

# 2023 Annual Performance

For the following system:

💧 **Komoka Wastewater Treatment Facility**



**Owner: Municipality of Middlesex Centre**

**Operating Authority:** Municipality of Middlesex Centre

**January 22, 2024**



## Contents

Introduction .....	1
Plant Facts .....	1
Monitoring & Compliance Data.....	1
Flow Data .....	1
Table 1 – 2023 Flow Data .....	1
Graph 1 – 2023 Flow (m <sup>3</sup> /day) .....	2
Graph 2 – 2023 Total Monthly Flows (m <sup>3</sup> ).....	2
Effluent Quality .....	3
Sampling Procedures .....	3
Table 2 – Raw Sewage .....	3
Table 3 – Effluent Monitoring .....	3
Plant Performance and Interpretation of Results .....	3
Raw Sewage .....	4
Table 4 – Raw Sewage Monthly Average Concentration .....	4
Effluent Limits.....	4
Table 5 – Effluent Limits: C of A 1847-87RK6Q .....	4
Table 6 – Effluent Objectives: C of A 1847-87RK6Q.....	4
Table 7 – Final Effluent Monthly Limit Concentrations .....	5
Table 8 – Final Effluent Monthly Average Loadings .....	6
Section F – Effluent Objectives .....	6
Table 9 – Final Effluent Monthly Average Concentrations & Objectives Comparison .....	6
Table 10 – Final Effluent Monthly Average Loading & Objectives Comparison .....	7
Operating Problems Encountered .....	7
Maintenance.....	8
Table 11 – Maintenance.....	8
Calibrations .....	8
Section G – Sludge Generation & Analytical .....	8
Table 12 - Komoka Biosolids Haulage .....	8
Section H – Summary of Complaints Received.....	9
Section I – Summary of By-Pass Events.....	9
Table 13 – Bypass Events .....	9

Section J – Other Information..... 9

    APPENDIX A – ANALYTICAL REPORTS ..... i

    APPENDIX B – BYPASS EVENT AND MECP REPORTS..... ii

    APPENDIX C – CALIBRATION REPORTS.....iii

## Introduction

The Komoka Wastewater Treatment Facility (WWTF) is located on 22280 Komoka Road, Komoka, Ontario in the Municipality of Middlesex Centre. The treatment facility is operated by the Municipality under the guidelines and regulations established by the Ministry of the Environment, Conservation and Parks (MECP) to insure the strict effluent discharge criteria standards are met. Komoka's WWTF is operated under Certificate of Approval (C of A) 1847-87RK6Q issued on October 5, 2010.

## Plant Facts

### Certificate of Approval

- 1847-87RK6Q (Dated: October 5th, 2010)
- Wastewater System Number # 120002585

### Rated Capacity

- Rated Plant Capacity 2,250 m<sup>3</sup>/day
- Peak Flow Capacity 9,000 m<sup>3</sup>/day

## Monitoring & Compliance Data

Condition 7 of the system C of A outlines the Effluent compliance parameters to be tested, sampling frequency, and the objectives and reportable limits of those parameters.

This section is to satisfy the requirement of Section 10 (6) (a) thru (j) of the C of A, to provide a summary of the effluent compliance monitoring and to provide an overview of plant performance in comparison to the requirements.

### **Flow Data**

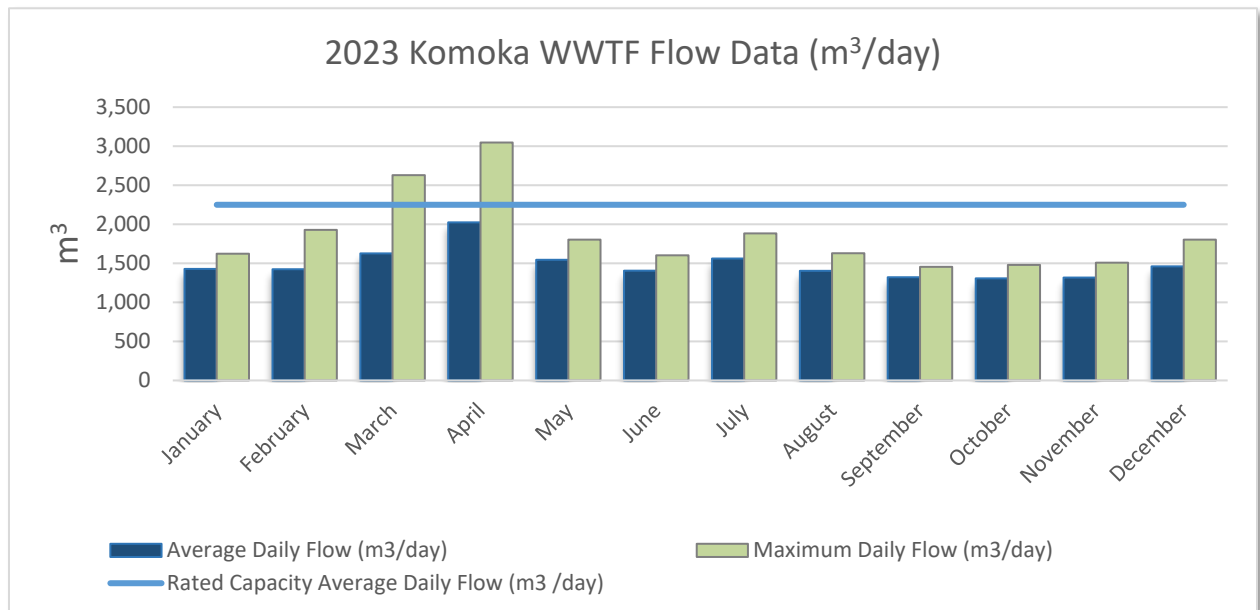
The Komoka WWTF provides a rated capacity of 2,250 m<sup>3</sup>/day average daily flow with a Peak Daily Flow of 9,000 m<sup>3</sup>/day. For the year 2023, the average annual daily flow was 1,486 m<sup>3</sup>/day. The following table shows the average daily flow, the maximum daily flow and the total flow for each month of 2023.

**Table 1 – 2023 Flow Data**

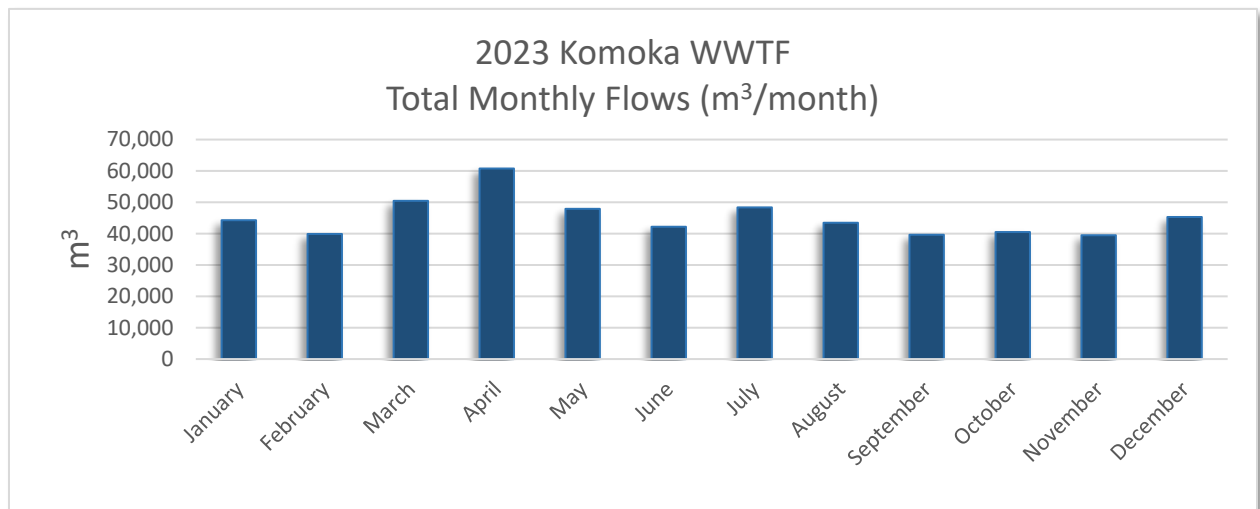
	<b>Average Daily Flow (m<sup>3</sup>/day)</b>	<b>Maximum Daily Flow (m<sup>3</sup>/day)</b>	<b>Total Month Flow (m<sup>3</sup>)</b>
January	1,428	1,623	44,266
February	1,425	1,928	39,911
March	1,628	2,629	50,476
April	2,025	3,047	60,748
May	1,545	1,803	47,908

	<b>Average Daily Flow (m<sup>3</sup>/day)</b>	<b>Maximum Daily Flow (m<sup>3</sup>/day)</b>	<b>Total Month Flow (m<sup>3</sup>)</b>
June	1,406	1,603	42,176
July	1,561	1,884	48,390
August	1,403	1,629	43,493
September	1,322	1,455	39,660
October	1,307	1,479	40,509
November	1,317	1,508	39,506
December	1,462	1,803	45,327
<b>Average</b>	<b>1,486</b>	<b>--</b>	<b>45,198</b>
<b>Total</b>	<b>--</b>	<b>--</b>	<b>542,370</b>

**Graph 1 – 2023 Flow (m<sup>3</sup>/day)**



**Graph 2 – 2023 Total Monthly Flows (m<sup>3</sup>)**



## **Effluent Quality**

On a quarterly basis, operators collected and submitted raw sewage influent composite samples to SGS Canada Inc. for biochemical oxygen demand, suspended solids, total Kjeldahl nitrogen (TKN) and total phosphorus. On a bi-weekly basis, operators collected final effluent samples for analysis by SGS Canada Inc. for carbonaceous biochemical oxygen demand, total suspended solids, total phosphorus, total ammonia nitrogen. Final effluent dissolved oxygen, pH and temperature are conducted on grab samples by operators a minimum of three (3) times a week as required.

### ***Sampling Procedures***

Sampling procedures are dictated by the C of A and the laboratory's sampling requirements. Tables 2 and 3 are taken from Section 7 of the C of A and illustrate how the sampling is conducted at the Komoka WWTF. A 24-hour composite sampling procedure is used where required.

Analysis for these parameters is conducted at SGS Canada Inc. (SGS). SGS is a member of the Canadian Association for Laboratory Accreditation Incorporated, accreditation #'s A2764 and 1999.

***Table 2 – Raw Sewage***

<b>Parameters</b>	<b>Sample Type</b>	<b>Frequency</b>
BOD <sub>5</sub>	24-hour composite	Quarterly
Total Suspended Solids	24-hour composite	Quarterly
Total Phosphorus	24-hour composite	Quarterly
Total Kjeldahl Nitrogen	24-hour composite	Quarterly

***Table 3 – Effluent Monitoring***

<b>Parameters</b>	<b>Sample Type</b>	<b>Frequency</b>
CBOD <sub>5</sub>	24-hour Composite	Weekly
Total Suspended Solids	24-hour Composite	Weekly
Total Phosphorus	24-hour Composite	Weekly
Total Ammonia Nitrogen	24-hour Composite	Weekly
E. Coli	Grab	Weekly
Dissolved Oxygen (measured in field)	Grab/Probe	Thrice per week
Temperature (measured in field)	Grab/Probe	Thrice per week
pH (measured in field)	Grab/Probe	Thrice per week

### ***Plant Performance and Interpretation of Results***

Table 4, 5 and 6 summarizes the raw monthly average concentration, final effluent monthly average concentration. Objective and reportable limit tables from C of A 1847-87RK6Q have been added for comparison.

