

**MUNICIPALITY OF SOUTHWEST MIDDLESEX
GLENCOE LAGOON SYSTEM**

**2008 ANNUAL REPORT
January 1 to December 31, 2008**

Certificate of Approval # 1-0068-67-742816

Prepared by:



**Ontario Clean Water Agency
Agence Ontarienne Des Eaux**

Plant Description

The Glencoe Lagoon System consists of three pumping stations within the collection system and a two cell seasonal retention waste stabilization pond. The pump stations are located at Industrial Road, South Street, and Victoria Street in the Village of Glencoe. Industrial Road and South Street pumping stations direct the raw sewage to the main pumping station on Victoria Street. From the main pumping station the sewage is pumped through an eight inch force main to the lagoon site. The lagoon system consists of two cells, fourteen acres each with the effluent discharging to the Newbiggen Creek.

Backup power is supplied to the main pumping station by a backup diesel generator.

Batch seasonal treatment is provided with the addition of a treatment polymer.

Summary of Monitoring and Compliance Data

A summary of all flow data, raw influent and final effluent data is summarized monthly in the Performance Assessment Report, attached as Appendix A.

The average daily influent flow was 771.6m³/day with a maximum daily flow of 1,769m³/day. The average daily flow has increased 13% from 2007; whereas, the maximum daily flow has decreased by 17% the previous year.

Effluent Quality Assurance

The operator does daily monitoring of the effluent before and upon discharge with on site laboratory testing to ensure effluent quality. Jar testing is performed by GAP EnviroMicrobial Services Ltd. on the lagoon cells to ensure proper treatment chemicals and dosing is used. The dissolved oxygen meter and pH meter are calibrated monthly, and the flow sensing devices are calibrated annually. The required samples are tested at SGS Lakefield Research Laboratories.

Maintenance Summary

Routine and preventative maintenance was completed on all equipment as per OCWA workplace management system. Annual generator maintenance was performed by Albert's Generator Service in July. Annual raw flow meter calibration was performed by R&R Instrumentation in September.

Other maintenance performed:

- Pump #1 at Industrial Street Pump Station pulled and cleaned
- Pump #1 at South Street Pump Station installed along with a new capacitor
- Main Pump Station diesel tank for generator was replaced
- Starter for pump at Main Pumping Station replaced

Operating Problems

The system continues to have infiltration problems when there is heavy precipitation and snow melt causing high levels at the pump station and an increase in flow to the lagoons.

An early emergency discharge was required and approved by the MOE for the West cell on March 6 to 20th due to ice melt and excess flow. The cell could not be treated because of a thick ice cover.

Operators were called in for excessive amounts of power flickers and power failures at all three pumping stations in Glencoe in 2008.

Alteration

No alterations were made to the lagoon system in 2008.

Sludge Generated

There was no removal of sludge in 2008.

Calibration

R&R Instrumentation calibrated the raw flow meter at the Main Pump Station in September.

Bypass Information

There were no bypass events in 2008 of the lagoons. An MOE approved untreated discharge event occurred in March, see below.

Discharge Information

The following are the discharge events for the Glencoe Lagoon System. Samples on the discharge effluent were collected and tested for the required parameters.

March 6-20—Untreated discharge

April 3-7—Batch treated discharge

April 11-16—Batch treated discharge

September 19-23—Batch treated discharge

December 14-15—Batch treated discharge

Sample Collection and Testing

All samples are collected and tested as per the requirements.

Raw sewage is sampled monthly and tested for BOD₅, suspended solids, total phosphorus, and total Kjeldahl nitrogen. The raw samples are collected at the Main Pumping Station.

Prior to a discharge event the cell contents are sampled and tested for BOD₅, suspended solids, total phosphorus, total Kjeldahl nitrogen, hydrogen sulfide (if odour

present), pH, and dissolved oxygen. During discharge the final effluent is sampled and tested for BOD₅, suspended solids, total phosphorus, ammonia + ammonium, total Kjeldahl nitrogen, nitrite, nitrate, hydrogen sulfide, pH, temperature and E. coli. During discharge the Newbiggen (receiving stream) is also analyzed in-house for pH, temperature and dissolved oxygen. Samples are collected as grab samples from the cell and from the discharge site at the creek.

In 2008, all chemical and microbiological sample analyses were conducted by SGS Lakefield Research. Temperature, pH and dissolved oxygen were conducted by in-house by operations staff.

Flows

Detailed monthly flow information is summarized in the Performance Assessment Report attached to this report as Appendix A.

The total raw flow in 2008 was 282,398m³ which is an 18% increase to the 2007 annual flow. The total effluent discharged from the Glencoe Lagoon System was 314,625m³, which correlates to a 35% increase to 2007. This increase in discharge is due to the last discharge event in 2007 was in September.

