



Harty

Sewage Treatment Lagoon Sewage Collection System

Annual Operating Report
January 1, 2025 to December 31, 2025

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Name of Facility: **Harty Sewage Treatment Lagoon**
 Address: **Lot 29, Concession 4, Township of Williamson
 Harty, Ontario**
 Ministry Works #: **120003316**
 Environmental Compliance Approval (ECA): **3-0085-006, issued July 15, 1983**
 Sewage Collection System (CLI-ECA): **July 15, 1983**
 Report Period: **January 1, 2025 to December 31, 2025**

FACILITY DESCRIPTION:

Capacity of Works	unknown
Service Area	Community of Harty
Service Population	90
Effluent Receiver	Un-named Creek to the Kapuskasing River
Major Process	Three Cell Waste Stabilization Lagoon

The Harty Lagoon sewage works is classified as a Class 1 wastewater treatment facility, and a Class 1 wastewater collection system.

The wastewater collection system is described to be individual pressure sewage collection systems with 1.5 horsepower grinder pumps which are pumped to a main trunk sewer and gravity fed to lagoon.

The lagoon is comprised of three (3) cells with a total surface area of approximately 2.26 ha (Cell 1 is 0.75 ha, Cell 2 is 0.75 ha and Cell 3 is 0.76 ha), and a total effective storage volume of 30,600 m³, including inlet and outlet control structures, fencing and outfall ditching.

The system operates on a semi-annual discharge basis without defined effluent discharge periods. This discharge is directed to an unnamed creek that leads to Kapuskasing River. Prior to each discharge season, samples are collected to ensure total phosphorous concentrations are below 1.0 mg/L. When required, phosphorous removal is accomplished by batch dosing the lagoon contents with alum, prior to discharge.

The Township of Val Rita - Harty owns the lagoon and the collection system.

DEFINITIONS

BOD5 - Five-day biochemical oxygen demand measured in an unfiltered sample

ECA – Environmental Compliance Approval

TSS - Total Suspended Solids

TP - Total Phosphorus

EFFLUENT QUALITY ASSURANCE AND CONTROL MEASURES UNDERTAKEN

Members of the operational staff possess a high level of process knowledge and regulatory competence.

Lagoon contents were sampled and analyzed prior discharge to ensure effluent parameters met the limits specified in the ECA.

Samples are collected as required and analyzed by Testmark Laboratories Limited, located in Timmins, Ontario. Licensed Operators conduct in-house tests for monitoring purposes using procedures as per Standard Methods of Water and Wastewater.

Any bypass or upset events that occur within the collection system or plant site are tested, monitored and reported to the Spills Action Center (SAC).

MAINTENANCE PROCEDURES PERFORMED ON THE WORKS

Lagoon maintenance, including non-scheduled maintenance, is monitored using OCWA's preventative maintenance software programs. All routine and preventative maintenance measures were conducted as scheduled.

OPERATING PROBLEMS AND CORRECTIVE ACTIONS

There were no major operating issues during the reporting period.

ALTERATIONS, EXTENSIONS OR REPLACEMENTS TO THE WORKS

There were no alterations, extensions or replacements proposed in the process or operations for the reporting period. There was no need for major modifications to improve performance or reliability of the system.

CALIBRATION AND MAINTENANCE OF ALL MONITORING EQUIPMENT

The monitoring equipment is calibrated based on the manufacturers' recommendations and conducted by a trained person.

Instrument	Calibration Date	Accuracy
pH meter (Oakton pH Meter Series 10)	July 29, 2025	99.3 %

ABNORMAL DISCHARGE EVENTS, OVERFLOWS, BYPASSES AND SPILLS

All events are verbally reported to the Ministry of the Environment's Spills Action Center, a courtesy call to the Ministry of Health and a written report is submitted to Environment Canada and OCWA's Compliance Department.

There were no abnormal discharge events during the reporting period.

SLUDGE REMOVAL

There was no sludge removed during the reporting period

COMPLAINTS

There were no complaints received during the reporting period

MONITORING DATA – RAW SEWAGE (INFLUENT)

On the raw influent, a monthly grab sample analyzed for:

- BOD₅,
- total suspended solids and
- total phosphorous

Below is a summary of the raw influent sampling for the calendar year:

Parameter (mg/L)	Number of Samples	Annual Average	Maximum
BOD ₅	12	108	190
Total Suspended Solids	12	122	218
Total Phosphorous	12	3.99	7.05

Refer to *APPENDIX A: Monthly Summary of Raw Influent Sampling and Monitoring Data*, which summarizes the monitoring and sampling analysis conducted at the facility

MONITORING PROGRAM – COLLECTION SYSTEM OVERFLOWS (CLI-ECA)

A weekly grab sample is taken on any collection system overflow and analyzed for:

- BOD₅
- Total Suspended Solids
- Total Phosphorous
- Total Kjeldahl Nitrogen
- E.coli

The Harty sewage collection system does not contain any pumping stations. There were no sewage collection system overflows events during this reporting period.