### Raw Sewage

As per the C of A sampling occurs on a quarterly basis beginning the first week of the year. These levels are used to determine the effectiveness of the treatment when compared to the plant effluent concentrations. The following table shows the results.

**Table 4 – Raw Sewage Monthly Average Concentration**

	<b>BOD<sub>5</sub> (mg/l)</b>	<b>Total Suspend Solids (mg/l)</b>	<b>Total Phosphorus (mg/l)</b>	<b>Total Kjeldahl Nitrogen (mg/l)</b>
<b>1<sup>st</sup> Quarter</b>	205	239	4.39	39.5
<b>2<sup>nd</sup> Quarter</b>	175	188	3.25	27.4
<b>3<sup>rd</sup> Quarter</b>	309	232	4.12	30.6
<b>4<sup>th</sup> Quarter</b>	225	243	4.91	39.9
<b>Average</b>	<b>229</b>	<b>226</b>	<b>4.17</b>	<b>34.4</b>

### Effluent Limits

The following Table 1 is taken from Section 7 of the system's C of A listing the parameters and their concentrations that are not to be exceeded. Any exceedances that occur are to be reported to the MECP.

There was one (1) reportable exceedance during this reporting period.

**Table 5 – Effluent Limits: C of A 1847-87RK6Q**

<b>Final Effluent Parameter</b>	<b>Average Concentration (mg/l)</b>	<b>Waste Loading (kg/d)</b>
CBOD <sub>5</sub>	7.5	16.88
Total Suspended Solids	10.0	22.5
Total Phosphorus		
• Nonfreezing period	0.5 (May 1 to Nov. 30)	1.13
• Freezing period	0.8 (Dec 1 to April 30)	1.80
Total Ammonia Nitrogen		
• Nonfreezing period	3.0	6.75
• Freezing period	5.0	11.25
Dissolved Oxygen	>4.0	
E-coli	200 organisms per 100mL	
pH of the effluent maintained between 6.0 to 9.0, inclusive, at all times		

**Table 6 – Effluent Objectives: C of A 1847-87RK6Q**

<b>Final Effluent Parameter</b>	<b>Average Concentration (mg/l)</b>	<b>Waste Loading (kg/d)</b>
CBOD <sub>5</sub>	5.0	11.25
Total Suspended Solids	5.0	11.25
Total Phosphorus		
• Nonfreezing period	0.3 (May 1 to Nov. 30)	0.675
• Freezing period	0.8 (Dec 1 to April 30)	1.8

Final Effluent Parameter	Average Concentration (mg/l)	Waste Loading (kg/d)
Total Ammonia Nitrogen <ul style="list-style-type: none"> <li>• Nonfreezing period</li> <li>• Freezing period</li> </ul>	2 4	4.5 9
E-coli	150 organisms per 100mL	

**Table 7 – Final Effluent Monthly Limit Concentrations**

	CBOD5 (mg/l)	TSS (mg/l)	TP (mg/l)	TAN (mg/l)	E.Coli (cfu/100ml)	pH min-max	D.O. (mg/l) min
<b>Limit</b>	<b>10</b>	<b>10</b>	<b>*</b>	<b>**</b>	<b>200</b>	<b>6.0-9.0</b>	<b>&lt;4.0</b>
Jan	3.0	3.0	0.2	0.20	3.0	6.30 - 7.19	7.41
Feb	2.5	3.0	0.2	0.20	2.5	6.38 - 6.82	7.47
Mar	2.5	4.0	0.2	0.10	2.5	6.33 - 6.74	8.13
Apr	3.0	4.0	0.1	0.10	3.0	6.56 - 7.04	8.31
May	2.3	5.3	0.2	0.17	2.3	6.29 - 6.61	7.71
Jun	5.3	12.0	0.6	0.50	5.3	6.08 - 6.45	6.89
Jul	3.5	7.0	0.3	1.15	3.5	6.08 - 6.92	7.45
Aug	2.0	2.5	0.2	0.60	2.0	6.15 - 6.96	6.22
Sep	2.0	3.0	0.3	1.55	2.0	6.08 - 6.66	6.67
Oct	2.0	3.7	0.3	1.13	2.0	6.03 - 6.77	6.51
Nov	2.0	3.5	0.2	0.85	2.0	6.02 - 6.74	6.98
Dec	2.5	2.5	0.2	0.50	2.5	6.02 - 6.83	7.46
<b>Avg.</b>	<b>2.7</b>	<b>4.5</b>	<b>0.3</b>	<b>0.59</b>	<b>2.7</b>	<b>--</b>	<b>7.27</b>

\*Total Phosphorous Limits for Non Freezing = 0.5mg/l (May 1 to Nov 30) Freezing = 1.0 mg/l (Dec 1 to April 30)

\*\* Total Ammonia Nitrogen Limits Non Freezing 3.0 mg/l (May 1 to Nov 30) Freezing 5.0 mg/l (Dec 1 to April 30)

For the month of June the average concentration for Total Phosphorous (TP) and Total Suspended Solids (TSS) had exceeded the CofA limits. Ministry was notified and a copy of the correspondence to the MECP is attached in Appendix B.

Table 8 shows the monthly average kilogram loadings that were released based on the average daily flows each month. All parameters were below the limits for the reporting period.



**Table 8 – Final Effluent Monthly Average Loadings**

	<b>CBOD5 (kg/d)</b>	<b>TSS (kg/d)</b>	<b>TP (kg/d)</b>	<b>TAN (kg/d)</b>
<b>Limit</b>	<b>16.88</b>	<b>22.5</b>	<b>*</b>	<b>**</b>
Jan	4.28	4.28	0.29	0.29
Feb	3.56	4.28	0.29	0.29
Mar	4.07	6.51	0.33	0.16
Apr	6.08	8.10	0.20	0.20
May	3.55	8.19	0.31	0.26
Jun	7.45	16.87	0.84	0.70
Jul	5.46	10.93	0.47	1.80
Aug	2.81	3.51	0.28	0.84
Sep	2.64	3.97	0.40	2.05
Oct	2.61	4.84	0.39	1.48
Nov	2.63	4.61	0.26	1.12
Dec	3.66	3.66	0.29	0.73
<b>Avg.</b>	<b>4.07</b>	<b>6.65</b>	<b>0.36</b>	<b>0.83</b>

Total Phosphorous Limits for Non Freezing = 1.13 kg/day (May 1 to Nov 30) Freezing = 1.80 kg/day (Dec 1 to April 30)

\*\* Total Ammonia Nitrogen Limits Non Freezing 6.75 kg/day (May 1 to Nov 30) Freezing 11.75 kg/day (Dec 1 to April 30)

## Section F – Effluent Objectives

**Table 9 – Final Effluent Monthly Average Concentrations & Objectives Comparison**

	<b>cBOD<sub>5</sub>(mg/l)</b>	<b>TSS (mg/l)</b>	<b>TP (mg/l)</b>	<b>TAN (mg/l)</b>	<b>E.coli</b>
<b>Objectives</b>	<b>5.0</b>	<b>5.0</b>	<b>*</b>	<b>**</b>	<b>150 cfu/100ml</b>
January	3.0	3.0	0.2	0.20	N/A
February	2.5	3.0	0.2	0.20	N/A
March	2.5	4.0	0.2	0.10	N/A
April	3.0	4.0	0.1	0.10	N/A
May	2.3	5.3	0.2	0.17	10
June	5.3	12.0	0.6	0.50	34
July	3.5	7.0	0.3	1.15	8
August	2.0	2.5	0.2	0.60	4
September	2.0	3.0	0.3	1.55	21
October	2.0	3.7	0.3	1.13	71
November	2.0	3.5	0.2	0.85	19
December	2.5	2.5	0.2	0.50	N/A
<b>Average</b>	<b>2.7</b>	<b>4.5</b>	<b>0.3</b>	<b>0.59</b>	<b>16</b>

Total Phosphorous Objectives for Non Freezing = 0.3 mg/l (May 1 to Nov 30) Freezing = 0.8 mg/l (Dec 1 to April 30)

\*\* Total Ammonia Nitrogen Objectives Non Freezing 2 mg/l (May 1 to Nov 30) Freezing 4 mg/l (Dec 1 to April 30)

**Table 10 – Final Effluent Monthly Average Loading & Objectives Comparison**

	cBOD <sub>5</sub> (kg/d)	TSS (kg/d)	TP (kg/d)	TAN (kg/d)
<b>Objectives</b>	<b>11.25</b>	<b>11.25</b>	*	**
January	4.28	4.28	0.29	0.29
February	3.56	4.28	0.29	0.29
March	4.07	6.51	0.33	0.16
April	6.08	8.10	0.20	0.20
May	3.55	8.19	0.31	0.26
June	7.45	16.87	0.84	0.70
July	5.46	10.93	0.47	1.80
August	2.81	3.51	0.28	0.84
September	2.64	3.97	0.40	2.05
October	2.61	4.84	0.39	1.48
November	2.63	4.61	0.26	1.12
December	3.66	3.66	0.29	0.73
<b>Average</b>	<b>4.07</b>	<b>6.65</b>	<b>0.36</b>	<b>0.83</b>

Total Phosphorous Objectives for Non Freezing = 0.675 kg/day (May 1 to Nov 30) Freezing = 2.8 kg/day (Dec 1 to April 30)

\*\* Total Ammonia Nitrogen Objectives Non Freezing 4.5 kg/day (May 1 to Nov 30) Freezing 9 kg/day (Dec 1 to April 30)

For the month of June the loading rates for total suspended solid had exceeded plant objectives, preventative actions were taken to switch the filter bags and focus on mass control within the secondary clarifiers. All other objectives were met for cBOD<sub>5</sub>, TP and TAN during the calendar year.

A preventative maintenance program for filter bag replacements and a mass balance program has been implemented. The mass balance program manages the amount of activated sludge concentration and mass in the aeration tanks and final clarifiers to minimize surface overflow rates and carryover of excessive solids. The two filters are monitored on the total backflow hours and are changed at a preset hourly run time to prevent further fouling and ineffective operations and restriction.

Flow studies have been conducted to better understand how flows move through the system with the increase in population. A plan has been developed, based on these studies, to install flow control gates and monitoring equipment to balance flow to each treatment train to improve the plant's treatment capabilities and overall effluent quality.

## Operating Problems Encountered

Raw influent hydraulic balancing to each treatment module has been a challenge. A hydraulic study was conducted and concluded that modifications to inlet channel flow control and individual flow monitoring to each treatment module can result in better hydraulic and organic loading. Due to the imbalance within the hydraulic and organic loading profile, sludge growth is excessive within aeration basins compared to others, surface overflow rates and up flow rates from final clarifiers causes periodic hydraulic and solids loading on the bag filters resulting in reduced life expectancy. Capital projects along with a strong composite correction program has results in good quality effluent and stable operations.

