Township of Enniskillen
Oil City Wastewater Collection System and Lagoon

Annual Performance Report of Operations
YEAR - 2023

Managed, Operated, and Maintained by
The Township of Enniskillen

Overview

The Township of Enniskillen Oil City Sewer Collecion system is a Class one (1) collection system and operated under the Environmental Compliance Approval Number: 028-W601 Issued September 28, 2022.

ECA Issue Date September 28th, 2022

Application for ECA Review Due Date September 15, 2028

Certificates of Classification on file are:

- **Wastewater Treatment Facility Class 1 4951 Issued March 23, 2009**
- **Wastewater Collection Facility Class 1 4836 Issued March 23, 2009**

MECP performed an inspection of the wastewater system on August 22, 2018.

Pump Stations

System Name	Wastewater System Number	Location	ECA Number	Issue Date
Oil City Pumptin Station	4836	3123 Main Street Oil City	1-0245-70-742196	Oct 1 1974

Collection System

The Oil City Wastewater Collection System consists of works for the collection and transmission of sewage, consisting of 2,496 m of trunk sewers, a sewage pumping station and 1,189 m of forcemain, with discharge into the Oil City Lagoon.

Alarm System

The Oil City pump station is equipped with an alarm system to alert the Operator of pump failures, high levels or hydro outages. The alarm system is tested on a monthly basis.

Sampling & Monitoring data

Oil City Wastewater lagoon samples are taken monthly
SGS Research Laboratory conducts sample analysis

Monthly Sample Results - Oil City Wastewater Lagoon

Year 2023

Month	Sample Date	BOD5	Total Suspended Solids	Phosphorus	TKN
		(BOD5) [mg/l	[mg/l]	(total) [mg/l]	[as N mg/l)
January	February 1, 2023	148	149	5.58	38.9
February	February 28, 2023	100	130	1.92	22.1
March	March 30, 2023	162	210	3.95	43.3
April	April 28, 2023	191	171	6.63	56.9
May	May 30, 2023	269	285	6.61	64.1
June	June 28, 2023	144	227	5.89	53.6
July	July 31, 2023	77	105	2.45	21.8
August	see lagoon discharge results for August 2023				
September	September 27, 2023	164	157	4.98	43.9
October	October 24, 2023	177	132	6.7	56.4
November	November 30, 2023	206	136	6.04	56.7
December	December 28, 2023	105	97	2.88	30.2

The raw sewage samples taken in 2023 appeared to be within normal, expected ranges for the Oil City lagoon.

Oil City Pump Station monitoring data

Readings are taken at the Oil City pump stations on a regular basis.
The last reading of each month will be reported in this annual report.
The readings will be compared to the prior year to observe any abnormal situations.

Month	2022 Reading	Toal	2023 Reading	Total
	(m3)	(m3)	(m3)	(m3)
January	26,893	769	34,287	681
February	27,456	563	35,243	956
March	28,348	892	36,161	918
April	29,041	693	37,086	925
May	29,483	442	37,719	633
June	30,247	764	38,450	731
July	30,843	596	39,186	736
August	31,567	724	39,906	720
September	32,104	537	40,424	518
October	32,685	581	40,946	522
November	33,207	522	41662	716
December	33,606	399	42255	593
	Annual Toal	7,482		8,649

The Oil City lagoon has approval for annual discharge.

Alum is added to the lagoon prior to dicharge to meet set parameters as outlined in Procedure F-5-1.

When levels are acceptable as per Procedure F-5-1 the lagoon is discharged and the required samples are taken. If levels are not within the acceptable parameters or abnormal circumstances occur, the Operator works with MECP for approval of lagoon discharge.

An annual report of the discharge is prepared and sent to the MECP

In 2023 we had an abnormal amount of precipitation which led to the necessity to release the lagoon earlier than normal, in August.
The lagoon was treated with alum on August 28. Discharge periods were approved by the local MECP with sampling requirments set out.
Results of the August discharge are included in this annual report.

The regular fall discharge took place on November 14, 2023.
Parameters for discharge were met prior to and during the discharge event.
Results of the November 2023 discharge are included in this annual report.