APPENDIX A

Performance Assessment Report



Ontario Clean Water Agency Performance Assessment Report - Wastewater Lagoon

Printed on: 3/20/2009

d_par_wwl

Municipality: Village of Glencoe
 Facility: [5877] - Glencoe Wastewater Lagoons & Collection System
 Works: [110001845] - Glencoe Wastewater Lagoon & Collection System
 Classification: Class 2 Wastewater Collection, Class 1 Wastewater Treatment
 Receiver: Newbiggen Creek to Thames River

Period: 01/01/2008 to 12/31/2008
 Serviced Population: 2,379
 Total Design Capacity(m³/day): 946.0
 Raw Flow Group Selected: Raw
 Effluent Group Selected: Eff

	Jan/2008	Feb/2008	Mar/2008	Apr/2008	May/2008	Jun/2008	Jul/2008	Aug/2008	Sep/2008	Oct/2008	Nov/2008	Dec/2008	<-- Total -->	<-- Avg. -->	<-- Max. -->	<--Criteria-->
Flow																
Raw: Total Flow(m3/mth)	28,564.0	28,379.0	29,885.0	26,060.0	19,955.0	18,214.0	17,576.0	17,107.0	19,032.0	17,930.0	25,441.0	34,255.0	282,398.0			
Raw: Avg. Day Flow(m3/day)	921.4	978.6	964.0	868.7	643.7	607.1	567.0	551.8	634.4	578.4	848.0	1,105.0		771.6		
Raw: Max. Day Flow(m3/day)	1,769.0	1,250.0	1,535.0	1,195.0	685.0	623.0	625.0	579.0	823.0	645.0	1,088.0	1,308.0			1,769.0	
Eff.: Total Flow(m3/mth)			6,375.0	168,250.0					84,000.0			56,000.0	314,625.0			
Biochemical O2 Demand																
Raw: Avg. BOD(mg/L)	294.0	198.0			293.0	221.0	244.0	268.0	358.0		241.0	217.0		259.3	358.0	0
Eff.: Avg. BOD(mg/L)				19.5					< 2.0					< 10.8	19.5	0
Percent Removal									99.44					99.44		
Raw: Avg. CBOD(mg/L)			213.0	180.0						298.0				230.3	298.0	0
Eff.: Avg. CBOD(mg/L)			23.9	18.0								< 2.0		< 20.9	< 23.9	0
Percent Removal			88.8	90.0										89.4		
Suspended Solids																
Raw: Avg. SS(mg/L)	224.0	140.0	114.0	102.0	201.0	142.0	208.0	204.0	410.0	216.0	181.0	264.0		200.5	410.0	0
Eff.: Avg. SS(mg/L)			23.9	39.7					4.5			3.0		22.3	39.7	0
Percent Removal			79.07	61.11					98.9			98.86		84.49		
Phosphorus																
Raw: Avg. PHOS(mg/L)	6.4	3.19	2.48	1.43	8.82	6.01	5.22	7.2	12.3	7.22	9.08	5.48		6.24	12.3	0
Eff.: Avg. PHOS(mg/L)			1.95	0.19					< 0.05			0.1		< 1.34	< 1.95	0
Percent Removal			21.43	86.48					99.63			98.27		76.45		
Nitrogen Series																
Eff.: Avg. NH3+NH4(mg/L)			21.56	12.5					3.4			< 0.1		< 16.5	< 21.56	0
Eff.: Avg. Nitrate(mg/L)			< 0.18	0.23					0.08			101.5		< 10.84	101.5	0
Eff.: Avg. Nitrite(mg/L)			< 0.06	< 0.06					0.29			0.14		< 0.09	0.29	0
Disinfection																
Eff.: Avg. H2S(mg/L)			< 0.13											< 0.13	< 0.13	0



**Ontario Clean Water Agency
Performance Assessment Report - Wastewater Lagoon**

Printed on: 3/20/2009

d_par_wwl

Municipality: Village of Glencoe
 Facility: [5877] - Glencoe Wastewater Lagoons & Collection System
 Works: [110001845] - Glencoe Wastewater Lagoon & Collection System
 Classification: Class 2 Wastewater Collection, Class 1 Wastewater Treatment
 Receiver: Newbiggen Creek to Thames River

Period: 01/01/2008 to 12/31/2008
 Served Population: 2,379
 Total Design Capacity(m³/day): 946.0
 Raw Flow Group Selected: Raw
 Effluent Group Selected: Eff

	Jan/2008	Feb/2008	Mar/2008	Apr/2008	May/2008	Jun/2008	Jul/2008	Aug/2008	Sep/2008	Oct/2008	Nov/2008	Dec/2008	<-- Total -->	<-- Avg. -->	<-- Max. -->	<--Criteria-->
--	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	---------------	--------------	--------------	----------------

Disinfection

Eff.: Geo.Mean E.Coli per 100mL			< 9.0	75.0					< 2.0			45.0		< 14.0	< 75.0	0
---------------------------------	--	--	-------	------	--	--	--	--	-------	--	--	------	--	--------	--------	---

Note: ? Calculation not verifiable. At least one result reported as < and at least one result reported >. -1 Analysis result less than detectable limit

Legend:

Raw Group Selected: Raw - Raw Sewage

Effluent Group Selected: Eff