MONITORING DATA – PRE-DISCHARGE SAMPLING

Pre-discharge sampling is to be completed prior to the scheduled discharge and analyzed for total phosphorous to determine if the concentrations are greater than 1.0 mg/L, and if chemical treatment is needed. The pre-discharge sampling consists of taking of three (3) total phosphorous samples at least 3 weeks prior to a planned discharge, with a treatment requirement if the average concentrations are above 1.0 mg/L. If required, the treatment with chemical additives shall be completed and discharge is commenced no sooner than one week after treatment.

Average Total Phosphorous (mg/L)	Cell 1	Cell 2	Cell 3
Spring – May 6 to 8	0.148	0.228	0.081
Fall – September 15 to 17	0.968	0.065	0.048

Refer to *APPENDIX B: Summary of Cell Contents Sampling*, which includes additional details for the cell contents sampling analysis.

MONITORING DATA - FINAL EFFLUENT

There is no defined time period for the spring or fall discharges. The minimum sampling requirement for the final effluent is samples taken on the first day, middle and last day of the discharge. Samples are taken and analyzed for:

- BOD₅
- Total Suspended Solids
- Total Phosphorous
- *E. coli* (*Escherichia coli*)

Spring Discharge

The controlled spring discharge for 2025 began on May 29th and ended on June 12th. The following data is from the controlled spring discharge. Non-compliance occurs when a sample concentration exceeds the compliance limit.

Parameter (mg/L)	Average Results	Max Result	Compliance
<i>E. coli</i> (cfu/100mL)	0	0	None
BOD ₅	1.5	1.7	22.5 mg/L
Total Suspended Solids (TSS)	3.6	4.3	22.5 mg/L
Total Phosphorous (TP)	0.164	0.360	1.5 mg/L

Fall Discharge

The controlled fall discharge for 2025 began on October 6th and ended on October 28th. The following data is from the controlled fall discharge. Non-compliance occurs when a sample concentration exceeds the compliance limit.

Parameter (mg/L)	Average Results	Max Result	Compliance
<i>E. coli</i> (cfu/100mL)	18	28	None
BOD ₅	2.2	2.7	22.5 mg/L
Total Suspended Solids (TSS)	4.5	6.5	22.5 mg/L
Total Phosphorous (TP)	0.071	0.129	1.5 mg/L

Refer to *APPENDIX C: Summary of Final Effluent Sampling and Monitoring Data*, which summarizes the monitoring and sampling analysis conducted.

Summary of Effluent Flow

Discharge Period	Average Flow (m ³ /d)	Total Flow (m ³)
Spring: May 29 to June 12	697	10,448
Fall: October 6 to October 28	324	7,449

Refer to APPENDIX D: Summary of Final Effluent Flow Monitoring Data which summarizes the treated effluent flows during the reporting period.

ANNUAL LOADINGS (EFFLUENT)

As defined in the ECA, the "Annual Average Loading" means the value obtained by multiplying the average concentration of a contaminant by the *Average Daily Flow* over the same period of twelve (12) consecutive calendar months.

Parameter	Final Effluent Loadings (kg/year)	Compliance
BOD ₅	32.8	306
Total Suspended Solids	72.7	306
Total Phosphorous	2.1	20.4

Refer to APPENDIX E: *Loading Calculations*, for additional details.

SEWAGE TREATMENT PROGRAM SUCCESS AND ADEQUACY

The table below details the efficiency of the lagoon's performance demonstrating pollutant removal rates from raw sewage concentrations through to final effluent for BOD₅ suspended solids and total phosphorus.

Parameter (mg/L)	Influent	Effluent	% Removal
BOD ₅	108	1.8	98.3
Total Suspended Solids	122	4.1	96.7
Total Phosphorous	3.99	0.118	97.1

Note: percent removal calculations are based on the annual average values

INTERPRETATION OF MONITORING AND ANALYTICAL DATA

Harty Sewage Treatment Lagoon's effluent monitoring parameters fell below the compliance limits specified in the facility's ECA.

The effluent quality is based on the biochemical oxygen demand, total phosphorous and total suspended solids levels.

The Biological Oxygen Demand (BOD₅) is the amount of oxygen used by micro-organisms as they decompose organic matter in the effluent sample for five days. High BOD₅ in effluent means a large quantity of oxygen was needed to break down the organic matter and identifies a large amount of organic matter in the effluent indicating inadequate treatment. The BOD₅ concentration limit of 22.5 mg/L, and the loading limit of 306 kg/year were not exceeded.