## Maintenance

The operators performed routine maintenance throughout the year. The Municipality of Middlesex Centre utilizes the Computerized Maintenance Management System Job Cal to help track preventative maintenance. Table 11 lists maintenance work that was completed in the reporting period that is outside the routine maintenance:

**Table 11 – Maintenance**

Maintenance Activity	
February 16	Install new raw flow control valves
April 2	Replaced all 4 filter cloths with 3 new and 1 used
May 31	Installed new power cables and explosion proof connectors for all T3/T4 valve actuators
July 4	Replaced all 4 filter cloths
July 17	Replaced reject piping
June	Replaced main breaker
October 12	New DO system, including probes, installed
December 6	New DO system, including probes, commissioned
	Replaced RASP-441 discharge piping elbow piping section
December 7	Replaced all 4 filter cloths

## Calibrations

Flow meter verifications are performed annually to ensure that all meters are operating within a  $\pm 15\%$  error range. On October 10, 2023 all flow meters were found to operating within specified parameters. The report can be found in *Appendix A*.

## Section G – Sludge Generation & Analytical

During the year, aerobically stabilized sludge is removed from the biosolids holding tank and applied to agriculture land for soil conditioning. The following volumes were removed from the Komoka WWTF.

**Table 12 - Komoka Biosolids Haulage**

Dates	Volume Transported (m <sup>3</sup> )
July 5 to July 7	1,204
August 14 to August 17	1,620
<b>Total Volume (m<sup>3</sup>)</b>	<b>2,824</b>

The volume transported during this reporting period is substantially higher than previous due to the storage tank not being emptied in the previous year and population growth within the collection system.

## **Section H – Summary of Complaints Received**

The Komoka WWTF did not receive any complaints in 2023.

## **Section I – Summary of By-Pass Events**

The Komoka WWTF had three (3) by pass events during the 2023 calendar year. A list of the events with volumes is detailed below. The reports that were submitted to the MECP are attached in *Appendix B*.

***Table 13 – Bypass Events***

<b>Date</b>	<b>Cause of Bypass</b>	<b>Volume of Spill (m3)</b>
March 31, 2023	Hydraulic overload due to rainfall	2
March 31, 2023	Hydraulic overload due to rainfall	1
April 1 to 2, 2023	Hydraulic overload due to rainfall	2,454

## **Section J – Other Information**

No additional requests for information were made by the District Manager.

## ***APPENDIX A – ANALYTICAL REPORTS***



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

11-January-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 04 January 2023  
**LR Report:** CA30109-JAN23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

**Copy:** #1

Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					03-Jan-23 07:45
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.5
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jan-23	17:03	11-Jan-23	14:05	205
Total Suspended Solids [mg/L]	09-Jan-23	08:13	10-Jan-23	13:12	239
Total Kjeldahl Nitrogen [as N mg/L]	10-Jan-23	15:45	11-Jan-23	11:08	39.5
Phosphorus (total) [mg/L]	10-Jan-23	08:03	11-Jan-23	12:47	4.39
Chemical Oxygen Demand [mg/L]	06-Jan-23	14:41	11-Jan-23	14:05	355



*Carrie Greenlaw*  
Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

20-January-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 04 January 2023  
**LR Report:** CA30113-JAN23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

**Copy:** #1

Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

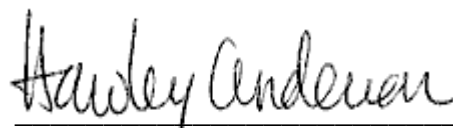
## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					03-Jan-23 13:22
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.0
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Total Solids [%]	06-Jan-23	19:21	12-Jan-23	11:33	0.62
Specific Gravity	06-Jan-23	19:21	12-Jan-23	11:33	1.0
Volatile Solids [%]	06-Jan-23	19:21	12-Jan-23	11:33	57.6
Volatile Solids [mg/kg]	06-Jan-23	19:21	12-Jan-23	11:33	0.36
Nitrite (as N) [mg/kg]	10-Jan-23	12:54	20-Jan-23	10:12	55
Nitrite (as N) [mg/L]	10-Jan-23	12:54	20-Jan-23	10:12	0.3
Nitrate (as N) [mg/kg]	10-Jan-23	12:54	20-Jan-23	10:12	68
Nitrate (as N) [mg/L]	10-Jan-23	12:54	20-Jan-23	10:12	0.4
Nitrate + Nitrite (a) [mg/kg]	***	***	***	***	***
Nitrate + Nitrite (as N) [mg/L]	10-Jan-23	12:54	20-Jan-23	10:12	0.8
Total Kjeldahl Nitrogen [as N mg/kg]	09-Jan-23	15:35	11-Jan-23	10:44	60000
Total Kjeldahl Nitrogen [as N mg/L]	09-Jan-23	15:35	11-Jan-23	10:44	372
Ammonia+Ammonium (N) [as N mg/kg]	06-Jan-23	17:06	11-Jan-23	10:21	15000
Ammonia+Ammonium (N) [as N mg/L]	06-Jan-23	17:06	11-Jan-23	10:21	95.6
Mercury [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	0.32
Mercury [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	0.002
Arsenic [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	<16
Arsenic [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	< 0.1
Cadmium [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	<0.8
Cadmium [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	< 0.005
Cobalt [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	3
Cobalt [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	0.02
Chromium [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	66
Chromium [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	0.41
Copper [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	290
Copper [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	1.8
Magnesium [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	3600
Magnesium [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	22
Manganese [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	410

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	2.5
Molybdenum [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	12
Molybdenum [mg/L]	14-Jan-23	22:41	17-Jan-23	10:24	0.08
Nickel [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	12
Nickel [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	0.07
Lead [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	<16
Lead [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	< 0.1
Selenium [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	<16
Selenium [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	< 0.1
Zinc [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	340
Zinc [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	2
Phosphorus [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	27000
Phosphorus (Total) [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	170
Potassium [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	4000
Potassium [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	25
Sulphur [mg/kg]	14-Jan-23	22:41	17-Jan-23	10:24	9300
Sulfur [mg/L]	14-Jan-23	22:41	17-Jan-23	10:25	58
E. Coli [cfu/1g dried wgt]	05-Jan-23	10:40	06-Jan-23	15:59	70968
E.Coli [cfu/100mL]	05-Jan-23	10:40	06-Jan-23	15:59	44000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.

  
 \_\_\_\_\_  
 Hawley Anderson, Hon.B.Sc  
 Project Specialist,  
 Environment, Health & Safety





**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

18-January-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 11 January 2023  
**LR Report:** CA30244-JAN23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					10-Jan-23 08:40
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	5.3/6.3
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	5.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	12-Jan-23	16:46	17-Jan-23	14:07	2
Total Suspended Solids [mg/L]	12-Jan-23	14:44	13-Jan-23	11:56	2
Phosphorus (total) [mg/L]	16-Jan-23	15:20	17-Jan-23	15:49	0.22
Ammonia+Ammonium (N) [as N mg/L]	12-Jan-23	21:20	13-Jan-23	09:48	0.2
Unionized Ammonia @temp15 [mg/L as N]	16-Jan-23	10:34	16-Jan-23	15:50	< 0.001
pH@temp15 [pH Units]	16-Jan-23	10:34	16-Jan-23	15:50	6.88

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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01-February-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 25 January 2023  
**LR Report:** CA30437-JAN23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					24-Jan-23 15:30
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	27-Jan-23	17:18	01-Feb-23	15:06	4
Total Suspended Solids [mg/L]	30-Jan-23	15:07	31-Jan-23	14:52	4
Phosphorus (total) [mg/L]	27-Jan-23	15:57	31-Jan-23	08:31	0.26
Ammonia+Ammonium (N) [as N mg/L]	27-Jan-23	21:50	31-Jan-23	10:09	0.2
Unionized Ammonia @temp15 [mg/L as N]	31-Jan-23	12:58	01-Feb-23	11:08	< 0.001
pH@temp15 [pH Units]	31-Jan-23	12:58	01-Feb-23	11:08	6.94

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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14-February-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 08 February 2023  
**LR Report:** CA30147-FEB23

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Ilderton, ON  
N0M 2A0, Canada

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Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					07-Feb-23 09:55
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.0
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	09-Feb-23	17:30	14-Feb-23	13:35	< 2
Total Suspended Solids [mg/L]	10-Feb-23	07:39	13-Feb-23	10:41	3
Phosphorus (total) [mg/L]	10-Feb-23	14:55	13-Feb-23	10:09	0.17
Ammonia+Ammonium (N) [as N mg/L]	10-Feb-23	09:40	14-Feb-23	13:39	0.2
Unionized Ammonia @temp15 [mg/L as N]	10-Feb-23	13:51	14-Feb-23	13:39	0.001
pH@temp15 [pH Units]	10-Feb-23	13:51	13-Feb-23	12:59	7.41

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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21-February-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 08 February 2023  
**LR Report:** CA30146-FEB23

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Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

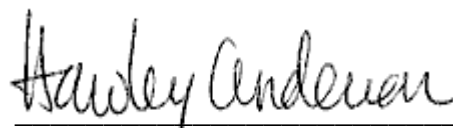
## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					07-Feb-23 10:05
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.0
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
Total Solids [%]	10-Feb-23	19:38	15-Feb-23	13:57	0.86
Specific Gravity	10-Feb-23	19:38	15-Feb-23	13:57	1.0
Volatile Solids [%]	10-Feb-23	19:38	15-Feb-23	13:57	66.2
Volatile Solids [mg/kg]	10-Feb-23	19:38	15-Feb-23	13:57	0.57
Nitrite (as N) [mg/kg]	09-Feb-23	20:11	21-Feb-23	12:58	860
Nitrite (as N) [mg/L]	09-Feb-23	20:11	21-Feb-23	12:58	7.4
Nitrate (as N) [mg/kg]	09-Feb-23	20:11	21-Feb-23	12:58	45
Nitrate (as N) [mg/L]	09-Feb-23	20:11	21-Feb-23	12:58	0.4
Nitrate + Nitrite (a) [mg/kg]	09-Feb-23	20:11	21-Feb-23	12:58	910
Nitrate + Nitrite (as N) [mg/L]	09-Feb-23	20:11	21-Feb-23	12:58	7.8
Total Kjeldahl Nitrogen [as N mg/kg]	10-Feb-23	08:53	14-Feb-23	14:05	69000
Total Kjeldahl Nitrogen [as N mg/L]	10-Feb-23	08:53	14-Feb-23	14:05	591
Ammonia+Ammonium (N) [as N mg/kg]	09-Feb-23	14:20	10-Feb-23	13:25	16000
Ammonia+Ammonium (N) [as N mg/L]	09-Feb-23	14:20	10-Feb-23	13:25	137
Mercury [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	0.58
Mercury [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	0.005
Arsenic [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	<12
Arsenic [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	< 0.1
Cadmium [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	<0.6
Cadmium [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	< 0.005
Cobalt [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	4
Cobalt [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	0.04
Chromium [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	140
Chromium [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	1.2
Copper [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	440
Copper [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	3.8
Magnesium [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	4600
Magnesium [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	39
Manganese [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	440

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	3.8
Molybdenum [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	17
Molybdenum [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	0.15
Nickel [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	25
Nickel [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	0.22
Lead [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	<12
Lead [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	< 0.1
Selenium [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	<12
Selenium [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	< 0.1
Zinc [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	380
Zinc [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	3
Phosphorus [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:24	38000
Phosphorus (Total) [mg/L]	16-Feb-23	12:44	17-Feb-23	16:24	330
Potassium [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:23	6100
Potassium [mg/L]	16-Feb-23	12:44	17-Feb-23	16:23	52
Sulphur [mg/kg]	16-Feb-23	12:44	17-Feb-23	16:26	12000
Sulfur [mg/L]	16-Feb-23	12:44	17-Feb-23	16:26	105
E. Coli [cfu/1g dried wgt]	08-Feb-23	16:35	10-Feb-23	11:06	186047
E.Coli [cfu/100mL]	08-Feb-23	16:35	10-Feb-23	11:06	160000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



