

# Killaloe Wastewater System

## 2012 Annual Reports



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

This report has been prepared as a general summary of results and events. There is no Certificate of Approval governing this facility and it is thereby operated based solely on guidelines.

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## Compliance Report Card

Compliance Event	# of Events	Details
Ministry of Environment Inspections	1	Inspection took place February 15, 2012. There were no actions required identified in this inspection.
Ministry of Labour Inspections	0	
Effluent Parameter Exceedances	0	
Bypass/Overflows	0	
Community Complaints	0	
Spills	0	

## System/Process Description

The Killaloe Wastewater Treatment System consists of a sewage treatment plant and one sewage pumping station. In the event of a power failure, emergency power is supplied from the main treatment facility to the pumping station.



Sewage collects from the Town of Killaloe at the pumping station which is then pumped to the treatment facility located at 113 Keetch Street.

## Primary Treatment

Once the raw sewage reaches the plant it is discharged into the grit channels. The flow through the channels is slowed down to allow the grit to settle. The settled grit is manually removed from the channel. The flow is measured using a v-notch weir.



## Chemical Addition

Caustic Soda is added to optimize nutrient removal. It is added at the end of the aeration process and ahead of the clarifier tank. This chemical reacts with phosphates in the sewage and forms an insoluble phosphate which settles out in the clarifier.





## Secondary Treatment

The influent water which is still carrying suspended and dissolved wastes, is then biologically treated using the extended aeration process. The flow travels from the grit channels to aeration tanks. The coarse aerators supply oxygen to the aeration tank and provide mixing creating mixed liquor.

The flow continues to the clarifier which allows settling. The activated sludge which settles to the bottom of the clarifier is either returned to the head of the aeration tank or is diverted to the digester. The clear water (final effluent) remaining after the clarifier, overflow the clarifier weirs and is collected in the channel leading to the chlorine contact chamber. Here Sodium Hypochlorite (a chlorine solution) is added to disinfect the effluent. A clear, virtually bacteria-free water then flows into Brenann's Creek.





### Solids Handling

Sludge collected in the clarifier is further processed (stabilized) in an aerobic digester and is spread on agricultural land during the summer months (April 1- November 30). In winter months (December 1 – March 31), sludge is stored in the holding tank (approx. 150 m<sup>3</sup>) until the weather conditions and regulations permit spreading.

