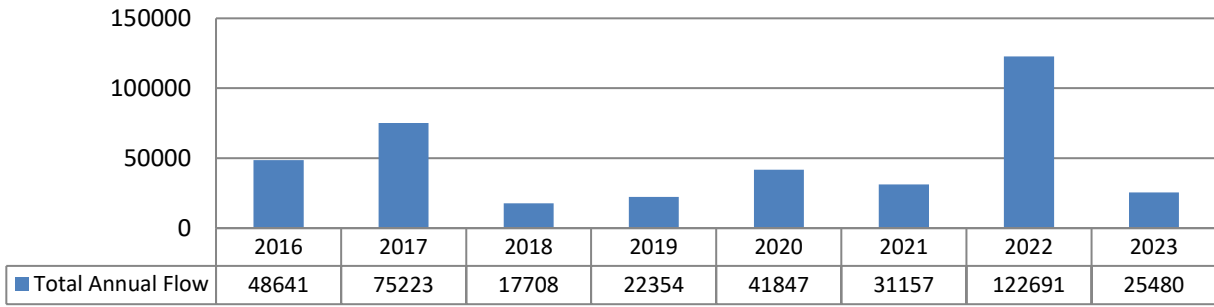
4.1.1 Annual Comparison (m³)



4.2 Discharge Flow

Discharge Period	Start Date	End Date	Volume Discharged (m ³)
Annual Discharge	April 14 th , 2023	April 20 th , 2023	25,480

4.3 Annual Comparison (m3)



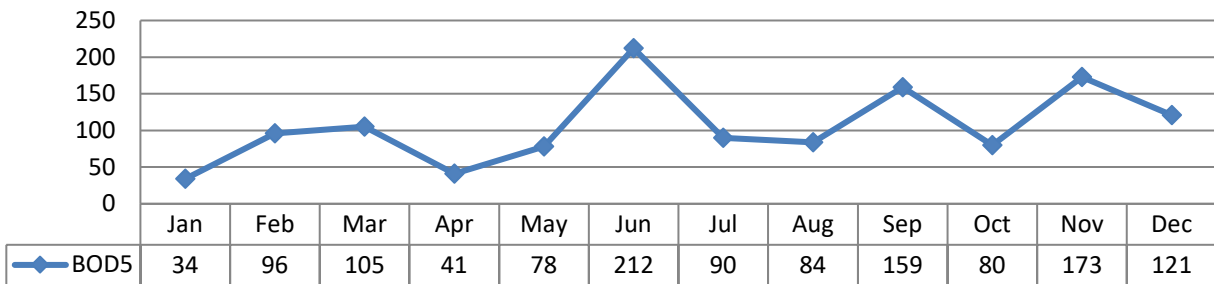
4.4 Imported Waste/Sewage

There was no imported waste or sewage accepted at this facility in 2023.