**Hawley Anderson, Hon.B.Sc**  
 Project Specialist,  
 Environment, Health & Safety



**SGS Canada Inc.**

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01-March-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 22 February 2023  
**LR Report:** CA30345-FEB23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					21-Feb-23 07:56
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	23-Feb-23	17:13	28-Feb-23	15:24	3
Total Suspended Solids [mg/L]	25-Feb-23	11:03	28-Feb-23	10:28	3
Phosphorus (total) [mg/L]	27-Feb-23	16:02	28-Feb-23	10:14	0.17
Ammonia+Ammonium (N) [as N mg/L]	24-Feb-23	22:15	27-Feb-23	11:05	0.2
Unionized Ammonia @temp15 [mg/L as N]	23-Feb-23	12:56	27-Feb-23	11:05	0.001
pH@temp15 [pH Units]	23-Feb-23	12:56	24-Feb-23	11:16	7.35

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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15-March-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 08 March 2023  
**LR Report:** CA30149-MAR23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					07-Mar-23 09:22
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	14.1
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	8.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	10-Mar-23	17:31	15-Mar-23	14:39	< 2
Total Suspended Solids [mg/L]	10-Mar-23	14:42	13-Mar-23	13:29	2
Phosphorus (total) [mg/L]	10-Mar-23	15:38	13-Mar-23	11:13	0.18
Ammonia+Ammonium (N) [as N mg/L]	10-Mar-23	17:02	13-Mar-23	10:26	0.1
Unionized Ammonia @temp15 [mg/L as N]	10-Mar-23	13:34	13-Mar-23	10:26	< 0.001
pH@temp15 [pH Units]	10-Mar-23	13:34	10-Mar-23	16:29	7.05

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
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22-March-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 08 March 2023  
**LR Report:** CA30156-MAR23

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Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1:	2:	3:	4:	6:
	Analysis Start Date	Analysis Start Time	Analysis Completed Date	Analysis Completed Time	36D07 Sludge
Sample Date & Time					07-Mar-23 13:12
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	15.3
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	8.0
Total Solids [%]	10-Mar-23	21:26	14-Mar-23	09:59	1.28
Specific Gravity	10-Mar-23	21:26	14-Mar-23	09:59	1.0
Volatile Solids [%]	10-Mar-23	21:26	14-Mar-23	09:59	66.9
Volatile Solids [g/g]	10-Mar-23	21:26	14-Mar-23	09:59	0.86
Nitrite (as N) [mg/kg]	13-Mar-23	20:27	22-Mar-23	10:54	<20
Nitrite (as N) [mg/L]	13-Mar-23	20:27	22-Mar-23	10:54	< 0.2
Nitrate (as N) [mg/kg]	13-Mar-23	20:27	22-Mar-23	10:54	<30
Nitrate (as N) [mg/L]	13-Mar-23	20:27	22-Mar-23	10:54	< 0.3
Nitrate + Nitrite (a) [mg/kg]	13-Mar-23	20:27	22-Mar-23	10:54	<30
Nitrate + Nitrite (as N) [mg/L]	13-Mar-23	20:27	22-Mar-23	10:54	< 0.3
Total Kjeldahl Nitrogen [as N mg/kg]	13-Mar-23	14:26	15-Mar-23	12:36	65000
Total Kjeldahl Nitrogen [as N mg/L]	13-Mar-23	14:26	15-Mar-23	12:36	829
Ammonia+Ammonium (N) [as N mg/kg]	13-Mar-23	14:26	15-Mar-23	12:36	14000
Ammonia+Ammonium (N) [as N mg/L]	13-Mar-23	15:38	14-Mar-23	09:49	183
Mercury [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	0.47
Mercury [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	0.006
Arsenic [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	<8
Arsenic [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	< 0.1
Cadmium [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	<0.4
Cadmium [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	< 0.005
Cobalt [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	3
Cobalt [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	0.04
Chromium [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	100
Chromium [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	1.3
Copper [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	360
Copper [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	4.5
Magnesium [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	3300

Online LIMS

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Analysis	1:	2:	3:	4:	6:
	Analysis Start Date	Analysis Start Time	Analysis Completed Date	Analysis Completed Time	36D07 Sludge
Magnesium [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	43
Manganese [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	340
Manganese [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	4.4
Molybdenum [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	13
Molybdenum [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	0.16
Nickel [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	19
Nickel [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	0.24
Lead [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	8
Lead [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	0.1
Selenium [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	<8
Selenium [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	< 0.1
Zinc [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	300
Zinc [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	4
Phosphorus [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	31000
Phosphorus (Total) [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	390
Potassium [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	3900
Potassium [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	50
Sulphur [mg/kg]	16-Mar-23	11:30	17-Mar-23	12:05	12000
Sulfur [mg/L]	16-Mar-23	11:30	17-Mar-23	12:05	160
E. Coli [cfu/1g dried wgt]	08-Mar-23	17:35	10-Mar-23	16:30	55469
E.Coli [cfu/100mL]	08-Mar-23	17:35	10-Mar-23	16:30	71000

Sample matrix = Sludge/Biosolids Solution

Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E. coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

28-March-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 22 March 2023  
**LR Report:** CA30384-MAR23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					21-Mar-23 08:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	5.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	23-Mar-23	16:56	28-Mar-23	13:14	3
Total Suspended Solids [mg/L]	24-Mar-23	10:46	27-Mar-23	12:44	6
Phosphorus (total) [mg/L]	23-Mar-23	15:49	24-Mar-23	12:39	0.21
Ammonia+Ammonium (N) [as N mg/L]	23-Mar-23	17:55	24-Mar-23	10:13	< 0.1
Unionized Ammonia @temp15 [mg/L as N]	23-Mar-23	13:19	24-Mar-23	10:13	< 0.001
pH@temp15 [pH Units]	23-Mar-23	13:19	24-Mar-23	09:54	7.15

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



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P.O. Box 4300 - 185 Concession St.  
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Phone: 705-652-2000 FAX: 705-652-6365

17-April-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 April 2023  
**LR Report:** CA30172-APR23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage	6: 1A0C6 Final Effluent
Sample Date & Time					05-Apr-23 10:00	05-Apr-23 09:55
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	13.9	13.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	11-Apr-23	16:23	17-Apr-23	11:52	78	---
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	11-Apr-23	16:37	17-Apr-23	13:13	---	< 2
Total Suspended Solids [mg/L]	11-Apr-23	08:25	12-Apr-23	12:58	113	3
Total Kjeldahl Nitrogen [as N mg/L]	12-Apr-23	16:40	14-Apr-23	15:35	13.5	---
Phosphorus (total) [mg/L]	12-Apr-23	15:01	13-Apr-23	13:14	1.60	0.12
Ammonia+Ammonium (N) [as N mg/L]	12-Apr-23	15:50	13-Apr-23	10:07	---	< 0.1
Unionized Ammonia @temp15 [mg/L as N]	11-Apr-23	13:19	13-Apr-23	10:07	---	< 0.001
pH@temp15 [pH Units]	11-Apr-23	13:19	12-Apr-23	11:27	---	7.66
Chemical Oxygen Demand [mg/L]	13-Apr-23	08:14	17-Apr-23	11:53	133	---

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



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20-April-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 April 2023  
**LR Report:** CA30169-APR23

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Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 38D07 Sludge
Sample Date & Time					04-Apr-23 12:54
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	13.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Total Solids [%]	10-Apr-23	21:39	12-Apr-23	10:49	2.32
Specific Gravity	10-Apr-23	21:39	12-Apr-23	10:49	1.0
Volatile Solids [%]	10-Apr-23	21:39	12-Apr-23	10:49	69.2
Volatile Solids [mg/kg]	10-Apr-23	21:39	12-Apr-23	10:49	1.60
Nitrite (as N) [mg/kg]	10-Apr-23	20:42	19-Apr-23	17:25	100
Nitrite (as N) [mg/L]	10-Apr-23	20:42	19-Apr-23	17:25	2.4
Nitrate (as N) [mg/kg]	10-Apr-23	20:42	19-Apr-23	17:25	<30
Nitrate (as N) [mg/L]	10-Apr-23	20:42	19-Apr-23	17:25	< 0.3
Nitrate + Nitrite (a) [mg/kg]	10-Apr-23	20:42	19-Apr-23	17:25	100
Nitrate + Nitrite (as N) [mg/L]	10-Apr-23	20:42	19-Apr-23	17:25	2.4
Total Kjeldahl Nitrogen [as N mg/kg]	10-Apr-23	17:36	12-Apr-23	11:47	64000
Total Kjeldahl Nitrogen [as N mg/L]	10-Apr-23	17:36	12-Apr-23	11:47	1490
Ammonia+Ammonium (N) [as N mg/kg]	10-Apr-23	15:32	11-Apr-23	11:03	12000
Ammonia+Ammonium (N) [as N mg/L]	10-Apr-23	15:32	11-Apr-23	11:03	282
Mercury [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	0.26
Mercury [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.006
Arsenic [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	<4
Arsenic [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	< 0.1
Cadmium [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	0.3
Cadmium [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.008
Cobalt [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	3
Cobalt [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.06
Chromium [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	95
Chromium [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	2.2
Copper [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	280
Copper [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	6.5
Magnesium [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	2700
Magnesium [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	63
Manganese [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	320

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0003305645

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 38D07 Sludge
Manganese [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	7.5
Molybdenum [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	10
Molybdenum [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.22
Nickel [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	16
Nickel [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.37
Lead [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	6
Lead [mg/L]	13-Apr-23	13:50	14-Apr-23	16:33	0.2
Selenium [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	<4
Selenium [mg/L]	13-Apr-23	13:50	14-Apr-23	16:32	< 0.1
Zinc [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	220
Zinc [mg/L]	13-Apr-23	13:50	14-Apr-23	16:32	5
Phosphorus [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	26000
Phosphorus (Total) [mg/L]	13-Apr-23	13:50	14-Apr-23	16:32	610
Potassium [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	3200
Potassium [mg/L]	13-Apr-23	13:50	14-Apr-23	16:32	73
Sulphur [mg/kg]	13-Apr-23	13:50	14-Apr-23	16:33	8500
Sulfur [mg/L]	13-Apr-23	13:50	14-Apr-23	16:32	200
E. Coli [cfu/1g dried wgt]	05-Apr-23	17:40	10-Apr-23	11:53	844828
E.Coli [cfu/100mL]	05-Apr-23	17:40	10-Apr-23	11:53	1960000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



*Carrie Greenlaw*  
 Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety



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27-April-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 19 April 2023  
**LR Report:** CA30446-APR23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					18-Apr-23 12:25
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	4.0
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	11.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	21-Apr-23	17:05	26-Apr-23	17:23	4
Total Suspended Solids [mg/L]	24-Apr-23	12:39	25-Apr-23	11:52	5
Phosphorus (total) [mg/L]	22-Apr-23	12:26	24-Apr-23	13:40	0.14
Ammonia+Ammonium (N) [as N mg/L]	25-Apr-23	16:51	26-Apr-23	13:55	< 0.1
Unionized Ammonia @temp15 [mg/L as N]	21-Apr-23	13:06	26-Apr-23	13:55	< 0.001
pH@temp15 [pH Units]	21-Apr-23	13:06	24-Apr-23	09:42	7.27

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.



