

# Lansdowne Wastewater System

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Waterworks # 110001934

## Annual Report

Prepared For: Township of Leeds and the Thousand Islands

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup> 2024

Issued: March 28, 2025

Revision: 0

Operating Authority:



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

Document	Document #	Issue Date	Issue Number
Facility ECA	3483-9Q6QAL	November 13, 2014	N/A
ECA for Municipal Sewage Collection System	262-W601	May 16,2023	1.0

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## 1 Revision History

Date	Rev#	Revisions	Revised By
March 28, 2025	0	Annual report issued.	PCT

## 2 Operations and Compliance Reliability Indices

Compliance Event	Details
Ministry of Environment Inspections	No MECP inspection in 2024.
Ministry of Labour Inspections	No MOL inspection in 2024.
Non-Compliance	2 Non-compliances reported in 2024. <ul style="list-style-type: none"><li>Details referenced in report</li></ul>
Community Complaints	No community complaints reported in 2024.
Spills	No spills reported in 2024.
Overflows	No overflows reported in 2024.
Bypass	No bypasses reported in 2024.
Diversion (if applicable)	No diversions reported in 2024.

## 3 Process Description

Lansdowne's wastewater system was constructed in the mid-1970's and commenced operation in 1976. The system consists of approximately 5.2 kilometers of asbestos cement sewer pipe, one pumping station located on Railway Street, and a two cell facultative lagoon system with a design capacity of 336 m3/d. The sewage pumping station consists of a single wet well with a peak design flow of 30 L/s. The lagoon system is typically operated in series, with raw sewage flowing into the north cell for initial treatment and then being transferred to the south cell for polishing.

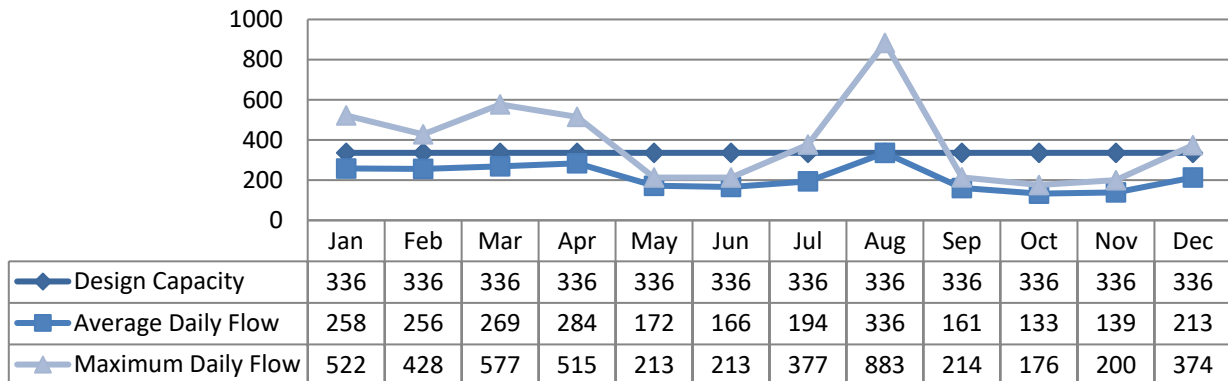
The north cell provides storage for 38,250 m3 and the south cell can store 34,500 m3. The system was originally designed for effluent to be directed to a spray irrigation facility along with an option for surface discharge. Due to the need for extensive repairs in addition to constraints placed on the system resulting from impacts on neighbouring lands, the spray irrigation system has not been in use since 2008. The current practice is to discharge effluent from the lagoons to an open ditch which flows to the La Rue Mills Creek and ultimately to the St. Lawrence River. The lagoon cells are treated with aluminum sulphate by injection at the SPS prior to the entry of the lagoon to ensure the total phosphorus concentration in the effluent is less than 1.0 mg/L.

Discharges typically take place on a semi-annual basis in the spring and in the fall.