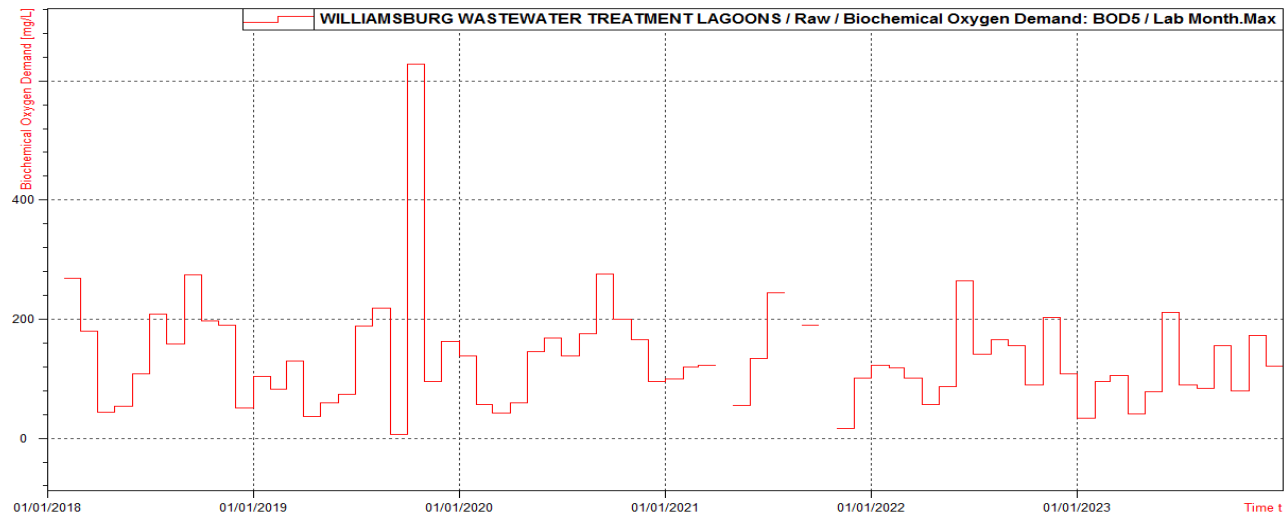
5 Raw Sewage Quality

Current year minimum, maximum and averages are available in Appendix A – Performance Assessment Report.

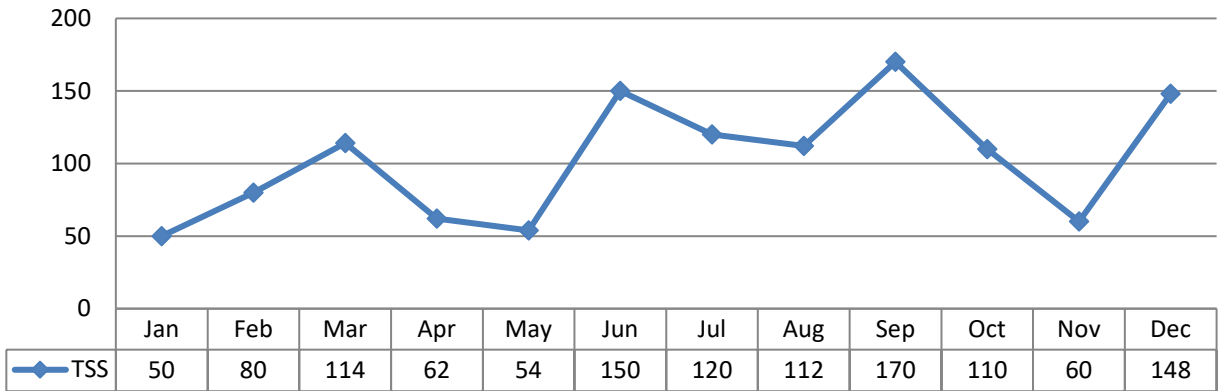
5.1.1 BOD5 (mg/L)



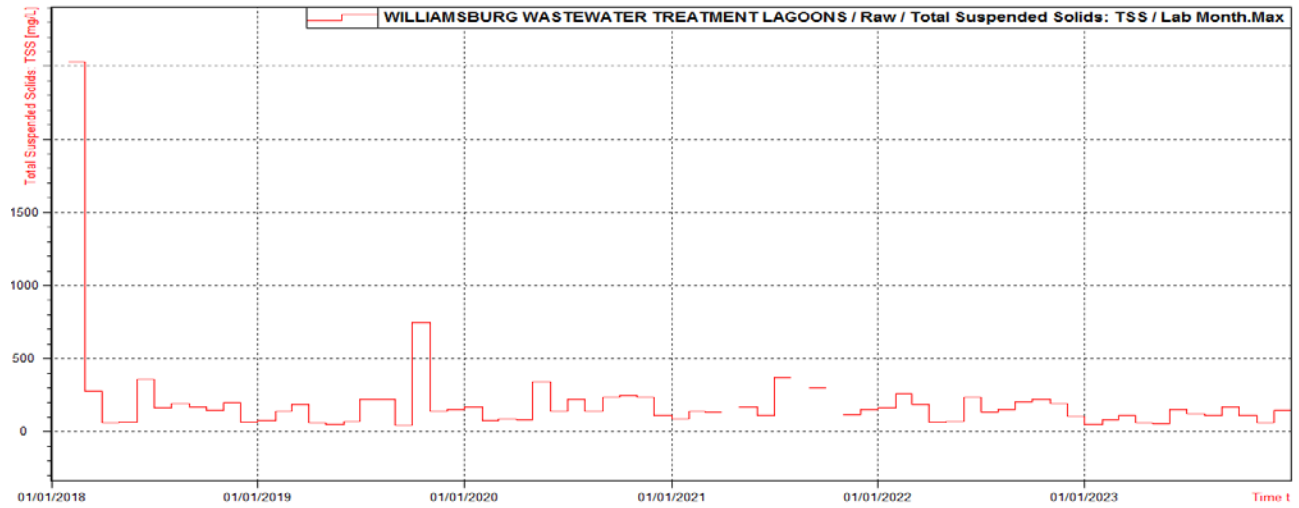
5.1.2 5-year BOD5 (mg/L)