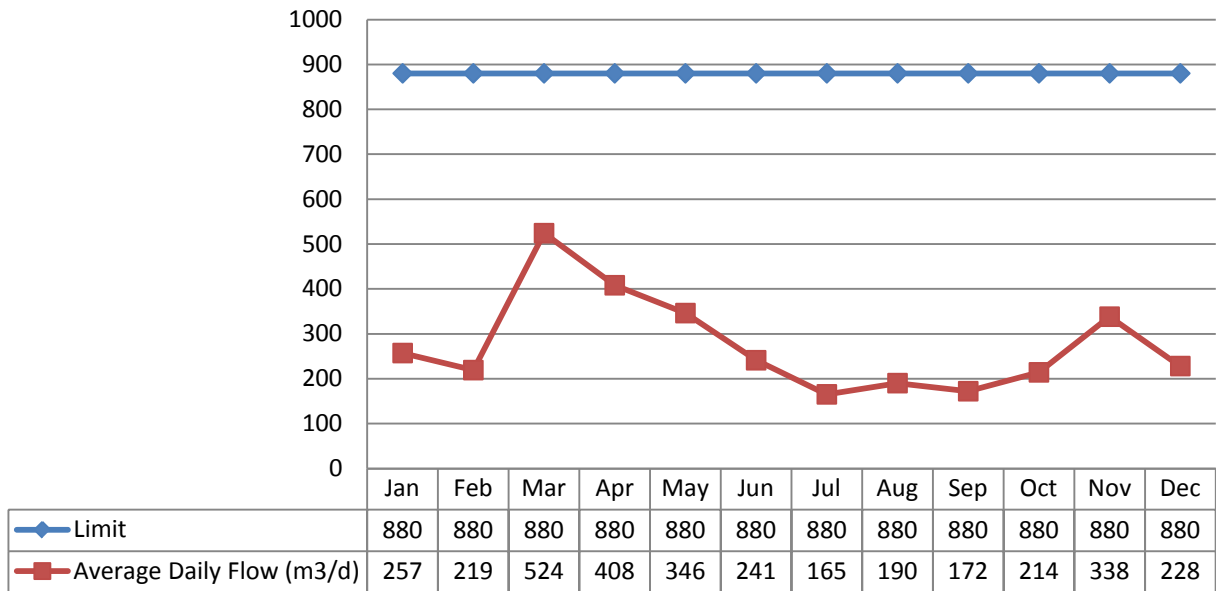


### Proposed Alterations, Extensions, or Replacement to Works

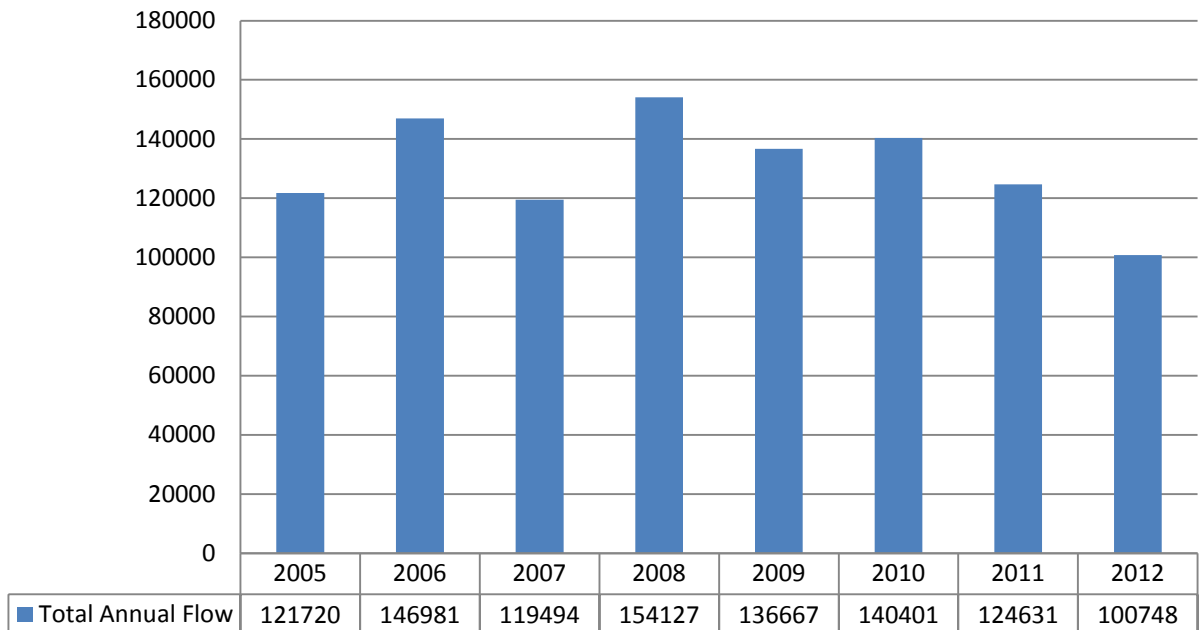
There were no major proposed alterations, extensions or replacements completed at the works in 2012.

## Treatment Flows

### Raw Flow (m3/d)



### Annual Comparison (m3)



## Effluent Quality Assurance or Control Measures

The Township of Killaloe, Hagarty and Richards facilities are part of OCWA's operational Ottawa Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff who live and work in the area.

OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional "Value Added" and operational support services that the Township of Killaloe, Hagarty and Richards benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
  - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
  - Process Data Collection (PDC) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
  - Work Management System (WMS) that tracks and reports maintenance activities, and creates predictive and preventative reports.
  - Outpost 5 wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling



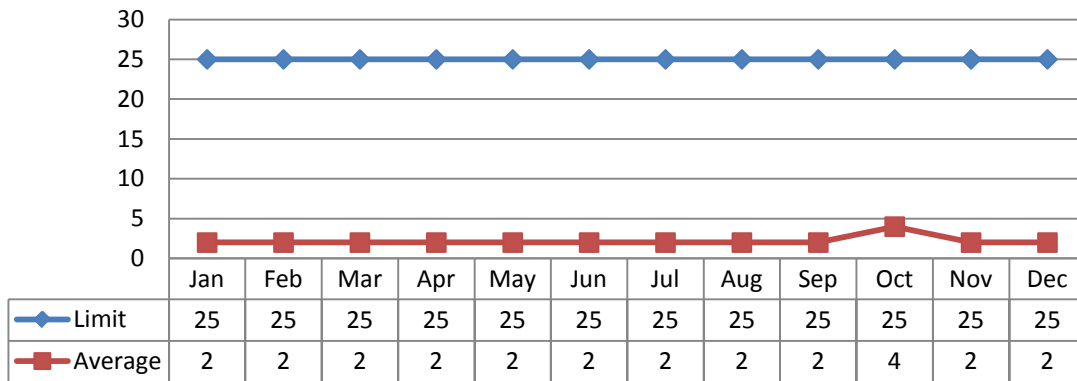


## Effluent Quality

There is no certificate of approval for this facility. This facility operates to ensure current guidelines are not exceeded.