## 4 Treatment Flows

The hydraulic flows reaching the sewage lagoons in 2024 averaged 214 m<sup>3</sup>/day which represents 64% of the 336 m<sup>3</sup>/day design capacity.

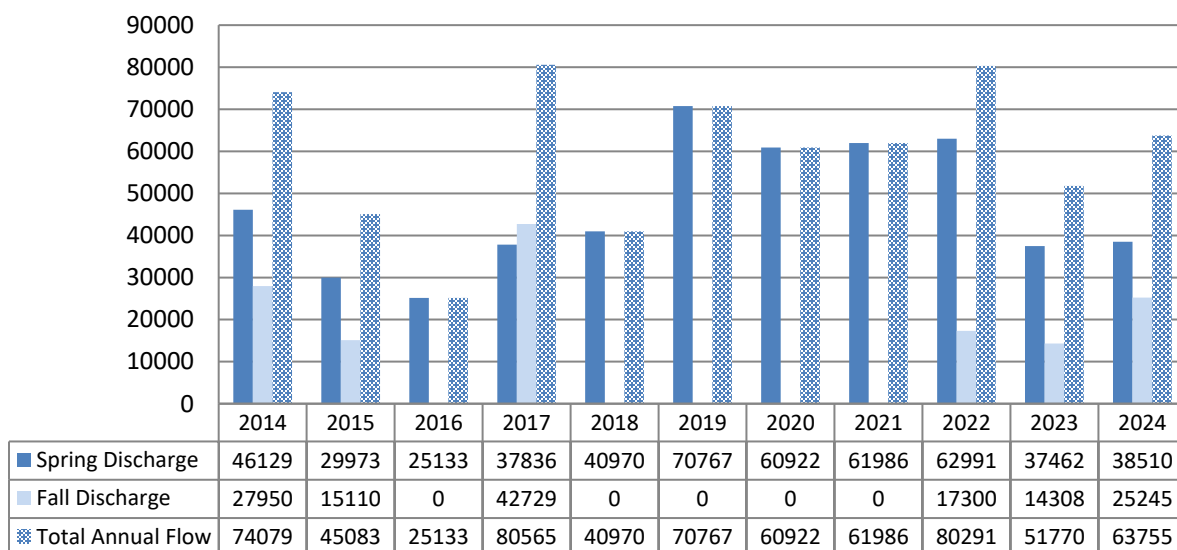
### 4.1 Raw Flow (m<sup>3</sup>/d)



### 4.2 Discharge Flow

Discharge Period	Start Date	End Date	Volume Discharged (m <sup>3</sup> )
Spring Discharge	April 2 <sup>nd</sup> , 2024	April 12 <sup>th</sup> , 2024	38,510
Fall Discharge	October 24 <sup>th</sup> , 2024	October 30 <sup>th</sup> , 2024	25,245
Total Flow Discharged			63,755

### 4.3 Annual Comparison (m<sup>3</sup>)



#### 4.4 Imported Sewage

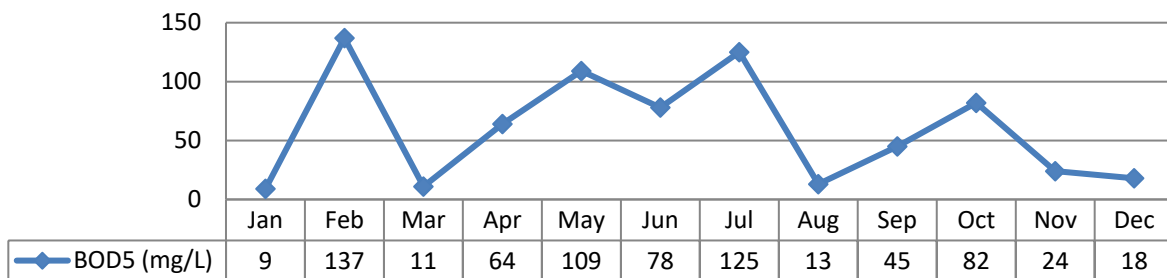
Imported sewage is not accepted at this facility.