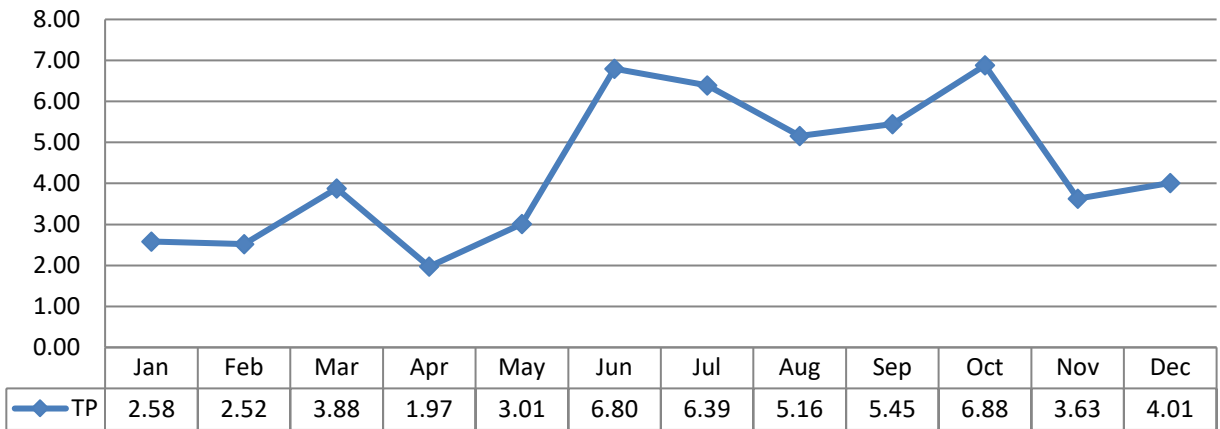
5.1.3 Total Suspended Solids (mg/L)



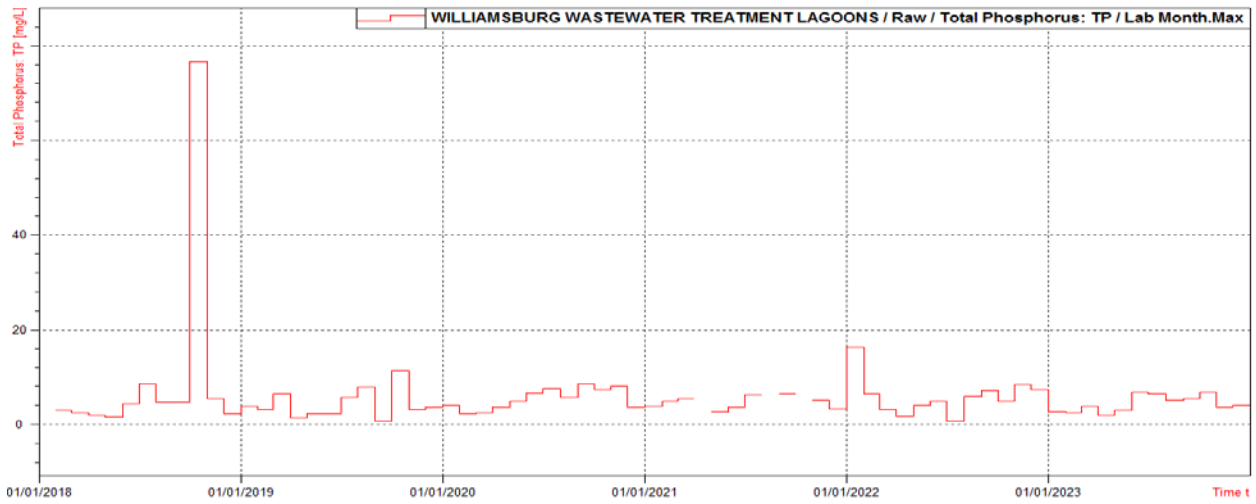
5.1.4 5-year Total Suspended Solids (mg/L)