Total Suspended Solids (TSS) in effluent are composed of settable solids and non-settable solids depending on the size, shape and weight of the solid particles. Settable solids are large sized particles that tend to settle more rapidly in a given period of time. The TSS concentration limit of 22.5 mg/L, and the loading limit of 306 kg/year were not exceeded.

Total Phosphorus (TP) refers to the amount of phosphorus in a sample. Excess TP stimulates algae and weed growth that may cause fluctuations in dissolved oxygen in the receiving waters. The TP concentration limit of 1.5 mg/L, and the loading limit of 20.4 kg/year were not exceeded.

SUMMARY

The Harty Sewage System consists of sewage works for the collection and transmission of sewage, consisting of low-pressure grinder pumping system with grinder unit and service lateral installation by each resident, force mains, with discharge into a three (3) cell stabilization pond and a P.V.C gravity discharge sewer from the waste stabilization pond to the receiving stream. The collection system does not have any immediate concerns.

In 2025, the effluent during discharge periods was of good quality and well below the compliance limits established in the ECA.

APPENDIX A: Monthly Summary of Raw Influent Sampling and Monitoring Data

Raw Sewage Parameters	09-Jan-25	25-Feb-25	13-Mar-25	10-Apr-25	06-May-25	10-Jun-25	09-Jul-25	12-Aug-25	09-Sep-25	06-Oct-25	18-Nov-25	16-Dec-25
BOD5 (mg/L)	170	100	90	70.3	14	87	22	130	120	140	160	190
Total Phosphorus (mg/L)	5.69	2.17	4.43	2.84	0.875	3.85	1.34	3.95	5.14	7.05	6.49	4.02
Suspended Solids (mg/L)	187	87	73	106	22.5	11.5	196	194	180	107	218	84

APPENDIX B: Summary of Cell Contents Sampling
Harty - Spring Discharge Cell Contents

Cell 1 Contents	Average	Max
BOD5	2.6	2.8
Field pH	7.42	7.78
Field Temp	11	16
Total Phosphorus	0.148	0.186
Suspended Solids	5.2	7.0

Cell 2 Contents	Average	Max
BOD5	4.0	5.8
Field pH	7.98	8.23
Field Temp	11	17
Total Phosphorus	0.228	0.433
Suspended Solids	6.2	7.0

Cell 3 Contents	Average	Max
BOD5	3.1	4.5
Field pH	7.59	7.85
Field Temp	10	14
Total Phosphorus	0.081	0.098
Suspended Solids	9.5	13.5

Three consecutive samples collected 3 weeks before discharge

Spring Discharge	6-May-25	7-May-25	8-May-25
BOD5	2.7	2.8	2.4
Field pH	7.19	7.78	7.3
Field Temp	15.6	9.3	7.5
Total Phosphorus	0.117	0.142	0.186
Suspended Solids	4.5	7	4

Spring Discharge	6-May-25	7-May-25	8-May-25
BOD5	2	5.8	4.3
Field pH	8.23	7.88	7.82
Field Temp	17.4	8.6	7.8
Total Phosphorus	0.433	0.13	0.12
Suspended Solids	7	6	5.5

Spring Discharge	6-May-25	7-May-25	8-May-25
BOD5	2	4.5	2.8
Field pH	7.85	7.52	7.4
Field Temp	13.5	9.4	8
Total Phosphorus	0.062	0.098	0.083
Suspended Solids	13.5	7.5	7.5

Harty - Fall Discharge Cell Contents

Cell 1 Contents	Average	Max
BOD5	3.4	5.0
Field pH	7.53	7.74
Field Temp	21	22
Total Phosphorus	0.968	1.120
Suspended Solids	9.3	21.3

Cell 2 Contents	Average	Max
BOD5	1.7	2.4
Field pH	9.41	9.71
Field Temp	21	22
Total Phosphorus	0.065	0.083
Suspended Solids	12.5	34.0

Cell 3 Contents	Average	Max
BOD5	2.1	2.7
Field pH	8.60	8.68
Field Temp	20	21
Total Phosphorus	0.048	0.052
Suspended Solids	15.8	21.0

Three consecutive samples collected 3 weeks before discharge

Fall Discharge	15-Sep-25	16-Sep-25	17-Sep-25
BOD5	5	2.8	2.5
Field pH	7.38	7.74	7.48
Field Temp	21	22	19
Total Phosphorus	0.91	0.873	1.12
Suspended Solids	3.7	2.8	21.3