### 5 Raw Sewage Quality

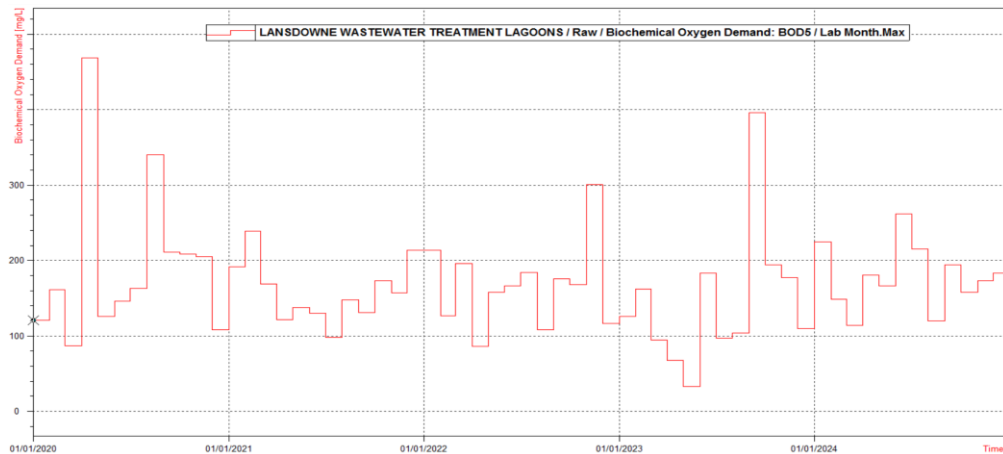
Current year minimum, maximum and averages are available in Appendix A – Performance Assessment Report.

#### 5.1 Influent Quality

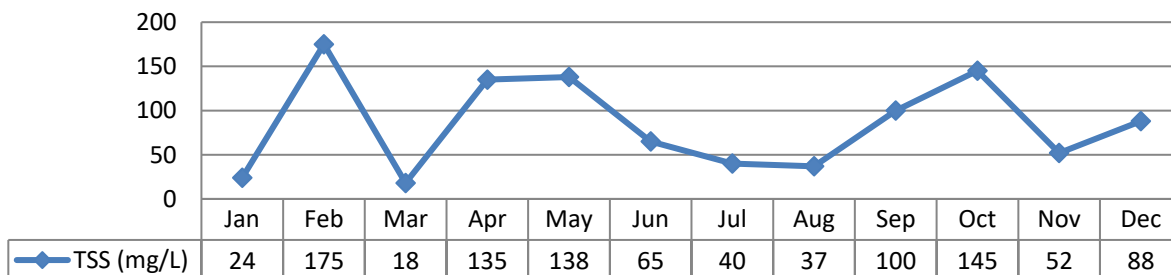
##### 5.1.1 BOD5 (mg/L)



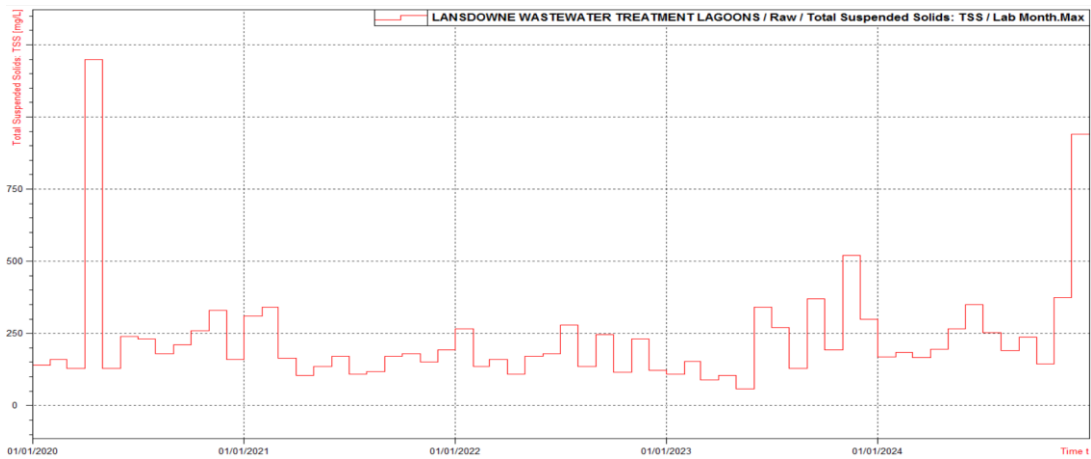
##### 5.1.2 5-year BOD5 (mg/L)