August 2023 Lagoon discharge					
First 12 Hour Event					
Date	**Time**	**Samples to be taken after treatment/prior to discharge**	**Fox Creek (results)**	**Lagoon Content (results)**	
August 29 2023	Fox Creek (8:30 am)	PH	7.18	6.8	
	Lag Content (8:30 am)	Temperature	18.1 °C	19.2° C	
		Total Suspended Solids (TSS)	29	39	
		Alkalinity	172	106	
		Total Phophorus	0.21	0.1	
		Nitrate	0.21	<0.06	
		Nitrite	<.03	<0.03	
		Total kjeldahl nitrogen	<0.5	4.1	
		Total Ammonia Nitrogen	<0.1	2.2	
		Start of discharge (1 hour after discharging starts)	**Effluent** (results)	**Upstream** (results)	**Downstream** (results)
August 29 2023	Eff (9:36 am)	PH	7.4	7.4	7.5
	DS (9:45 am)	Temperature	23.2 ° C	22 ° C	21.7 ° C
	US (9:40 am)	Total Suspended Solids (TSS)	36	117	38
		Alkalinity	104	152	122
		Total phosphorus	0.09	0.22	0.09
		Nitrate	<0.06	0.21	0.08
		Nitrite	<0.03	<0.03	<.03
		Total Kjeldahl Nitrogren	4	1.4	2.8
		Total Ammonia Nitrogen	2	<0.1	1.4
		Near end of discharge	**Effluent** (results)	**Upstream** (results)	**Downstream** (results)
August 29 2023	Eff (8:02 pm)				
	US (7:51 pm)	PH	7.55	7.8	7.7
	DS (7:53 pm)	Temperature	22.2 ° C	21 ° C	20.3 ° C
		Total Suspended Solids (TSS)	30	23	30
		Alkalinity	102	152	130
		Total phosphorus	0.12	0.16	0.08
		Nitrate	<0.06	0.2	0.18
		Nitrite	<0.03	<0.03	<0.03
		Total Kjeldahl Nitrogren	4.5	<0.5	1.6
		Total Ammonia Nitrogen	1.9	0.2	1

Second 12 Hour Event					
Date	Time	**Start of discharge (1 hour after discharging starts)**	**Effluent**	**Upstream**	**Downstream**
			(results)	(results)	(results)
August 30 2023	Eff (9:45 am)	PH	7.27	7.9	7.47
	US (9:32 am)	Temperature	18.6 C	17.2 ° C	18 ° C
	DS (9:40 am)	Total Suspended Solids (TSS)	29	23	34
		Alkalinity	106	140	130
		Total phosphorus	0.15	0.11	0.08
		Nitrate	<0.06	0.29	0.18
		Nitrite	<0.03	<0.03	<0.03
		Total Kjeldahl Nitrogren	4.6	1.2	1.6
		Total Ammonia Nitrogen	1.9	0.2	1
		Near end of discharge	**Effluent**	**Upstream**	**Downstream**
			(results)	(results)	(results)
August 30 2023	Eff (8:02 pm)	PH	7.63	7.79	7.68
	US (7:45 am)	Temperature	16.9	16 ° C	16.4 ° C
	DS (7:51 pm)	Total Suspended Solids (TSS)	85	24	29
		Alkalinity	114	180	149
		Total phosphorus	0.09	0.13	0.09
		Nitrate	<0.06	0.23	0.15
		Nitrite	<0.03	<0.03	<0.03
		Total Kjeldahl Nitrogren	4	0.7	2
		Total Ammonia Nitrogen	1.8	0.2	0.9
Third 12 Hour Event					
Date	Time	**Start of discharge (1 hour after discharging starts)**	**Effluent**	**Upstream**	**Downstream**
			(results)	(results)	(results)
August 31 2023	Eff (9:40 am)	PH	7.65	7.79	7.8
	US (9:25 am)	Temperature	15.7 ° C	15.2 ° C	15.6 ° C
		Total Suspended Solids (TSS)	32	29	35
		Alkalinity	112	182	183
		Total phosphorus	0.08	0.13	0.13
		Nitrate	<0.06	0.26	0.25
		Nitrite	<0.03	<0.03	<0.03
		Total Kjeldahl Nitrogren	3.7	1.2	0.9
		Total Ammonia Nitrogen	2	0.1	<0.1
		Near end of discharge	**Effluent**	**Upstream**	**Downstream**

			(results)	(results)	(results)
August 31 2023	Eff (8:03 pm)	PH	7.76	7.94	7.96
	US (7:45 pm)	Temperature	19.6 ° C	18 °C	17.9 ° C
	DS (7:50 pm)	Total Suspended Solids (TSS)	26	16	33
		Alkalinity	124	188	147
		Total phosphorus	0.1	0.09	0.12
		Nitrate	<0.06	0.25	0.13
		Nitrite	<0.03	0.04	<0.03
		Total Kjeldahl Nitrogren	4.4	0.8	3
		Total Ammonia Nitrogen	2.6	0.1	1.5
Date	Time	**Day Following Third discharge**	Downstream		
			(results)		
September 1 2023	Fox Creek DS (7:24 am)	PH	8.04		
		Temperature	15.3 ° C		
		Total Suspended Solids (TSS)	22		
		Alkalinity	183		
		Total phosphorus	0.1		
		Nitrate	0.26		
		Nitrite	<0.03		
		Total Kjeldahl Nitrogren	1		
		Total Ammonia Nitrogen	0.2		