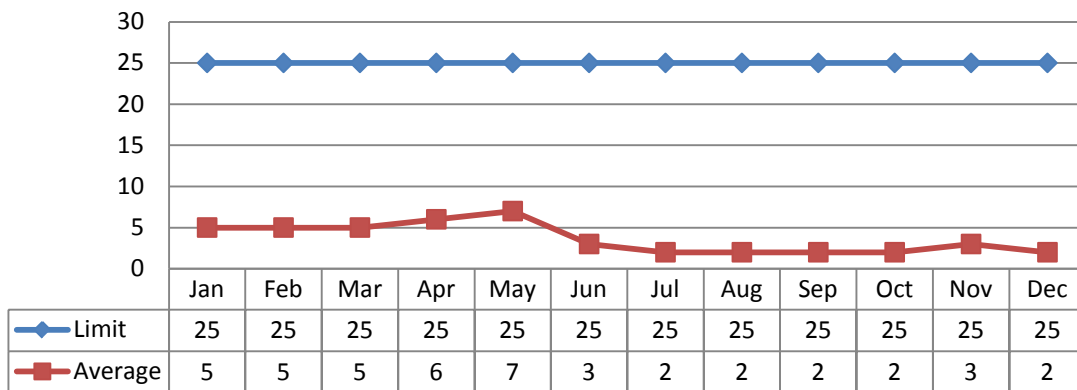
### BOD5

#### Concentration (mg/L)



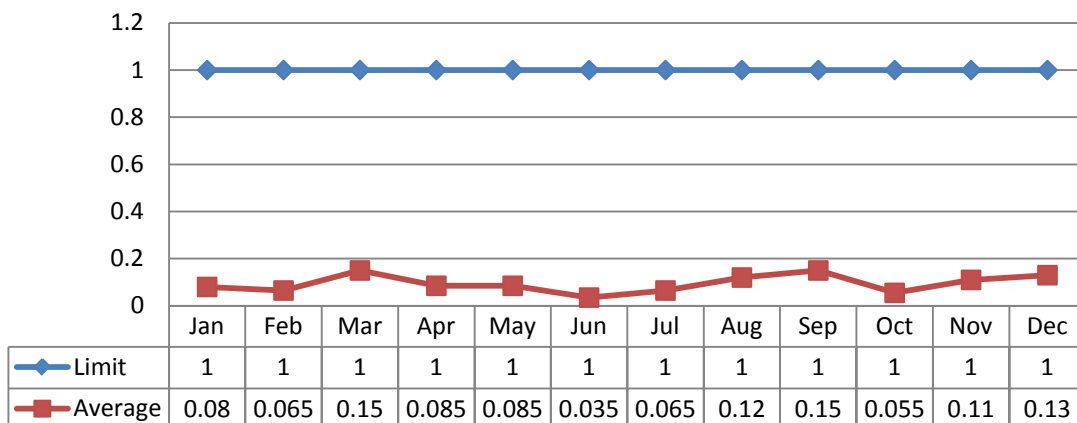
### Total Suspended Solids

#### Concentration (mg/L)



### Total Phosphorus

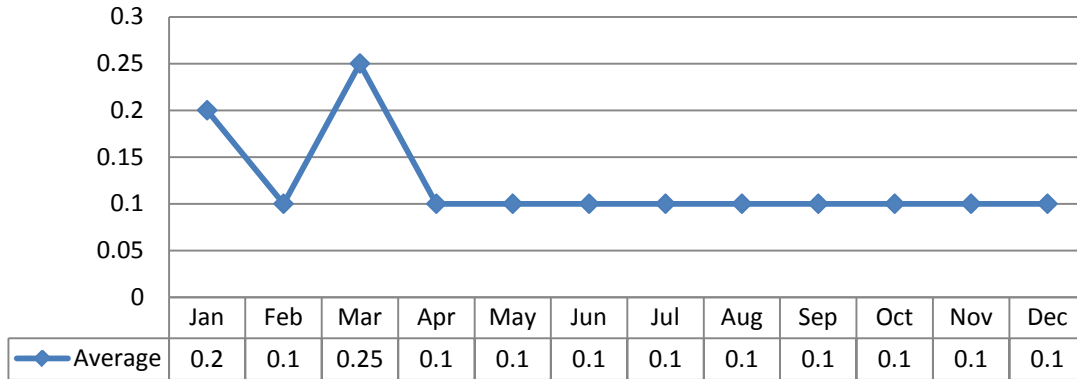
#### Concentration (mg/L)



## Total Ammonia Nitrogen

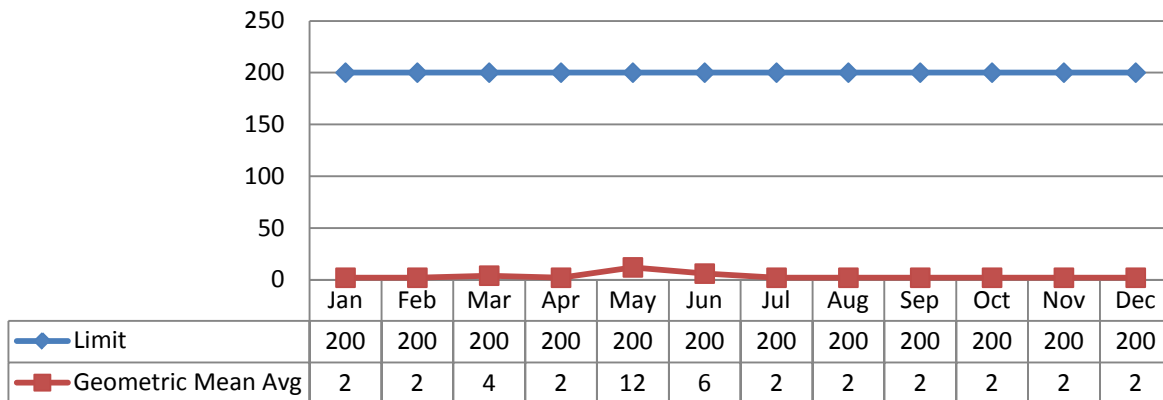
There is no guideline limit on Ammonia Nitrogen.