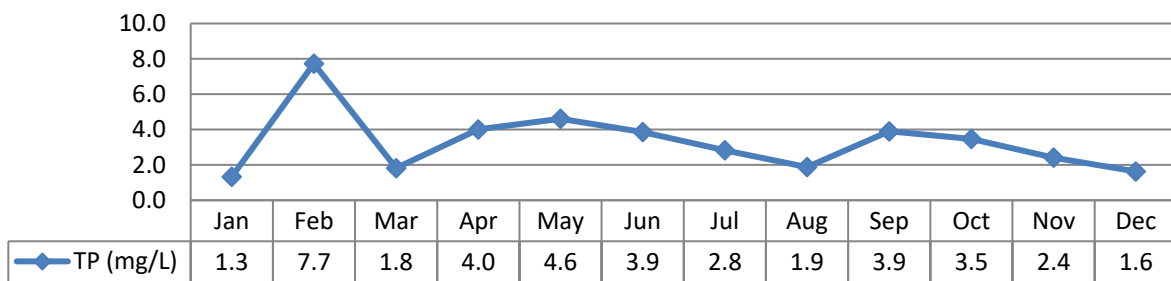
##### 5.1.3 Total Suspended Solids (mg/L)



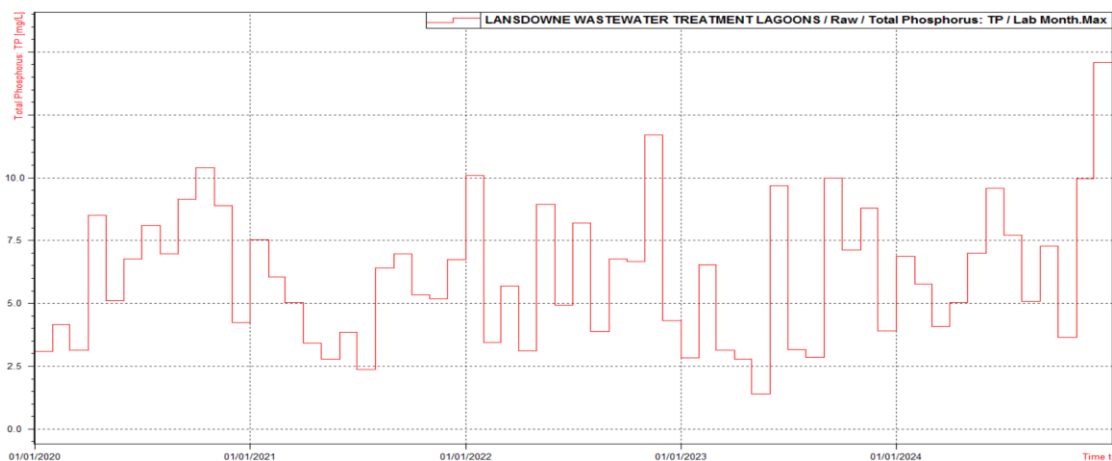
### 5.1.4 5-year Total Suspended Solids (mg/L)