**Carrie Greenlaw**  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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11-May-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 03 May 2023  
**LR Report:** CA30113-MAY23

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Ilderton, ON  
N0M 2A0, Canada

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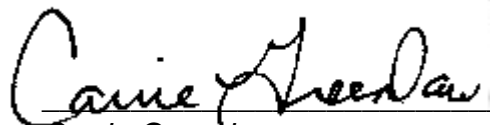
Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					02-May-23 08:40
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
E.Coli [cfu/100mL]	03-May-23	15:05	05-May-23	10:58	9
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	04-May-23	17:22	09-May-23	16:59	< 2
Total Suspended Solids [mg/L]	08-May-23	18:51	09-May-23	14:11	4
Phosphorus (total) [mg/L]	05-May-23	14:44	11-May-23	13:10	0.15
Ammonia+Ammonium (N) [as N mg/L]	04-May-23	16:39	05-May-23	09:53	< 0.1
Unionized Ammonia @temp15 [mg/L as N]	04-May-23	21:26	05-May-23	12:50	< 0.001
pH@temp15 [pH Units]	04-May-23	21:26	05-May-23	12:46	7.37

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

  
Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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15-May-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 03 May 2023  
**LR Report:** CA30111-MAY23

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Ilderton, ON  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					02-May-23 15:15
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Total Solids [%]	05-May-23	21:18	09-May-23	09:48	1.34
Specific Gravity	05-May-23	21:18	09-May-23	09:48	1.0
Volatile Solids [%]	05-May-23	21:18	09-May-23	09:48	61.1
Volatile Solids [%]	05-May-23	21:18	09-May-23	09:48	0.82
Nitrite (as N) [mg/kg]	06-May-23	11:07	09-May-23	14:20	<20
Nitrite (as N) [mg/L]	06-May-23	11:07	09-May-23	14:20	< 0.2
Nitrate (as N) [mg/kg]	06-May-23	11:07	09-May-23	14:20	<30
Nitrate (as N) [mg/L]	06-May-23	11:07	09-May-23	14:20	< 0.3
Nitrate + Nitrite (a) [mg/kg]	06-May-23	11:07	09-May-23	14:20	<30
Nitrate + Nitrite (as N) [mg/L]	06-May-23	11:07	09-May-23	14:21	< 0.3
Total Kjeldahl Nitrogen [as N mg/kg]	04-May-23	16:12	08-May-23	10:18	73000
Total Kjeldahl Nitrogen [as N mg/L]	04-May-23	16:12	08-May-23	10:18	980
Ammonia+Ammonium (N) [as N mg/kg]	04-May-23	17:19	05-May-23	10:38	25000
Ammonia+Ammonium (N) [as N mg/L]	04-May-23	17:19	05-May-23	10:38	336
Mercury [mg/kg]	09-May-23	14:09	12-May-23	15:58	0.45
Mercury [mg/L]	09-May-23	14:09	12-May-23	15:58	0.006
Arsenic [mg/kg]	09-May-23	14:09	12-May-23	15:58	<8
Arsenic [mg/L]	09-May-23	14:09	12-May-23	15:58	< 0.1
Cadmium [mg/kg]	09-May-23	14:09	12-May-23	15:58	1
Cadmium [mg/L]	09-May-23	14:09	12-May-23	15:58	0.018
Cobalt [mg/kg]	09-May-23	14:09	12-May-23	15:58	3
Cobalt [mg/L]	09-May-23	14:09	12-May-23	15:58	0.05
Chromium [mg/kg]	09-May-23	14:09	12-May-23	15:58	110
Chromium [mg/L]	09-May-23	14:09	12-May-23	15:58	1.5
Copper [mg/kg]	09-May-23	14:09	12-May-23	15:58	370
Copper [mg/L]	09-May-23	14:09	12-May-23	15:58	4.9
Magnesium [mg/kg]	09-May-23	14:09	12-May-23	15:58	3800
Magnesium [mg/L]	09-May-23	14:09	12-May-23	15:58	50
Manganese [mg/kg]	09-May-23	14:09	12-May-23	15:58	410



Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	09-May-23	14:09	12-May-23	15:58	5.5
Molybdenum [mg/kg]	09-May-23	14:09	12-May-23	15:58	13
Molybdenum [mg/L]	09-May-23	14:09	12-May-23	15:58	0.17
Nickel [mg/kg]	09-May-23	14:09	12-May-23	15:58	21
Nickel [mg/L]	09-May-23	14:09	12-May-23	15:58	0.28
Lead [mg/kg]	09-May-23	14:09	12-May-23	15:58	24
Lead [mg/L]	09-May-23	14:09	12-May-23	15:58	0.3
Selenium [mg/kg]	09-May-23	14:09	12-May-23	15:58	<8
Selenium [mg/L]	09-May-23	14:09	12-May-23	15:58	< 0.1
Zinc [mg/kg]	09-May-23	14:09	12-May-23	15:58	1800
Zinc [mg/L]	09-May-23	14:09	12-May-23	15:58	24
Phosphorus [mg/kg]	09-May-23	14:09	12-May-23	15:58	36000
Phosphorus (Total) [mg/L]	09-May-23	14:09	12-May-23	15:58	488
Potassium [mg/kg]	09-May-23	14:09	12-May-23	15:58	4300
Potassium [mg/L]	09-May-23	14:09	12-May-23	15:58	58
Sulphur [mg/kg]	09-May-23	14:09	12-May-23	15:58	9600
Sulfur [mg/L]	09-May-23	14:09	12-May-23	15:58	129
E. Coli [cfu/1g dried wgt]	03-May-23	16:15	05-May-23	11:15	20896
E.Coli [cfu/100mL]	03-May-23	16:15	05-May-23	11:15	28000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



**Carrie Greenlaw**  
 Project Specialist,  
 Environment, Health & Safety



**SGS Canada Inc.**

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24-May-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 17 May 2023  
**LR Report:** CA30336-MAY23

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Ilderton, ON  
N0M 2A0, Canada

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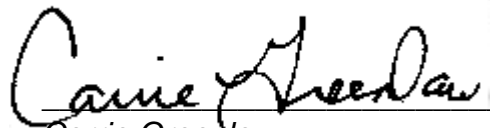
Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					16-May-23 08:35
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	4.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
E.Coli [cfu/100mL]	17-May-23	12:00	19-May-23	15:10	20
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	19-May-23	12:53	24-May-23	13:40	< 2
Total Suspended Solids [mg/L]	20-May-23	12:52	23-May-23	16:31	3
Phosphorus (total) [mg/L]	18-May-23	15:07	19-May-23	11:44	0.19
Ammonia+Ammonium (N) [as N mg/L]	19-May-23	15:46	23-May-23	10:01	0.2

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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07-June-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 31 May 2023  
**LR Report:** CA30532-MAY23

10227 Ilderton Rd.  
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N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					30-May-23 11:12
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	11.0
E.Coli [cfu/100mL]	31-May-23	15:50	02-Jun-23	09:10	12
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	01-Jun-23	17:02	06-Jun-23	15:20	3
Total Suspended Solids [mg/L]	01-Jun-23	15:00	02-Jun-23	14:34	9
Phosphorus (total) [mg/L]	02-Jun-23	14:39	05-Jun-23	10:52	0.32
Ammonia+Ammonium (N) [as N mg/L]	01-Jun-23	19:26	02-Jun-23	13:30	0.2

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2H0  
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20-June-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 07 June 2023  
**LR Report:** CA30131-JUN23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					06-Jun-23 09:15
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.4/5.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
Total Solids [%]	08-Jun-23	19:00	12-Jun-23	12:54	0.87
Specific Gravity	08-Jun-23	19:00	12-Jun-23	12:54	1.0
Volatile Solids [%]	08-Jun-23	19:00	12-Jun-23	12:54	70.3
Volatile Solids [%]	08-Jun-23	19:00	12-Jun-23	12:54	0.61
Nitrite (as N) [mg/kg]	12-Jun-23	14:34	14-Jun-23	15:11	960
Nitrite (as N) [mg/L]	12-Jun-23	14:34	14-Jun-23	15:11	8
Nitrate (as N) [mg/kg]	12-Jun-23	14:34	14-Jun-23	15:11	<340
Nitrate (as N) [mg/L]	12-Jun-23	14:34	14-Jun-23	15:11	< 3
Nitrate + Nitrite (a) [mg/kg]	12-Jun-23	14:34	14-Jun-23	15:11	960
Nitrate + Nitrite (as N) [mg/L]	12-Jun-23	14:34	14-Jun-23	15:11	8
Total Kjeldahl Nitrogen [as N mg/kg]	08-Jun-23	15:57	12-Jun-23	12:54	64000
Total Kjeldahl Nitrogen [as N mg/L]	08-Jun-23	15:57	12-Jun-23	12:54	554
Ammonia+Ammonium (N) [as N mg/kg]	09-Jun-23	16:58	12-Jun-23	10:12	27000
Ammonia+Ammonium (N) [as N mg/L]	09-Jun-23	16:58	12-Jun-23	10:12	238
Mercury [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	0.46
Mercury [mg/L]	14-Jun-23	14:23	16-Jun-23	14:49	0.004
Arsenic [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	<11
Arsenic [mg/L]	14-Jun-23	14:23	16-Jun-23	14:49	< 0.1
Cadmium [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	<0.6
Cadmium [mg/L]	14-Jun-23	14:23	16-Jun-23	14:49	< 0.005
Cobalt [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	4
Cobalt [mg/L]	14-Jun-23	14:23	16-Jun-23	14:49	0.03
Chromium [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	110
Chromium [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	0.93
Copper [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	320
Copper [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	2.8
Magnesium [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	4000

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Magnesium [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	35
Manganese [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	500
Manganese [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	4.4
Molybdenum [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	13
Molybdenum [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	0.11
Nickel [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	19
Nickel [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	0.17
Lead [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	<11
Lead [mg/L]	14-Jun-23	14:23	16-Jun-23	14:50	< 0.1
Selenium [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	<11
Selenium [mg/L]	14-Jun-23	14:23	16-Jun-23	14:51	< 0.1
Zinc [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	290
Zinc [mg/L]	14-Jun-23	14:23	16-Jun-23	14:51	3
Phosphorus [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	33000
Phosphorus (Total) [mg/L]	14-Jun-23	14:23	16-Jun-23	14:51	286
Potassium [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	4600
Potassium [mg/L]	14-Jun-23	14:23	16-Jun-23	14:51	40
Sulphur [mg/kg]	14-Jun-23	14:23	16-Jun-23	14:49	8000
Sulfur [mg/L]	14-Jun-23	14:23	16-Jun-23	14:51	70
E. Coli [cfu/1g dried wgt]	07-Jun-23	16:15	09-Jun-23	13:12	35632
E.Coli [cfu/100mL]	07-Jun-23	16:15	09-Jun-23	13:12	31000

Sample matrix = Sludge/Biosolids Solution

Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E. coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety



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26-June-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 16 June 2023  
**LR Report:** CA30295-JUN23