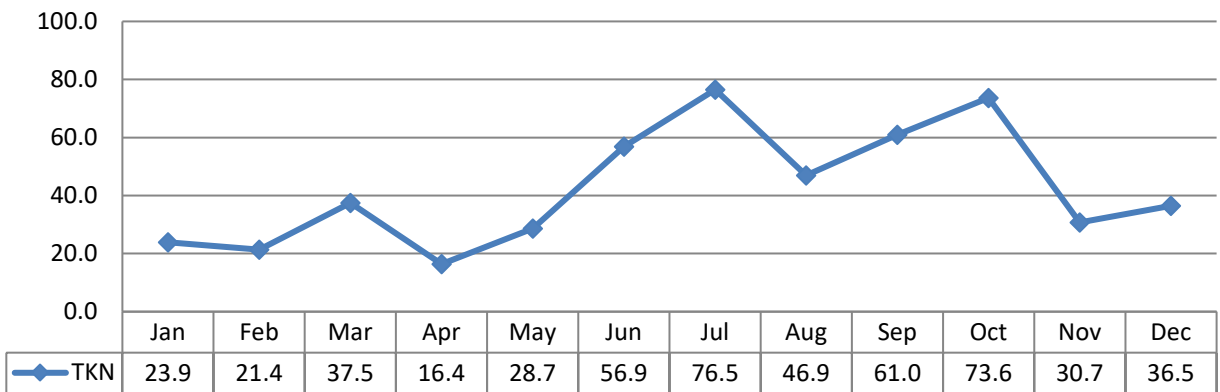
5.1.5 Total Phosphorus (mg/L)



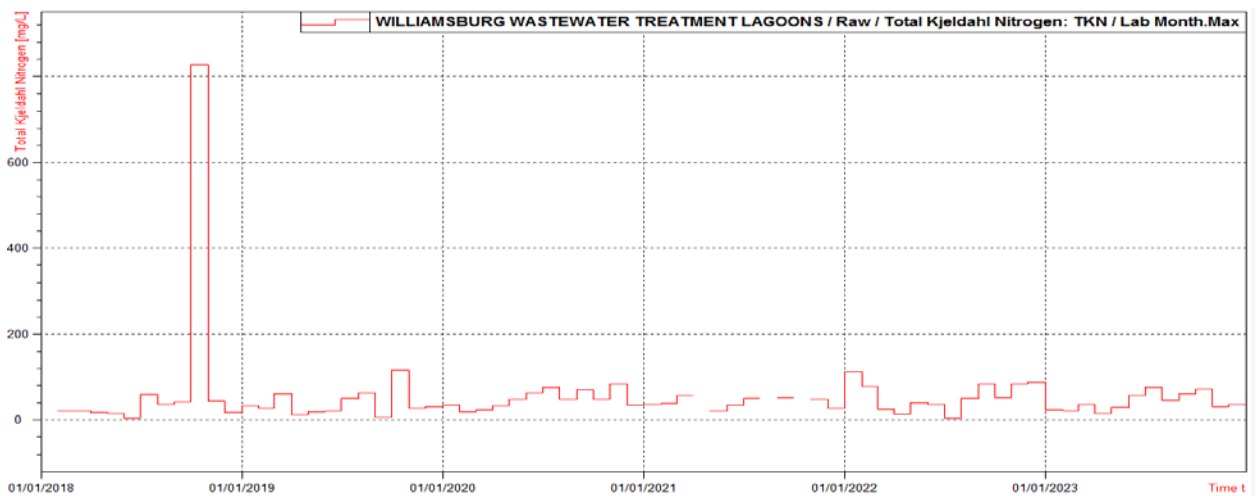
5.1.6 5-year Total Phosphorus (mg/L)



5.1.7 Total Kjeldahl Nitrogen (mg/L)



5.1.8 5-year Total Kjeldahl Nitrogen (mg/L)



5.2 Imported Waste Quality

There were no imported wastes accepted at this facility.

6 Effluent Quality

For the 2023 discharge period, the limit for BOD₅ in the facility's Certificate of Approval was met, however the limit for total suspended solids was exceeded. Details are provided below in the Operating Issues/Problems section. The results from the spring discharge can be found tabulated in the Performance Assessment Reports attached in Appendix A.