Oil City Lagoon - WW#110001738
Lagoon Discharge - Annual Reporting
File: SI-LA-EN-400

Reporting Period Ending (Select One)	March	April	May	June	September	October	November	December
							x	

Proposed Lagoon Discharge Date: 14-Nov-23

Proposed Treatment Option: Treated with alum August 28 2023

Lagoon Discharge Date (start and end dates): Start November 14 2023 End Friday November 17 2023 at 3:00 pm

Total Effluent volume to watercourse: 9,000 m3

Treatment Date: August 28 2023

Treatment Option/Details: Alum

Sample Results	Guideline Criteria for parameter	Contents of Lagoon Prior to Discharge	Contents of Lagoon Prior to Discharge	Effluent Sample 1 During discharge	Effluent Sample 2 During Discharge	Effluent *Additional Sample During Discharge	(use additional columns if necessary) *(if applicable)
Carbonaceous Biochemical Oxygen Demand (BOD5) [mg/L]	25	N/A	N/A	<4	<4		
Biochemical Oxygen Demand (BOD5) [mg/L]	25	<12	10	N/A	N/A		
Total Suspended Solids [mg/L]	25	22	21	8	7		
pH [no unit]				N/A	N/A	N/A	
Total Phosphorus (total) [mg/L]	1	0.41	0.52	0.56	0.56		
Total Kjeldahl Nitrogen [as N mg/L]		10.9	14.3	15.1	14.8		
Ammonia+Ammonium (N) [mg/L]		N/A	N/A	12.6	12.5		
Date of Sample		Oct 24 2023	07-Nov-23	14-Nov-23	15-Nov-23		

Notes/Observations/Comments: Fall lagoon discharge taking place

No Actions to report this period (check here if applicable): Lagoon discharge

In 2023 the following operating problems and associated solutions occurred

Problem/Concern/Issue	Solution
Ultrasonic Transmitter	Replaced device on August 28 2023 (like for like replacement)
Float in pumping station that controls pumps failed	Replaced float
Pro-Talk alarm system malfunctioning	Replaced alarm system

The Oil City Pump station is equipped with two (2) submersible pumps
The pumps are alternately running. There is one (1) pump in storage to serve as back up if necessary.

There is a 100 mm diameter Electromagnetic Flow meter installed on the forcemain downstream of the sewage pumping station. The Electromagmetic flow meter is read on a wekly basis and recorded in the Oil City sewer log book.
This measuring device is to be calibrated at least once every three (3) years. A copy of the verification report is filed in the Operating Manual.

Last calibration date: February 22, 2022

There is an ultrasonic transmitter to monitor the levels in the pump station.
If the levels go above 1.8 m the alarm is set to alarm out to the operator.
The transmitter is calibrated upon installation and does not need calibration on a regular basis.

The following are list of complaints received for the sewage collection system for the year

N/A - No complaints received for the Oil City Sewer System in 2023.

Alternations to the Authorized System within the reporting period that are authorized by ECA Number 028-W601

N/A - No alterations made in the system in 2023.

In 2023 the following overflow or spill situations occurred
(State N/A if no events during the year)

Date	Event	Description of Events	Solution
N/A	N/A	N/A	N/A

Procedure F-5-1 Determination Of Treatment Requirements For Municipal And Private Sewage Treatment Works

Parameters from the following chart (F-5-1) are guidelines for seasonal discharge of the single cell lagoon.

Treatment Level and Processes	Effluent Design Objectives 1 (mg/L) - BOD5	Effluent Design Objectives 1 (mg/L) - SS	Effluent Design Objectives 1 (mg/L) - TP	Effluent Design Objectives 1 (mg/L) - (NH3+NH4+)-N	Effluent Guidelines 2 (mg/L) - BOD5	Effluent Guidelines 2 (mg/L) - SS
Seasonal Lagoon with TP removal by batch chemical dosage	15	20	0.5 to 1.0	n/a	25	25

The following practices occur to strive to meet guideline paramers:

10 L/month of Shactivate is added to the lagoon as per approvals on file in the Operating Manual.

Alum is added each year prior to discharging the lagoon.
Jar samples are sent OCWA to determine the amount of alum required prior to treatment.

Special event in 2023:
In the spring of 2023 a smoke test took place in Oil City to determine if issues were occuring in the system that could be causing high level alarms during significant rain fall events.
One particular sewer cap was viewed as the primary source of surface water entering the sewer system.
The cap was replaced at that time. The issue is determined to be resolved.