### Concentration (mg/L)

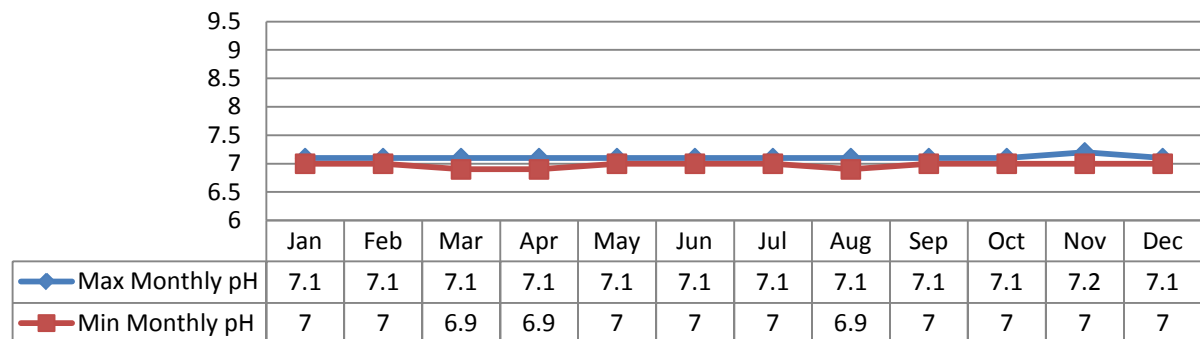


## E-coli

### Concentration (cfu/100mL)



## pH



## Operating Problems

There were no operating problems to report on in 2012.

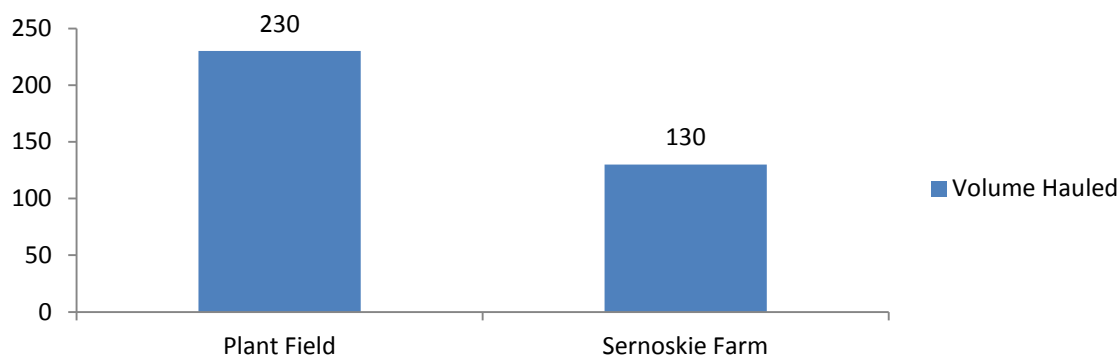
## Biosolids

Sludge generated from the treatment plant is spread on agricultural land during the spreading season as per the Nutrient Management Act O.Reg 267/03. There are two certified organic conditioning sites:

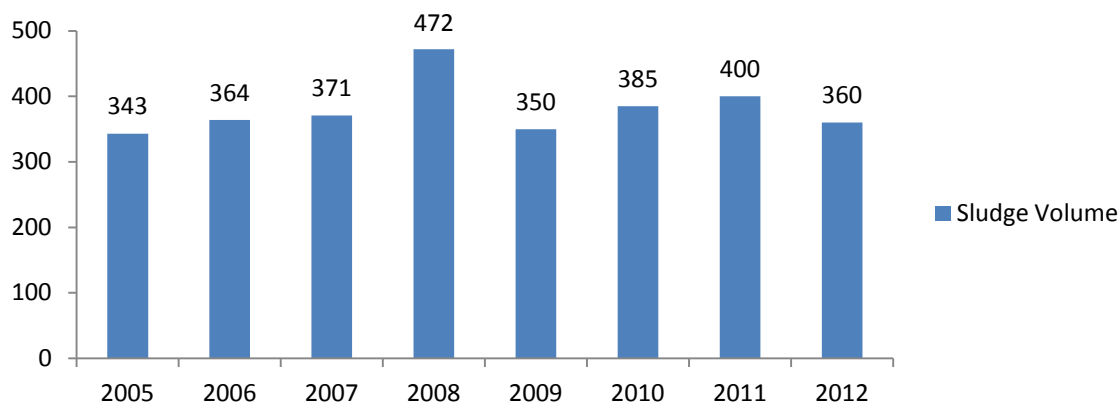
Site Name	Certificate #	Issued Date	Expiration Date
Sernoskie Field	S-4123-32	April 23, 2008	December 1, 2013
Plant Site	S-4123-33	October 28, 2008	December 1, 2013

Sludge haulage is provided by the Ontario Clean Water Agency. All Ontario Regulations and Waste Management System Certificate of Approval # A841393 are followed.