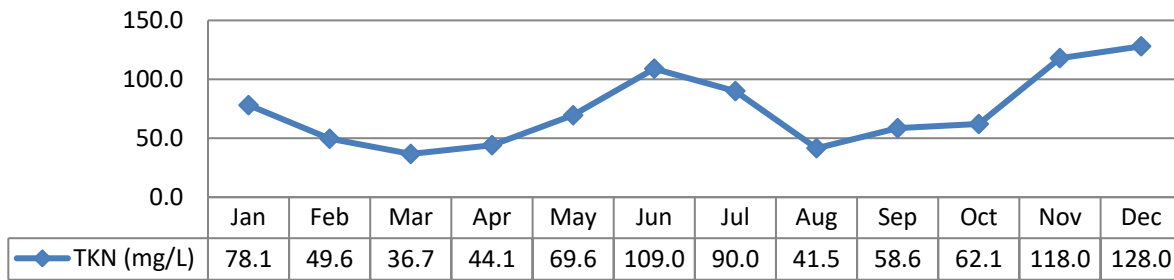
### 5.1.5 Total Phosphorus (mg/L)



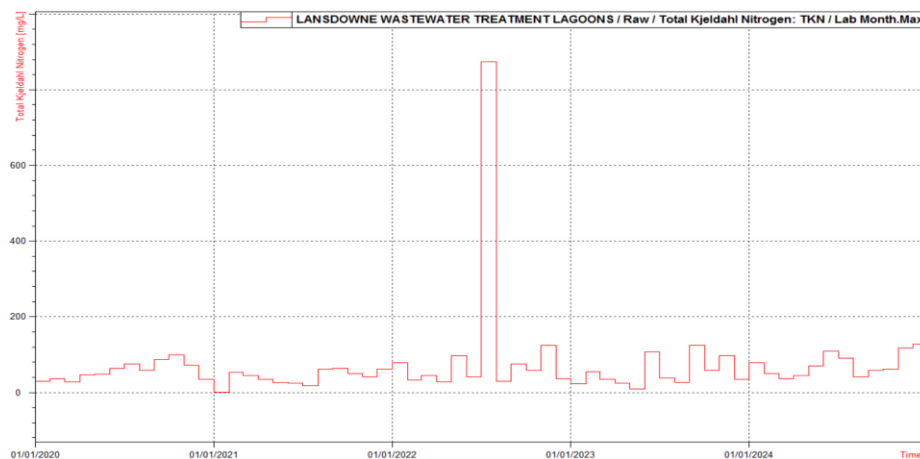
### 5.1.6 5-year Total Phosphorus (mg/L)



### 5.1.7 Total Kjeldahl Nitrogen (mg/L)



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



## 5.2 Imported Waste Quality

Imported sewage is not accepted at this facility.

## 6 Effluent Quality

Over the course of the spring and fall discharge season, Total Phosphorus, Total Ammonia Nitrogen and CBOD5 remained within the Compliance Limits and Objectives. The Total Suspended Solids parameter was exceeded during the fall discharge, and details are listed below.

### 6.1 Effluent Quality Assurance and Control Measures Taken

This system is part of OCWA's Seaway Valley Cluster. The cluster is supported by the Eastern Regional Hub, and corporate resources. Operational Services are delivered by OCWA 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 Kingston for analysis, with the exception of disinfection residuals and temperature. Caduceon 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 Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis. The disinfection residuals 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.

OCWA uses several computer systems which include:

- 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.
- Maximo – OCWA's Work Management System (WMS)
  - This program is used to track and schedule maintenance activities for all equipment in the system. It is also used to assign tasks for specific operational tasks.
- Wonderware (OUTPOST5)/SCADA
  - Wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming.

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 individual sample results for both raw sewage and final effluent can be requested from the operating authority.