6.1 Effluent Quality Assurance and Control Measures Taken

This system is part of the Township of South Dundas. The Township's compliance is supported by the Eastern Regional Hub, and corporate resources. Operational Services are delivered by Township staff that live and work in the community. The systems are operated to meet compliance with applicable regulations. The system has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents and are updated as required. These documents are also part of OCWA's Quality & Environmental Management System.

The process is reviewed and maintained by certified operators. These operator's complete in-house rounds and testing to monitor the process. All Sampling and analysis follow approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet legislated sampling requirements are submitted to Caduceon Ottawa for analysis, with the exception of pH and temperature. Caduceon Ottawa has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Township of South Dundas is ensuring appropriate control measures are undertaken during sample analysis. The pH and temperature parameters are analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained.

The Township is using a data management system provided by OCWA:

- Process Data Management (PDM)
 - This database program consolidates all operational data from a variety of sources including field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.

The operations team also has access to a network of operational compliance and process specialists to assist for emerging process issues. This aids in establishing additional control measures to ensure a quality effluent product.

Detailed sample results raw sewage and final effluent can be requested from the operating authority.

6.2 Effluent Quality Summary

Parameter	April Result (mg/L)	Limit (mg/L)	Exceedance
BOD	13.0	30	No
Total Suspended Solids	53.3	30	Yes
Total Phosphorus	0.92	N/A	N/A
Total Ammonia Nitrogen	4.14	N/A	N/A
pH	7.48 – 9.18	N/A	N/A

7 Operating Issues/Problems

There were no operating issues in the 2023 that are not already mentioned in the effluent non-compliance summary below.

7.1 Effluent Quality Non-Compliance Summary

Date	Exceedance of	Limit	Value	Corrective Action
April 2023	Total Suspended Solids	30 mg/L	53 mg/L	Quarterly cleaning of the lift station to keep solids levels down

7.2 Summary of Abnormal Sewage Discharge Events

Abnormal Discharge Events include Bypass', Overflows, Diversions and Spills of Sewage. Summary Details are included in Appendix B.

7.3 Spills (Other than Sewage)

Date	Location	Details	Volume (m3)	Start Date and Time	End Date and Time
No spills to report on in 2023.					

8 Maintenance

Routine planned maintenance activities:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of water distribution systems, pumps, chemical feeders, and all other equipment installed at the facilities.
- Carry out a routine maintenance program including greasing and oiling as specified in the lubrication schedule.
- Perform day-to-day maintenance duties to equipment including checking machinery and electrical equipment when required.
- Maintain an equipment inventory
- Maintain accurate records of work conducted, activities, and achievements.

Unplanned maintenance is conducted as required.

8.1 Normal Maintenance and Repairs

Maintenance/Repair
<ul style="list-style-type: none"> - Cattails removed from East Cell - Sewage pumping station cleanouts quarterly

8.2 Emergency Maintenance and Repairs

Maintenance/Repair	Details
No emergency maintenance in 2023.	

8.3 Flow Meter Calibrations and Maintenance

Location	Date of Calibration	Additional Maintenance
FIT-01 Williamsburg SPS Flow	June 6 th 2023	None.

8.4 Authorized Alterations in Collection System

Alteration	Details	Significant Drinking Water Threat (Y/N)
No alterations were made in 2023.		

8.5 Notice of Modifications

Date	Process	Modification	Status
No modifications made in 2023.			

9 Sludge Generation

Sludge depth is monitored periodically across the lagoon, and plans for sludge removal are made as required for optimal operation of the wastewater system.

10 Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
No complaints in 2023.			