### Volumes (m3)



### Annual Comparison



## Quality

The biosolids sampling results are summarized in Appendix A.

## Field Summary

Field Summary information is attached in Appendix B.

## Summary of Complaints

There were no complaints received in 2012.

## Summary of Bypass/Overflows

There were no events reported for this system in 2012.

## Summary of Spills/Abnormal Discharges

There were no spills or abnormal discharges from this system in 2012.

## Maintenance

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer's and/or industry standards. Maintenance is completed using various tools and operational supports. The Ottawa Valley Hub has specialized certified staff such as Millwrights, Electricians and Instrumentation Specialists to name a few.

OCWA uses a Workplace Maintenance System (WMS). WMS is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the Township of Killaloe, Hagarty and Richards in the form of a "Capital Forecast". This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative Maintenance Work Orders Completed	77
Operational Maintenance Work Orders Completed	28
Weekly Maintenance Work Orders Completed	276

## Maintenance Highlights

WO#	Details
2578261	Replaced solenoid valve for waste sludge
2690822	Replace diesel tank at Plant to meet code. Completed by Whitfields Plumbing and Heating.

## Calibration

OCWA has certified Instrumentation Technicians on staff, that complete the flow meter calibrations. Calibration of the effluent flow meter was completed March 4, 2012.



# Appendix A

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## **Biosolids Quality Report**





**Ontario Clean Water Agency**  
**Biosolids Quality Report - Liquid**  
**Digester Type: AEROBIC**  
**Geometric Mean E. Coli**

Facility: [5539] - Killaloe Wastewater Treatment Plant & Collection System  
Works: [110001532] - Killaloe Wastewater Treatment Plant & Collection System  
Period: 01/01/2012 to 12/31/2012

Ecoli Sample 1 11/06/2012	Ecoli Sample 2 11/20/2012	Ecoli Sample 3 12/04/2012	Ecoli Sample 4 12/18/2012	Geometric Mean E. Coli (based on last 4 samples) cfu/g
94,276.0	375,494.0	395,018.0	1,888,889.0	403,140.907



# Ontario Clean Water Agency

## Biosolids Quality Report - Liquid

Digester Type: AEROBIC

Metals and Criteria

Facility: [5539] - Killaloe Wastewater Treatment Plant & Collection System  
 Works: [110001532] - Killaloe Wastewater Treatment Plant & Collection System  
 Period: 01/01/2012 to 12/31/2012

Month	Arsenic (mg/L)	Cadmium (mg/L)	Cobalt (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)
JAN 2012	0.3	0.03	0.05	0.3	20.0	0.008	0.1	0.3	0.4	0.3	11.0
FEB 2012	0.3	0.03	0.05	0.4	26.0	0.004	0.1	0.3	0.5	0.3	14.0
MAR 2012	0.3	0.03	0.06	0.4	28.0	0.005	0.1	0.4	0.6	0.3	16.0
APR 2012	0.3	0.03	0.07	0.5	35.0	0.006	0.2	0.5	1.0	0.3	20.0
MAY 2012	0.3	0.03	0.05	0.4	29.0	0.008	0.1	0.5	0.7	0.3	17.0
JUN 2012	0.3	0.03	0.05	0.3	18.0	0.004	0.1	0.3	0.5	0.3	11.0
JUL 2012	0.3	0.03	0.05	0.2	13.0	0.002	0.1	0.2	0.3	0.3	8.5
AUG 2012	0.3	0.03	0.05	0.2	15.0	0.004	0.1	0.2	0.4	0.3	10.0
SEP 2012	0.3	0.03	0.05	0.2	17.0	0.004	0.1	0.2	0.4	0.3	11.0
OCT 2012	0.3	0.03	0.05	0.2	16.0	0.005	0.1	0.2	0.4	0.3	10.0
NOV 2012	0.3	0.03	0.05	0.4	31.0	0.008	0.2	0.4	0.8	0.3	20.0
DEC 2012	0.3	0.03	0.05	0.3	24.0	0.029	0.2	0.3	0.6	0.3	15.0
Average	0.3	0.03	0.053	0.317	22.667	0.007	0.125	0.317	0.55	0.3	13.625
Max. Permissible Metal Concentrations (mg/kg of Solids)	170	34	340	2800	1700	11	94	420	1100	34	4200
Metal Concentrations in Sludge (mg/kg)	11.378	1.138	1.991	12.01	859.671	0.275	4.741	12.01	20.86	11.378	516.751