## 6.2 CBOD5

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	14.3 mg/L	15 mg/L	N	25 mg/L	N
	46.21 kg/d	N/A		N/A	
Fall	11.75 mg/L	15 mg/L	N	25 mg/L	N
	41.14 kg/d	N/A		N/A	



### 6.3 Total Suspended Solids

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	28.60 mg/L	15 mg/L	Y	25 mg/L	Y
	110.14 kg/d	N/A		N/A	
Fall	64 mg/L	15 mg/L	Y	25 mg/L	Y
	230.81 kg/d	N/A		N/A	

\*See Operational Issues/Problems section of this report for details for parameter exceedances.

### 6.4 Total Phosphorus

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	0.48 mg/L	0.7 mg/L	N	1.0 mg/L	N
	1.84 kg/d	N/A		N/A	
Fall	0.38 mg/L	0.7 mg/L	N	1.0 mg/L	N
	1.43 kg/d	N/A		N/A	

### 6.5 Total Ammonia Nitrogen

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	5.30 mg/L	N/A		N/A	
	24.57 kg/d	N/A		N/A	
Fall	1.10 mg/L	N/A		N/A	
	1.00 kg/d	N/A		N/A	

### 6.6 Total Kjeldahl Nitrogen

Discharge Period	Seasonal Average	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	12.88 mg/L	N/A		N/A	
	49.60 kg/d	N/A		N/A	
Fall	5.68 mg/L	N/A		N/A	
	20.43 kg/d	N/A		N/A	

## 6.7 E-coli

Discharge Period	Geometric Mean	Objective	Objective Exceedance (Y/N)	Limit	Limit Exceedance (Y/N)
Spring	2300 cfu/100mL	N/A		N/A	
Fall	620 cfu/100mL	N/A		N/A	

## 6.8 pH

Discharge Period	Inclusive at all times	Objective (mg/L)	Objective Exceedance (Y/N)	Limit (mg/L)	Limit Exceedance (Y/N)
Spring	Min 7.75 Max 8.15	6.5-8.5	N	6-9.5	N
Fall	Min 8.15 Max 8.61	6.5-8.5	Y	6-9.5	N

# 7 Operating Issues/Problems

There were no operating issues in 2024 that are not mentioned in the objective and limit exceedances below.

## 7.1 Effluent Quality Non-Compliance Summary

Date	Exceedance of	Limit	Value	Corrective Action
Spring Discharge	TSS ECA Objective	15 mg/L	28.6 mg/L	Historical issues with algae growth in the lagoon has led to total suspended solids issues. Lagoon monitored closely by operators when discharging. Photos of samples are taken.
Fall Discharge	TSS ECA Limit	25 mg/L	64 mg/L	Historical issues with algae growth in the lagoon has led to total suspended solids issues. Lagoon monitored closely by operators when discharging. Photos of samples are taken. Actions taken: Installed coagulant injection point at the SPS to improve solids settling, and more consistent/accurate dosing.
Fall Discharge	pH ECA objective	8.5	8.6	Historical issues with algae growth causing elevated pH levels. Operators monitor the pH closely.

## 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 (other than sewage) in 2024.					

## 8 Maintenance

Routine planned maintenance activities are scheduled in WMS and include:

- 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.

Planned maintenance activities are communicated to the person responsible for completing the task through the issuance of WMS work orders. Work orders are automatically generated on a schedule as determined based on manufacturer's recommendations and site specific operational and maintenance needs and are assigned directly to the appropriate operations personnel. This schedule is set up by the designated WMS Primary. Work orders are completed and electronically entered into WMS by the person responsible for completing the task. Unplanned maintenance is conducted as required.

### 8.1 Normal Maintenance and Repairs

Work Order	Details
3759366	Shelf for security system and window coverings
3759366	Replaced flow meter
3759367	Addition of Alum Tank
3759360	Wiring for Alum pump, level meter and GFI receptacle. Flushed ½ Collection system. Camera inspection of NW area.

### 8.2 Emergency Maintenance and Repairs

Work Order	Details
No emergency repairs in 2024.	

### 8.3 Flow Meter Calibrations and Maintenance

Location	Date of Calibration	Additional Maintenance
FIT-01 SPS Effluent	April 3 <sup>rd</sup> , 2024	None.