Appendix A

Appendix A - Performance Assessment Report

MUNICIPALITY OF SOUTH DUNDAS PERFORMANCE ASSESSMENT REPORT

PROJECT: WILLIAMSBURG SEWAGE YEAR: 2023
 WORKS NUM.: 3-0456-84-887 WATER COURSE: MCMARTIN DRAIN
 DESCRIPTION: A TWO CELL LAGOON HAVING A TOTAL SURFACE AREA OF 7.1 HA DESIGN CAPACITY: 383 m³/day

MONTH	FLOWS					BIOCHEMICAL O ₂ DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN
	Total Flow m ³	Avg Day Flow m ³	Max Day Flow m ³	Effluent Flow m ³	Discharge Duration (days)	Avg Raw BOD (mg/L)	Avg Eff BOD (mg/L)	Percent Removal	Avg Raw SS (mg/L)	Avg Eff SS (mg/L)	Percent Removal	Avg Raw PHOS. (mg/L)	Avg Eff PHOS. (mg/L)	Percent Removal	Avg Raw TKN
JAN	11759	379	1,030			34			50			2.58			23.9
FEB	9302	332	544			96			80			2.52			21.4
MAR	12486	403	670			105			114			3.88			37.5
APR	13976	466	1539	25,480	5	41	13.0		62	53.3		1.97	0.92		16.4
MAY	9856	318	603			78			54			3.01			28.7
JUN	5439	181	205			212			150			6.80			56.9
JUL	6282	203	265			90			120			6.39			76.5
AUG	6878	222	298			84			112			5.16			46.9
SEPT	5454	182	202			159			170			5.45			61.0
OCT	5424	175	190			80			110			6.88			73.6
NOV	5951	198	225			173			60			3.63			30.7
DEC	8560	276	428			121			148			4.01			36.5
TOTAL	101,367			25,480	5										
AVG		278				106	13.0	87.7	103	53.3	48.0	4.36	0.92	78.8	42.5
MAX			1539			212			170			6.88			
CRITERIA		383					30			30					
COMPLIANCE		YES					YES			NO					

COMMENTS: PERCENT REMOVAL BASED ON 12 MONTHS OF RAW COMPOSITE SAMPLES

MUNICIPALITY OF SOUTH DUNDAS LAGOON PERFORMANCE ASSESSMENT REPORT

PROJECT: WILLIAMSBURG LAGOON YEAR: 2023
 WORKS NUM.: 3-0456-84-887 WATER COURSE: MCMARTIN DRAIN
 DESCRIPTION: A TWO CELL LAGOON HAVING A TOTAL SURFACE AREA OF 7.1 HA DESIGN CAPACITY: 383 m³/day

SAMPLE RESULTS	SPRING				25,480 m ³	C of A Limit*
	DATE	14-Apr	17-Apr	20-Apr-23	Average	
BOD (mg/L)	17	16	6	13.0	30	
TSS (mg/L)	78	74	8	53.3	30	
TP (mg/L)	1.75	0.89	0.13	0.92		
NH ₃ (mg/L)	8.52	3.72	0.18	4.14		
NO ₂ (mg/L)	<0.05	<0.05	<0.05			
NO ₃ (mg/L)	0.16	0.57	0.3			
TKN (mg/L)	13.4	8.7	1.7			
S ₂ - (mg/L)	<0.1	<0.1	0.02			

EFFLUENT FLOW	
DATE	Flow (m ³ /d)
14-Apr	start
17-Apr	6,370
18-Apr	4,550
19-Apr	5,460
20-Apr	9,100

pH	7.48	7.91	9.18
Temp	12.5	15.7	10.2
S ₂ - (mg/L)	<0.1	<0.1	0.02
%	--	--	1.212
undissociated H ₂ S	ND	ND	0.0002

Appendix B

Appendix B - Details of Abnormal Sewage Discharge Events

Event Details Summary

Facility Bypass

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No bypass's of Williamsburg Sewage Lagoon to report in 2023.								

Facility Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No facility overflows to report in 2023.								

Collection Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No collection overflows to report in 2023.								

Spills of Sewage

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No spills of sewage to report in 2023.								

Appendix C

Appendix C - ECA Annual Report Requirements

Facility ECA # 3-0456-84-887	Section in Report
No section in the CofA references an annual report.	N/A

Collection ECA # # 165-W601 Schedule E	
4.6.3 If applicable, includes 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.	Operating Issues and Problems
4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.	Operating Issues and Problems
4.6.5 Includes 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.	Maintenance
4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.	Summary of Complaints
4.6.7 Includes 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.	Maintenance
4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(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, if applicable.	Operating Issues and Problems
4.6.9 Includes 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. b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines. c) An assessment of the effectiveness of each action taken. 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. e) Public reporting approach including proactive efforts.	Maintenance Operating Issues and Problems