# Appendix B

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## Field Summary

# Sernoskie Farm

Certificate of Approval # S-4123-32  
 Expiry Date 1-Dec-13  
 Issued Date 23-Apr-08

Generator: Killaloe Wastewater Treatment Plant  
 Operating Authority: Ontario Clean Water Agency  
 Hauler: Ontario Clean Water Agency  
 WMCertificate #: A841393  
 Broker Certificate # BROK06030  
 Business License # PMAB06025

## Field Location Description

Field #1 296 Long Meadows Road 21.00 h

## 5 Year Running Field Total

	2008	2009	2010	2011	2012	Total	Available Space
Hauled Volume	388.00				130.00	518.00	No Limit
Kg's Solids	493.78				137.27	631.06	7368.94
Kg's Nitrogen	6.19				0.08	6.27	128.73
Kg's Phosphorus	<del>X</del>				5.12	5.12	374.88

## 2012

Date of Spreading	Volume Spread (m3)	Hectares Spread (ha)	Sludge Solids Concentration (mg/L)	Kg of Solids Spread on Field	Sludge Ammonia + Nitrogen Concentration (mg/L)	Kg of Ammonia Nitrogen Spread on Field	Phosphorus Concentration (mg/L)	Kg Phosphorus Spread on Field
17-Jul-12	52.00	21.00	22175.00	54.91	13.375	0.03	827.5	2.05
18-Jul-12	78.00	21.00	22175.00	82.36	13.375	0.05	827.5	3.07
				0		0		0
				0		0		0
				0		0		0
				0		0		0
				0		0		0
				0		0		0
				0		0		0
<del>X</del>	130.00		<del>X</del>	137.27	<del>X</del>	0.08	<del>X</del>	5.12

## Plant Field

Certificate of Approval # S-4123-33  
 Expiry Date 1-Dec-13  
 Issued Date 23-Apr-08

Generator: Killaloe Wastewater Treatment Plant  
 Operating Authority: Ontario Clean Water Agency  
 Hauler: Ontario Clean Water Agency  
 WMCertificate #: A841393  
 Broker Certificate # BROK06030  
 Business License # PMAB06025

## Field Location Description

Field #1 13 Keetch Street

5.40 h

## 5 Year Running Field Total

	2009	2010	2011	2012	2013	Total	Available Space
Hauled Volume	350.0	385.0	400.0	230.0	0.0	1365.0	No Limit
Kg's Solids	1613.9	1828.0	2594.7	1232.8	0.0	7269.4	730.6
Kg's Nitrogen	11.7	0.7	5.0	1.5	0.0	18.9	116.1
Kg's Phosphorus	44.4	46.2	63.6	37.3	0.0	191.4	No Limit

2012

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Date of Spreading	Volume Spread (m3)	Hectares Spread (ha)	Sludge Solids Concentration (mg/L)	Kg of Solids Spread on Field	Sludge Ammonia + Nitrogen Concentration (mg/L)	Kg of Ammonia Nitrogen Spread on Field	Phosphorus Concentration (mg/L)	Kg Phosphorus Spread on Field
23-May-12	117.00	5.40	33950.00	735.58	10.25	0.22	1005	21.775
24-May-12	13.00	5.40	33950.00	81.73	10.25	0.02	1005	2.41944
7-Nov-12	100.00	5.40	22437.50	415.51	69.65	1.29	705	13.0556
		5.40		0		0		0
		5.40		0		0		0
		5.40		0		0		0
		5.40		0		0		0
		5.40		0		0		0
		5.40		0		0		0
		5.40		0		0		0
	230.00	5.40		1232.82		1.54		37.25