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Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					16-Jun-23 11:58
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
E.Coli [cfu/100mL]	16-Jun-23	17:00	19-Jun-23	13:19	96
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	20-Jun-23	17:00	26-Jun-23	10:45	9
Total Suspended Solids [mg/L]	21-Jun-23	15:59	23-Jun-23	13:04	19
Phosphorus (total) [mg/L]	20-Jun-23	18:53	21-Jun-23	13:02	0.78
Ammonia+Ammonium (N) [as N mg/L]	20-Jun-23	20:07	21-Jun-23	09:29	0.4
Unionized Ammonia @temp15 [mg/L as N]	22-Jun-23	13:48	23-Jun-23	10:24	< 0.001
pH@temp15 [pH Units]	22-Jun-23	13:48	23-Jun-23	10:24	6.83

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



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05-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 28 June 2023  
**LR Report:** CA30494-JUN23

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Ilderton, ON  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					27-Jun-23 07:50
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	29-Jun-23	16:54	04-Jul-23	16:04	142
Total Kjeldahl Nitrogen [as N mg/L]	29-Jun-23	17:05	30-Jun-23	15:11	25.2
Phosphorus (total) [mg/L]	29-Jun-23	14:38	30-Jun-23	11:38	3.08

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



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05-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 28 June 2023  
**LR Report:** CA30497-JUN23

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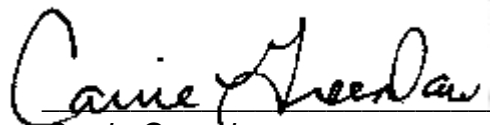
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					27-Jun-23 07:45
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
E.Coli [cfu/100mL]	28-Jun-23	17:30	29-Jun-23	17:38	12
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	29-Jun-23	16:54	04-Jul-23	16:05	4
Total Suspended Solids [mg/L]	01-Jul-23	08:40	04-Jul-23	15:47	9
Phosphorus (total) [mg/L]	29-Jun-23	14:38	30-Jun-23	11:38	0.54
Ammonia+Ammonium (N) [as N mg/L]	30-Jun-23	17:51	04-Jul-23	08:32	0.6
Unionized Ammonia @temp15 [mg/L as N]	30-Jun-23	11:10	04-Jul-23	08:32	0.001
pH@temp15 [pH Units]	30-Jun-23	11:10	04-Jul-23	10:30	6.92

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

  
Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety





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05-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 28 June 2023  
**LR Report:** CA30496-JUN23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					28-Jun-23 07:40
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	29-Jun-23	16:54	04-Jul-23	16:05	205
Total Kjeldahl Nitrogen [as N mg/L]	29-Jun-23	17:05	30-Jun-23	15:12	31.9
Phosphorus (total) [mg/L]	29-Jun-23	14:38	30-Jun-23	11:38	3.77

*Hawley Anderson, Hon.B.Sc*  
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05-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 28 June 2023  
**LR Report:** CA30495-JUN23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					28-Jun-23 07:45
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	29-Jun-23	16:54	04-Jul-23	16:05	3
Total Suspended Solids [mg/L]	01-Jul-23	09:39	04-Jul-23	15:51	8
Phosphorus (total) [mg/L]	29-Jun-23	14:38	30-Jun-23	11:38	0.43



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10-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 30 June 2023  
**LR Report:** CA30544-JUN23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					30-Jun-23 12:08
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	11.7
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	12.0
Biochemical Oxygen Demand (BOD5) [mg/L]	04-Jul-23	16:08	10-Jul-23	10:23	272
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	04-Jul-23	16:30	10-Jul-23	11:13	203
Total Suspended Solids [mg/L]	06-Jul-23	08:39	07-Jul-23	11:28	278
Total Kjeldahl Nitrogen [as N mg/L]	05-Jul-23	16:32	05-Jul-23	13:12	51.0
Phosphorus (total) [mg/L]	04-Jul-23	15:38	05-Jul-23	13:48	5.65
Chemical Oxygen Demand [mg/L]	06-Jul-23	08:14	10-Jul-23	10:23	470



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12-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 July 2023  
**LR Report:** CA30095-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					02-Jul-23 07:45
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jul-23	14:23	11-Jul-23	15:34	235
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	06-Jul-23	14:23	11-Jul-23	15:34	209
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	16:25	07-Jul-23	14:38	25.2
Phosphorus (total) [mg/L]	07-Jul-23	14:08	10-Jul-23	10:07	3.86
Chemical Oxygen Demand [mg/L]	07-Jul-23	09:17	11-Jul-23	15:34	262



*Carrie Greenlaw*  
Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



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12-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 July 2023  
**LR Report:** CA30098-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					03-Jul-23 08:00
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jul-23	14:23	12-Jul-23	14:44	124
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	07-Jul-23	16:38	12-Jul-23	14:44	141
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	16:25	07-Jul-23	14:39	28.4
Phosphorus (total) [mg/L]	06-Jul-23	15:04	07-Jul-23	12:53	4.58
Chemical Oxygen Demand [mg/L]	11-Jul-23	08:40	12-Jul-23	14:45	415



*Carrie Greenlaw*  
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17-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 July 2023  
**LR Report:** CA30096-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					04-Jul-23 08:40
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jul-23	14:23	17-Jul-23	13:00	168
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	11-Jul-23	16:19	17-Jul-23	13:00	166
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	16:25	07-Jul-23	14:38	22.8
Phosphorus (total) [mg/L]	07-Jul-23	14:08	10-Jul-23	10:07	3.16
Chemical Oxygen Demand [mg/L]	11-Jul-23	08:40	17-Jul-23	13:00	340



Carrie Greenlaw  
Project Specialist,  
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**SGS Canada Inc.**

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18-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 July 2023  
**LR Report:** CA30097-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage (Project)
Sample Date & Time					05-Jul-23 08:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jul-23	14:23	17-Jul-23	16:02	131
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	12-Jul-23	17:29	17-Jul-23	16:02	109
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	16:25	07-Jul-23	14:39	23.8
Phosphorus (total) [mg/L]	07-Jul-23	14:08	10-Jul-23	10:07	3.52
Chemical Oxygen Demand [mg/L]	07-Jul-23	09:17	17-Jul-23	16:01	220



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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12-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 05 July 2023  
**LR Report:** CA30102-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage (Regulatory)
Sample Date & Time					05-Jul-23 08:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Jul-23	14:23	11-Jul-23	13:45	186
Chemical Oxygen Demand [mg/L]	07-Jul-23	09:17	11-Jul-23	13:45	256
Total Suspended Solids [mg/L]	11-Jul-23	09:24	12-Jul-23	12:58	232
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	16:25	07-Jul-23	14:39	22.3
Phosphorus (total) [mg/L]	07-Jul-23	14:08	10-Jul-23	10:08	3.51



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety





**SGS Canada Inc.**

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20-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

Date Rec. : 05 July 2023  
LR Report: CA30091-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					05-Jul-23 07:15
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	14.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Total Solids [%]	10-Jul-23	20:54	12-Jul-23	10:34	2.39
Specific Gravity	10-Jul-23	20:54	12-Jul-23	10:34	1.0
Volatile Solids [%]	10-Jul-23	20:54	12-Jul-23	10:34	62.9
Volatile Solids [%]	10-Jul-23	20:54	12-Jul-23	10:34	1.50
Nitrite (as N) [mg/kg]	08-Jul-23	10:39	12-Jul-23	14:51	<130
Nitrite (as N) [mg/L]	08-Jul-23	10:39	12-Jul-23	14:51	< 3
Nitrate (as N) [mg/kg]	08-Jul-23	10:39	12-Jul-23	14:51	<130
Nitrate (as N) [mg/L]	08-Jul-23	10:39	12-Jul-23	14:51	< 3
Nitrate + Nitrite (a) [mg/kg]	08-Jul-23	10:39	12-Jul-23	14:51	<130
Nitrate + Nitrite (as N) [mg/L]	08-Jul-23	10:39	12-Jul-23	14:51	< 3
Total Kjeldahl Nitrogen [as N mg/kg]	06-Jul-23	14:31	11-Jul-23	10:23	49000
Total Kjeldahl Nitrogen [as N mg/L]	06-Jul-23	14:31	11-Jul-23	10:23	1180
Ammonia+Ammonium (N) [as N mg/kg]	06-Jul-23	15:57	11-Jul-23	10:04	9000
Ammonia+Ammonium (N) [as N mg/L]	06-Jul-23	15:57	11-Jul-23	10:04	216
Mercury [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	0.34
Mercury [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.008
Arsenic [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	4
Arsenic [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.1
Cadmium [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	0.4
Cadmium [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.010
Cobalt [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	4
Cobalt [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.10
Chromium [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	130
Chromium [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	3.2
Copper [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	370
Copper [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	8.9
Magnesium [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	2600
Magnesium [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	63
Manganese [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	580

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	14
Molybdenum [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	12
Molybdenum [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.28
Nickel [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	22
Nickel [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.53
Lead [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	8
Lead [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	0.2
Selenium [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	<4
Selenium [mg/L]	10-Jul-23	13:49	12-Jul-23	14:31	< 0.1
Zinc [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	350
Zinc [mg/L]	10-Jul-23	13:49	12-Jul-23	14:30	8
Phosphorus [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	39000
Phosphorus (Total) [mg/L]	10-Jul-23	13:49	12-Jul-23	14:30	936
Potassium [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	1800
Potassium [mg/L]	10-Jul-23	13:49	12-Jul-23	14:30	42
Sulphur [mg/kg]	10-Jul-23	13:49	12-Jul-23	14:31	11000
Sulfur [mg/L]	10-Jul-23	13:49	12-Jul-23	14:30	257
E. Coli [cfu/1g dried wgt]	06-Jul-23	10:35	07-Jul-23	15:09	58577
E.Coli [cfu/100mL]	06-Jul-23	10:35	07-Jul-23	15:09	140000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E. coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



*Carrie Greenlaw*  
 Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety



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18-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 07 July 2023  
**LR Report:** CA30175-JUL23

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N0M 2A0, Canada

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Phone: 519-666-0190 ext 255  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					06-Jul-23 07:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.3/6.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	11.0
Biochemical Oxygen Demand (BOD5) [mg/L]	10-Jul-23	15:18	18-Jul-23	10:51	478
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	10-Jul-23	15:18	18-Jul-23	10:54	178
Total Kjeldahl Nitrogen [as N mg/L]	10-Jul-23	17:01	11-Jul-23	13:48	28.3
Phosphorus (total) [mg/L]	10-Jul-23	15:00	11-Jul-23	11:30	4.25
Chemical Oxygen Demand [mg/L]	11-Jul-23	08:44	18-Jul-23	10:50	360

\*BOD result should not exceed COD result. These differences in results maybe due to differences in sample portions used for analysis (non-homogenous).



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17-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 07 July 2023  
**LR Report:** CA30176-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					07-Jul-23 07:30
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.8/7.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	11.0
Biochemical Oxygen Demand (BOD5) [mg/L]	10-Jul-23	15:18	17-Jul-23	10:51	314
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	10-Jul-23	15:18	17-Jul-23	11:14	252
Total Kjeldahl Nitrogen [as N mg/L]	10-Jul-23	17:01	11-Jul-23	13:48	20.0
Phosphorus (total) [mg/L]	10-Jul-23	15:00	11-Jul-23	11:30	5.37
Chemical Oxygen Demand [mg/L]	11-Jul-23	08:44	17-Jul-23	10:35	635



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19-July-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 12 July 2023  
**LR Report:** CA30286-JUL23

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Ilderton, ON  
N0M 2A0, Canada

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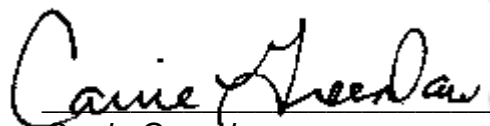
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					12-Jul-23 10:00
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	11.0
E.Coli [cfu/100mL]	12-Jul-23	16:10	14-Jul-23	15:38	8
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	14-Jul-23	14:24	19-Jul-23	14:20	4
Total Suspended Solids [mg/L]	17-Jul-23	10:39	18-Jul-23	15:12	9
Phosphorus (total) [mg/L]	17-Jul-23	15:35	18-Jul-23	09:46	0.41
Ammonia+Ammonium (N) [as N mg/L]	18-Jul-23	08:39	19-Jul-23	11:12	2.2
Unionized Ammonia @temp15 [mg/L as N]	17-Jul-23	13:28	19-Jul-23	11:12	0.005
pH@temp15 [pH Units]	17-Jul-23	13:28	18-Jul-23	09:25	6.90

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.