Fall Discharge	15-Sep-25	16-Sep-25	17-Sep-25
BOD5	2.4	1.6	< 1
Field pH	9.71	9.28	9.24
Field Temp	21.5	21.5	19.5
Total Phosphorus	0.043	0.083	0.068
Suspended Solids	1	2.5	34

Fall Discharge	15-Sep-25	16-Sep-25	17-Sep-25
BOD5	2.7	2.6	< 1
Field pH	8.52	8.6	8.68
Field Temp	19	20.5	19
Total Phosphorus	0.05	0.052	0.043
Suspended Solids	21	11	15.3

APPENDIX C: Summary of Final Effluent Sampling and Monitoring Data

Spring Combined Effluent	29-May-25	5-Jun-25	12-Jun-25
Field pH (units)	7.23	7.25	7.9
Field Temperature C	19	17	11
Total Phosphorus	0.360	0.052	0.079
<i>E. coli</i> (cfu/100 mL)	0	0	0
BOD5	1.6	1.7	1.1
Suspended Solids	4.3	2.3	4.3

Fall Combined Effluent	6-Oct-25	14-Oct-25	28-Oct-25
BOD5	2.5	1.4	2.7
<i>E. coli</i> (cfu/100 mL)	28	13	16
Field pH (units)	7.96	8.01	7.05
Field Temperature C	16	12.5	8
Total Phosphorus	0.063	0.022	0.129
Suspended Solids	6.5	< 0.67	6.3

APPENDIX D: Summary of Final Effluent Flow Monitoring Data

Effluent Discharge	January	February	March	April	May	June	July	August	September	October	November	December
<i>Effluent Flow - Avg (m3/d)</i>					457	756				324		
<i>Effluent Flow - Max (m3/d)</i>					534	1,032				393		
<i>Effluent Flow - Total (m3)</i>					1,372	9,076				7,449		
<i>Days Discharging</i>					3	12				23		

APPENDIX E: Loading Calculations

Loading Calculations

$$\boxed{\frac{\text{Annual average result}}{\text{L}} \frac{\text{mg}}{\text{L}}} \times \boxed{\frac{1000 \text{ L}}{1 \text{ m}^3} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ kg}}{1000 \text{ g}}} \times \boxed{\frac{\text{annual average flow}}{\text{year}} \frac{\text{m}^3}{\text{year}}} = \boxed{\frac{\text{Loading}}{\text{year}} \frac{\text{kg}}{\text{year}}}$$

convert from mg/L to kg/m³

BOD₅ Loading Calculation

$$\frac{1.8 \text{ mg}}{1 \text{ L}} \times \frac{1000 \text{ L}}{1 \text{ m}^3} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ kg}}{1000 \text{ g}} \times \frac{17,897 \text{ m}^3}{\text{a}} = \frac{32.8 \text{ kg}}{\text{a}}$$

Total Suspended Solids (TSS) Loading Calculation

$$\frac{4.1 \text{ mg}}{1 \text{ L}} \times \frac{1000 \text{ L}}{1 \text{ m}^3} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ kg}}{1000 \text{ g}} \times \frac{17,897 \text{ m}^3}{\text{a}} = \frac{72.7 \text{ kg}}{\text{a}}$$

Total Phosphorous (TP) Loading Calculation

$$\frac{0.12 \text{ mg}}{1 \text{ L}} \times \frac{1000 \text{ L}}{1 \text{ m}^3} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ kg}}{1000 \text{ g}} \times \frac{17,897 \text{ m}^3}{\text{a}} = \frac{2.1 \text{ kg}}{\text{a}}$$

APPENDIX F: CLI-ECA Reporting Sections

Collection ECA # 291-W601 Schedule E	(Page #) Section in Report
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.	(3) MONITORING PROGRAM – COLLECTION SYSTEM OVERFLOWS (CLI-ECA) (2) ABNORMAL DISCHARGE EVENTS, BYPASSES AND SPILLS (2) ALTERATIONS, EXTENSIONS OR REPLACEMENTS TO THE WORKS (6) SUMMARY
4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.	(2) ABNORMAL DISCHARGE EVENTS, BYPASSES AND SPILLS (2) OPERATING PROBLEMS AND CORRECTIVE ACTIONS
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.	(2) CALIBRATION AND MAINTENANCE OF ALL MONITORING EQUIPMENT (2) MAINTENANCE PROCEDURES PERFORMED ON THE WORKS
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.	(3) 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.	(2) ALTERATIONS, EXTENSIONS OR REPLACEMENTS TO THE WORKS
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.	(2) ABNORMAL DISCHARGE EVENTS, BYPASSES AND SPILLS

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.

(6) SUMMARY