#### 8.4 Authorized Alterations in Collection System

Work Order	Details	Significant Drinking Water Threat (Y/N)
No alterations to the collection system in 2024.		

#### 8.5 Notice of Modifications

Date	Process	Modification	Status
No modifications made in 2024.			

### 9 Sludge Generation

Sludge depth is monitored periodically, and plans for sludge removal are made as needed for optimal operation of the lagoon system. Sludge removal from the north cell is planned for 2026. Some berm repairs were completed in 2022 to the north cell.

#### 9.1 Sludge Disposal Summary

Date	Lagoon	Total Volume (m3)
2019	South Cell	N/A

### 10 Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
1 Jessie Street	August 6, 2024	Odour	Checked sewer on site, no blockage

# Appendix A

## Appendix A – Performance Assessment Report

MUNICIPALITY:	TOWNSHIP OF LEEDS & LANSDOWNE	YEAR:	2024
PROJECT:	LANSDOWNE WASTEWATER LAGOON	WATER COURSE:	La Rue Mills Creek
PROJECT NUM.:	5975	DESIGN CAPACITY:	336 m <sup>3</sup> /d
WORKS NUM.:	110001934		
DESCRIPTION:	A SINGLE SEWAGE PUMPING STATION EQUIPPED WITH STANDBY DIESEL POWER, TWO FACULTATIVE LAGOON CELLS AND A SPRAY IRRIGATION SITE		

MONTH	FLOWS					BIOCHEMICAL O <sub>2</sub> DEMAND			SUSPENDED SOLIDS			PHOSPHORUS			TKN
	TOTAL FLOW (m <sup>3</sup> )	AVG DAY FLOW (m <sup>3</sup> )	MAX DAY FLOW (m <sup>3</sup> )	LAGOON EFFLUENT FLOW (m <sup>3</sup> )	IRRIGATION EFFLUENT FLOW (m <sup>3</sup> )	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 (mg/L)
JAN	7,993	258	522			225			168			6.88			78.1
FEB	7,419	256	428			149			185			5.78			49.6
MAR	8,341	269	577			114			166			4.09			36.7
APR	8,525	284	515	38510.00		181	14.3	92.1	195	28.6	85.3	5.02	0.48	90.4	44.1
MAY	5,347	172	213			166			265			7.01			69.6
JUN	4,979	166	213			262			350			9.59			109.0
JUL	6,021	194	377			215			252			7.72			90.0
AUG	10,419	336	883			120			190			5.09			41.5
SEPT	4,830	161	214			194			238			7.27			58.6
OCT	4,137	133	176	25,245		158	11.75	92.6	144	64.0	55.6	3.66	0.38	89.6	62.1
NOV	4,169	139	200			173			375			9.97			118.0
DEC	6,615	213	374			183			940			14.60			128.0
TOTAL	78,795			63,755	0										
AVG		215				178	13.0	92.7	289	46.3	84.0	7.2	0.43	94.1	73.8
MAX			883			262			940			14.6			
CRITERIA		336					25			25			1		
COMPLIANCE	YES						YES			NO			YES		

DISCHARGE	SPRING							38,510	m <sup>3</sup>
DATE	02-Apr	05-Apr-24	08-Apr	10-Apr	12-Apr	Avg		ECA Objective	ECA Limit
CBOD (mg/L)	3	14	14	16	13	12.0		15	25
TSS (mg/L)	17	23	33	28	42	28.6		15	25
TP (mg/L)	0.49	0.34	0.42	0.52	0.62	0.48		0.70	1.0
NH3NH4 (mg/L)	6.24	7.91	4.54	6.27	6.94	6.4		N/A	N/A
pH	8.00	8.50	8.50	8.20	7.70	8.20		6.5 - 8.5	6.0 - 9.5
TKN (mg/L)	7.20	11.40	12.20	13.10	17.50	12.88			
Nitrite (mg/L)	0.05	0.05	0.06	0.05	0.06	0.05			
Nitrate (mg/L)	0.27	0.16	0.29	0.25	0.21	0.24			
H <sub>2</sub> S (mg/L)	0.67	0.16	0.16	0.16	0.16	0.26			
E.coli (cfu/100 mL)	44	2300	200	1300	1970	953			