**Carrie Greenlaw**  
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01-August-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 26 July 2023  
**LR Report:** CA30518-JUL23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					25-Jul-23 15:35
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	13.0
E.Coli [cfu/100mL]	26-Jul-23	14:45	28-Jul-23	15:41	9
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	27-Jul-23	16:06	01-Aug-23	13:26	3
Total Suspended Solids [mg/L]	28-Jul-23	10:15	31-Jul-23	08:23	5
Phosphorus (total) [mg/L]	31-Jul-23	15:39	01-Aug-23	13:11	0.18
Ammonia+Ammonium (N) [as N mg/L]	27-Jul-23	18:06	28-Jul-23	10:18	0.1
Unionized Ammonia @temp15 [mg/L as N]	27-Jul-23	11:54	28-Jul-23	10:18	< 0.001
pH@temp15 [pH Units]	27-Jul-23	11:54	28-Jul-23	09:37	6.61

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
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15-August-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 09 August 2023  
**LR Report:** CA30155-AUG23

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N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					08-Aug-23 15:35
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.1
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
E.Coli [cfu/100mL]	09-Aug-23	18:15	11-Aug-23	13:48	2
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	10-Aug-23	16:31	15-Aug-23	13:54	< 2
Total Suspended Solids [mg/L]	10-Aug-23	16:38	11-Aug-23	15:57	2
Phosphorus (total) [mg/L]	14-Aug-23	15:01	15-Aug-23	15:02	0.25
Ammonia+Ammonium (N) [as N mg/L]	11-Aug-23	19:38	14-Aug-23	14:24	1.1
Un-ionized Ammonia @temp15 [mg/L as N]	10-Aug-23	13:13	14-Aug-23	14:24	0.002
pH@temp15 [pH Units]	10-Aug-23	13:13	11-Aug-23	14:08	6.76

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal un-ionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**

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29-August-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 23 August 2023  
**LR Report:** CA30482-AUG23

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## CERTIFICATE OF ANALYSIS

### Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage	6: 1A0C6 Final Effluent
Sample Date & Time					22-Aug-23 08:30	22-Aug-23 11:58
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	11.6	11.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	8.0	8.0
E.Coli [cfu/100mL]	23-Aug-23	14:00	25-Aug-23	14:10	---	10
Biochemical Oxygen Demand (BOD5) [mg/L]	24-Aug-23	17:14	29-Aug-23	13:24	208	---
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	24-Aug-23	16:32	29-Aug-23	14:27	---	< 2
Chemical Oxygen Demand [mg/L]	25-Aug-23	10:12	29-Aug-23	13:24	425	---
Total Suspended Solids [mg/L]	24-Aug-23	13:15	25-Aug-23	14:02	228	3
Total Kjeldahl Nitrogen [as N mg/L]	24-Aug-23	17:50	28-Aug-23	16:01	40.7	---
Phosphorus (total) [mg/L]	24-Aug-23	17:30	25-Aug-23	12:28	4.92	0.19
Ammonia+Ammonium (N) [as N mg/L]	25-Aug-23	21:05	28-Aug-23	14:33	---	0.1
Unionized Ammonia @temp15 [mg/L as N]	25-Aug-23	09:16	28-Aug-23	14:33	---	< 0.001
pH@temp15 [pH Units]	25-Aug-23	09:16	25-Aug-23	14:27	---	6.78

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
 Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Carrie Greenlaw**  
 Project Specialist,  
 Environment, Health & Safety





**SGS Canada Inc.**

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05-September-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 25 August 2023  
**LR Report:** CA30540-AUG23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					23-Aug-23 11:12
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.4
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	28-Aug-23	16:23	05-Sep-23	10:24	513
Chemical Oxygen Demand [mg/L]	30-Aug-23	08:09	05-Sep-23	10:24	515
Total Kjeldahl Nitrogen [as N mg/L]	28-Aug-23	16:46	30-Aug-23	12:32	38.7

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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05-September-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 25 August 2023  
**LR Report:** CA30538-AUG23

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Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					24-Aug-23 08:50
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.2
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	28-Aug-23	16:23	05-Sep-23	10:23	377
Chemical Oxygen Demand [mg/L]	30-Aug-23	08:09	05-Sep-23	10:23	425
Total Kjeldahl Nitrogen [as N mg/L]	28-Aug-23	16:46	30-Aug-23	12:32	36.0

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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05-September-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 25 August 2023  
**LR Report:** CA30539-AUG23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage
Sample Date & Time					25-Aug-23 08:00
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	8.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	28-Aug-23	16:23	05-Sep-23	10:23	223
Chemical Oxygen Demand [mg/L]	30-Aug-23	08:09	05-Sep-23	10:23	395
Total Kjeldahl Nitrogen [as N mg/L]	28-Aug-23	16:46	30-Aug-23	12:32	35.2

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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12-September-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 06 September 2023  
**LR Report:** CA30075-SEP23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					05-Sep-23 12:30
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	6.0
E.Coli [cfu/100mL]	07-Sep-23	10:10	08-Sep-23	17:00	55
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	07-Sep-23	15:15	12-Sep-23	13:56	2
Total Suspended Solids [mg/L]	07-Sep-23	16:18	11-Sep-23	07:18	3
Phosphorus (total) [mg/L]	08-Sep-23	16:48	11-Sep-23	13:33	0.27
Ammonia+Ammonium (N) [as N mg/L]	11-Sep-23	18:01	12-Sep-23	13:06	2.5
pH@temp15 [pH Units]	11-Sep-23	13:05	11-Sep-23	16:00	7.07
Unionized Ammonia @temp15 [mg/L as N]	11-Sep-23	13:05	12-Sep-23	13:07	0.008

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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26-September-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 20 September 2023  
**LR Report:** CA30401-SEP23

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N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					19-Sep-23 09:36
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.3
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
E.Coli [cfu/100mL]	20-Sep-23	16:25	22-Sep-23	12:45	8
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	21-Sep-23	15:40	26-Sep-23	13:33	< 2
Total Suspended Solids [mg/L]	24-Sep-23	09:46	25-Sep-23	15:12	3
Phosphorus (total) [mg/L]	21-Sep-23	15:03	22-Sep-23	13:51	0.26
Ammonia+Ammonium (N) [as N mg/L]	21-Sep-23	20:16	22-Sep-23	16:19	0.6
Unionized Ammonia @temp15 [mg/L as N]	23-Sep-23	13:07	26-Sep-23	11:41	< 0.001
pH@temp15 [pH Units]	23-Sep-23	13:07	25-Sep-23	10:37	6.57

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Hawley Anderson, Hon.B.Sc**  
**Project Specialist,**  
**Environment, Health & Safety**

**SGS Canada Inc.**

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13-October-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 04 October 2023  
**LR Report:** CA30079-OCT23

10227 Ilderton Rd.  
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 N0M 2A0, Canada

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Phone: 519-666-0190 ext 255  
 Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C2 Raw Sewage	6: 1A0C6 Final Effluent
Sample Date & Time					03-Oct-23 08:02	03-Oct-23 08:15
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	10.6	10.6
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0	9.0
E.Coli [cfu/100mL]	04-Oct-23	16:20	06-Oct-23	15:51	---	106
Biochemical Oxygen Demand (BOD5) [mg/L]	05-Oct-23	16:40	10-Oct-23	15:54	225	---
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	05-Oct-23	17:53	10-Oct-23	18:49	---	< 2
Total Suspended Solids [mg/L]	09-Oct-23	10:33	10-Oct-23	16:00	243	4
Total Kjeldahl Nitrogen [as N mg/L]	10-Oct-23	15:53	11-Oct-23	13:52	39.9	---
Phosphorus (total) [mg/L]	10-Oct-23	15:05	12-Oct-23	19:43	4.91	0.28
Ammonia+Ammonium (N) [as N mg/L]	06-Oct-23	19:41	10-Oct-23	10:09	---	1.8
Unionized Ammonia @temp15 [mg/L as N]	05-Oct-23	15:07	10-Oct-23	10:09	---	0.002
pH@temp15 [pH Units]	05-Oct-23	15:07	05-Oct-23	16:53	---	6.51
Chemical Oxygen Demand [mg/L]	06-Oct-23	06:26	12-Oct-23	11:11	450	---

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.  
 Note: Federal unionized ammonia at 15 °C calculated using Lab pH results performed at this temperature.

**Carrie Greenlaw**  
 Project Specialist,  
 Environment, Health & Safety



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25-October-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 04 October 2023  
**LR Report:** CA30080-OCT23

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N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					04-Oct-23 08:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	17.5
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
Total Solids [%]	06-Oct-23	20:53	11-Oct-23	09:24	0.57
Specific Gravity	06-Oct-23	20:53	11-Oct-23	09:24	1.0
Volatile Solids [%]	06-Oct-23	20:53	11-Oct-23	09:24	57.8
Volatile Solids [mg/kg]	06-Oct-23	20:53	11-Oct-23	09:24	0.33
Nitrite (as N) [mg/kg]	07-Oct-23	07:52	13-Oct-23	16:04	<530
Nitrite (as N) [mg/L]	07-Oct-23	07:52	13-Oct-23	16:04	< 3
Nitrate (as N) [mg/kg]	07-Oct-23	07:52	13-Oct-23	16:04	<530
Nitrate (as N) [mg/L]	07-Oct-23	07:52	13-Oct-23	16:04	< 3
Nitrate + Nitrite (a) [mg/kg]	07-Oct-23	07:52	13-Oct-23	16:04	<530
Nitrate + Nitrite (as N) [mg/L]	07-Oct-23	07:52	13-Oct-23	16:04	< 3
Total Kjeldahl Nitrogen [as N mg/kg]	20-Oct-23	12:35	25-Oct-23	11:53	66000
Total Kjeldahl Nitrogen [as N mg/L]	20-Oct-23	12:35	25-Oct-23	11:53	378
Ammonia+Ammonium (N) [as N mg/kg]	06-Oct-23	15:34	10-Oct-23	11:04	24000
Ammonia+Ammonium (N) [as N mg/L]	06-Oct-23	15:34	10-Oct-23	11:04	139
Mercury [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	0.70
Mercury [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	0.004
Arsenic [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	<18
Arsenic [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	< 0.1
Cadmium [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	<0.9
Cadmium [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	< 0.005
Cobalt [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	4
Cobalt [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	0.02
Chromium [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	120
Chromium [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	0.69
Copper [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	320
Copper [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	1.8
Magnesium [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	4400
Magnesium [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	25
Manganese [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	500