Note: CBOD5, TSS, TP, NH3 - Non-compliance when seasonal average exceeds the ECA limit. E.coli calculated using Geometric Mean

PRE-DISCHARGE TP (mg/L)				
S1	S2	S3	S4	
North Cell	0.41	0.44	0.52	---
South Cell	1.45	1.53	1.42	---

LOADING (KG)		LOADING (KG/Day)
CBOD (kg)	462	48.21
TSS (kg)	1101	110.14
TP (kg)	8	1.94
NH3 (kg)	246	24.57
TKN (kg)	496	49.60

DISCHARGE	FALL							25,245	m <sup>3</sup>
DATE	24-Oct	25-Oct	28-Oct	29-Oct	30-Oct		Avg	ECA Objective	ECA Limit
CBOD (mg/L)	10	8	13	13	13		11.4	15	25
TSS (mg/L)	45	60	55	65	95		64	15	25
TP (mg/L)	0.35	0.35	0.38	0.39	0.45		0.38	0.70	1.0
NH3NH4 (mg/L)	0.17	0.12	0.28	0.37	0.48		0.3	N/A	N/A
pH	8.41	8.51	8.46	8.37	8.15		8.40	6.5-8.5	6.0-9.5
TKN (mg/L)	5.10	5.10	5.50	6.10	6.30		5.58		
Nitrite (mg/L)	0.05	0.05	0.05	0.1	0.1		0.1		
Nitrate (mg/L)	0.05	0.05	0.05	0.1	0.1		0.1		
H <sub>2</sub> S (mg/L)	0.16	0.16	0.15	0.16	0.16		0.16		
E.coli (cfu/100 mL)	620	590	870	85	75		289.4		

Note: CBOD5, TSS, TP, NH3 - Non-compliance when seasonal average exceeds the ECA limit

PRE-DISCHARGE TP (mg/L)				
S1	S2	S3	S4	
North Cell	0.70	0.56	0.55	
South Cell	0.77	0.33	0.27	

LOADING (KG)		LOADING (KG/Day)
CBOD (kg)	288	41.14
TSS (kg)	165	230.81
TP (kg)	10	1.43
NH3 (kg)	7	1.00
TKN (kg)	143	20.43

### Event Details Summary

### Facility Bypass/Overflow

### Collection Overflow

There are no authorized overflow locations in this system.

### Spills of Sewage

## Collection System Monitoring Data

Event Date	Event Location	Volume (m3)	Parameter	mg/L	Source Loading	Any Adverse Impacts & Corrective Actions
No collection system overflows in 2024.						

# Appendix C

## Appendix C - ECA Annual Report Requirements

<b>Facility ECA # 3483-9Q6QAL Section 11 (5)</b>	<b>Section in Report</b>
(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;	Treatment Flows, Raw Sewage, Effluent Quality
(b) a description of any operating problems encountered and corrective actions taken;	Operating Issues/Problems
(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;	Maintenance
(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;	Effluent Quality
(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;	Maintenance
(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6;	Effluent Quality
(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;	Sludge Generation
(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;	Summary of Complaints
(i) a summary of all By-pass, spill or abnormal discharge events; and	Operating Issues/Problems and Appendix B
(j) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule 'B', Section 1, with a status report on the implementation of each modification;	Maintenance
(k) a report summarizing all modifications completed as a result of Schedule 'B', Section 3; and	Maintenance
(l) any other information the Water Supervisor requires from time to time.	N/A
<b>Collection ECA #262-W601 Schedule E</b>	
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

Collection ECA #262-W601 Schedule E	
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 Appendix D
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