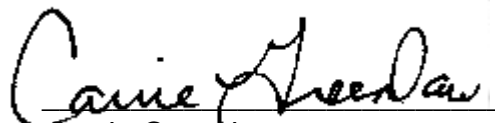
Online LIMS

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Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	2.8
Molybdenum [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	12
Molybdenum [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	0.07
Nickel [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	24
Nickel [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	0.14
Lead [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	<18
Lead [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	< 0.1
Selenium [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	<18
Selenium [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	< 0.1
Zinc [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	350
Zinc [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	2
Phosphorus [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	32000
Phosphorus (Total) [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	185
Potassium [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	5400
Potassium [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	31
Sulphur [mg/kg]	19-Oct-23	15:03	20-Oct-23	13:24	13000
Sulfur [mg/L]	19-Oct-23	15:03	20-Oct-23	13:24	73
E. Coli [cfu/1g dried wgt]	07-Oct-23	15:29	12-Oct-23	14:39	12281
E. Coli [cfu/100mL]	07-Oct-23	15:29	12-Oct-23	14:39	7000 UAL

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E. coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

\*Due to a laboratory oversight E. Coli was missed being completed within the recommended holding time of 48 hours. Client was notified.  
 UAL - Unreliable: Sample Age Exceeds Normal Limit



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety





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24-October-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 17 October 2023  
**LR Report:** CA30399-OCT23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					17-Oct-23 09:50
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	4.1
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	10.0
E.Coli [cfu/100mL]	18-Oct-23	16:30	20-Oct-23	14:06	0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	19-Oct-23	16:38	24-Oct-23	11:59	< 2
Total Suspended Solids [mg/L]	23-Oct-23	13:35	24-Oct-23	14:13	4
Phosphorus (total) [mg/L]	21-Oct-23	14:26	24-Oct-23	13:10	0.26
Ammonia+Ammonium (N) [as N mg/L]	21-Oct-23	14:29	23-Oct-23	14:34	1.0

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



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08-November-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 01 November 2023  
**LR Report:** CA30016-NOV23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					31-Oct-23 10:18
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.1
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
E.Coli [cfu/100mL]	01-Nov-23	12:30	02-Nov-23	16:32	48
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	02-Nov-23	17:16	07-Nov-23	13:27	< 2
Total Suspended Solids [mg/L]	05-Nov-23	11:01	06-Nov-23	13:35	3
Phosphorus (total) [mg/L]	06-Nov-23	16:40	08-Nov-23	08:09	0.31
Ammonia+Ammonium (N) [as N mg/L]	03-Nov-23	19:29	06-Nov-23	10:29	0.6

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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22-November-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 09 November 2023  
**LR Report:** CA30177-NOV23

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Ilderton, ON  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					09-Nov-23 09:22
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	9.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	3.0
Total Solids [%]	10-Nov-23	21:21	14-Nov-23	11:49	0.31
SpecificGravity	10-Nov-23	21:21	14-Nov-23	11:49	1.0
Volatile Solids [%]	10-Nov-23	21:21	14-Nov-23	11:49	57.1
Volatile Solids [%]	10-Nov-23	21:21	14-Nov-23	11:49	0.18
Nitrite (as N) [mg/kg]	14-Nov-23	10:15	16-Nov-23	13:52	<970
Nitrite (as N) [mg/L]	14-Nov-23	10:15	16-Nov-23	13:52	< 3
Nitrate (as N) [mg/kg]	14-Nov-23	10:15	16-Nov-23	13:52	<970
Nitrate (as N) [mg/L]	14-Nov-23	10:15	16-Nov-23	13:52	< 3
Nitrate + Nitrite (a [mg/kg]	14-Nov-23	10:15	16-Nov-23	13:52	<970
Nitrate + Nitrite (as N) [mg/L]	14-Nov-23	10:15	16-Nov-23	13:52	< 3
Total Kjeldahl Nitrogen [as N mg/kg]	14-Nov-23	16:26	16-Nov-23	11:06	79000
Total Kjeldahl Nitrogen [as N mg/L]	14-Nov-23	16:26	16-Nov-23	11:06	245
Ammonia+Ammonium (N) [as N mg/kg]	14-Nov-23	09:38	16-Nov-23	10:39	39000
Ammonia+Ammonium (N) [as N mg/L]	14-Nov-23	09:38	16-Nov-23	10:39	121
Mercury [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	0.64
Mercury [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	0.002
Arsenic [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	<32
Arsenic [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	< 0.1
Cadmium [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	<2
Cadmium [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	< 0.005
Cobalt [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	5
Cobalt [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	0.01
Chromium [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	150
Chromium [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	0.46
Copper [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	370
Copper [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	1.1
Magnesium [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	7600
Magnesium [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	24
Manganese [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	580

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	1.8
Molybdenum [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	17
Molybdenum [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	0.05
Nickel [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	25
Nickel [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	0.08
Lead [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	<32
Lead [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	< 0.1
Selenium [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	<32
Selenium [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	< 0.1
Zinc [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	410
Zinc [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	1
Phosphorus [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	34000
Phosphorus (Total) [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	106
Potassium [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	9300
Potassium [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	29
Sulphur [mg/kg]	20-Nov-23	14:50	21-Nov-23	15:32	20000
Sulfur [mg/L]	20-Nov-23	14:50	21-Nov-23	15:32	63
E. Coli [cfu/1g dried wgt]	10-Nov-23	15:15	13-Nov-23	12:40	6452
E.Coli [cfu/100mL]	10-Nov-23	15:15	13-Nov-23	12:40	2000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety



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21-November-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 15 November 2023  
**LR Report:** CA30272-NOV23

10227 Ilderton Rd.  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					15-Nov-23 07:58
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	13.9
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	9.0
E.Coli [cfu/100mL]	15-Nov-23	12:30	16-Nov-23	16:46	18
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	16-Nov-23	15:17	21-Nov-23	13:07	< 2
Total Suspended Solids [mg/L]	20-Nov-23	18:02	21-Nov-23	14:03	3
Phosphorus (total) [mg/L]	17-Nov-23	20:12	20-Nov-23	14:04	0.23
Ammonia+Ammonium (N) [as N mg/L]	17-Nov-23	18:34	20-Nov-23	16:18	0.2

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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06-December-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 29 November 2023  
**LR Report:** CA30462-NOV23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					28-Nov-23 08:20
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	5.1
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	5.0
E.Coli [cfu/100mL]	29-Nov-23	11:50	30-Nov-23	14:44	21
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	30-Nov-23	16:02	05-Dec-23	12:22	2
Total Suspended Solids [mg/L]	30-Nov-23	13:40	01-Dec-23	13:53	4
Phosphorus (total) [mg/L]	30-Nov-23	16:01	01-Dec-23	11:46	0.21
Ammonia+Ammonium (N) [as N mg/L]	30-Nov-23	17:42	01-Dec-23	14:10	1.5

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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15-December-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 06 December 2023  
**LR Report:** CA30097-DEC23

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Sample Date & Time					05-Dec-23 15:25
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.2
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	4.0
Total Solids [%]	07-Dec-23	18:16	11-Dec-23	10:38	1.02
Specific Gravity	07-Dec-23	18:16	11-Dec-23	10:38	1.0
Volatile Solids [%]	07-Dec-23	18:16	11-Dec-23	10:38	73.5
Volatile Solids [%]	07-Dec-23	18:16	11-Dec-23	10:38	0.75
Nitrite (as N) [mg/kg]	11-Dec-23	07:58	14-Dec-23	16:59	<290
Nitrite (as N) [mg/L]	11-Dec-23	07:58	14-Dec-23	16:59	< 3
Nitrate (as N) [mg/kg]	11-Dec-23	07:58	14-Dec-23	16:59	<290
Nitrate (as N) [mg/L]	11-Dec-23	07:58	14-Dec-23	16:59	< 3
Nitrate + Nitrite (a) [mg/kg]	11-Dec-23	07:58	14-Dec-23	16:59	<290
Nitrate + Nitrite (as N) [mg/L]	11-Dec-23	07:58	14-Dec-23	16:58	< 3
Total Kjeldahl Nitrogen [as N mg/kg]	08-Dec-23	13:24	12-Dec-23	14:14	58000
Total Kjeldahl Nitrogen [as N mg/L]	08-Dec-23	13:24	12-Dec-23	14:14	597
Ammonia+Ammonium (N) [as N mg/kg]	08-Dec-23	19:34	12-Dec-23	14:02	1500
Ammonia+Ammonium (N) [as N mg/L]	08-Dec-23	19:34	12-Dec-23	14:02	15.7
Mercury [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	0.20
Mercury [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	0.002
Arsenic [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	<10
Arsenic [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	< 0.1
Cadmium [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	<0.5
Cadmium [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	< 0.005
Cobalt [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	2
Cobalt [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	0.02
Chromium [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	98
Chromium [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	1.00
Copper [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	260
Copper [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	2.7
Magnesium [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	2800
Magnesium [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	29
Manganese [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	230

Online LIMS

0003565043

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: 36D07 Sludge
Manganese [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	2.4
Molybdenum [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	13
Molybdenum [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	0.13
Nickel [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	14
Nickel [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	0.14
Lead [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	74
Lead [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	0.8
Selenium [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	<10
Selenium [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	< 0.1
Zinc [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	200
Zinc [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	2
Phosphorus [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	26000
Phosphorus (Total) [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	268
Potassium [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	4700
Potassium [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	48
Sulphur [mg/kg]	11-Dec-23	16:11	12-Dec-23	13:59	8300
Sulfur [mg/L]	11-Dec-23	16:11	12-Dec-23	13:59	85
E. Coli [cfu/1g dried wgt]	06-Dec-23	16:55	08-Dec-23	13:22	509804
E.Coli [cfu/100mL]	06-Dec-23	16:55	08-Dec-23	13:22	520000

Sample matrix = Sludge/Biosolids Solution  
 Metals, TKN, Ammonia + Ammonium, Nitrite, Nitrate and Nitrates calculated and reported in mg/kg on a dried weight basis. Detection Limits reflect this calculation  
 The E.coli value reported in CFU/1g dried weight was calculated using Total Solids and CFU/100ml.

Note: E. Coli analysis was completed at the SGS London Laboratory.



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety





**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

20-December-2023

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 13 December 2023  
**LR Report:** CA30217-DEC23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

**Copy:** #1

Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					12-Dec-23 10:05
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	6.0
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	5.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	15-Dec-23	16:56	20-Dec-23	12:46	< 2
Total Suspended Solids [mg/L]	15-Dec-23	15:02	18-Dec-23	15:52	3
Phosphorus (total) [mg/L]	15-Dec-23	15:35	18-Dec-23	13:07	0.15
Ammonia+Ammonium (N) [as N mg/L]	15-Dec-23	17:43	18-Dec-23	11:48	< 0.1
Unionized Ammonia @temp15 [mg/L as N]	15-Dec-23	13:21	18-Dec-23	11:05	< 0.001
pH@temp15 [pH Units]	15-Dec-23	13:21	18-Dec-23	11:05	6.88

Note: Federal unionized ammonia at 15 °C calculated using lab pH results performed at this temperature.

*Hawley Anderson, Hon.B.Sc*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

04-January-2024

**Mun of Middlesex Centre (Komoka WWTP)**

Attn : Brian Watson

**Date Rec. :** 27 December 2023  
**LR Report:** CA30383-DEC23

10227 Ilderton Rd.  
Ilderton, ON  
N0M 2A0, Canada

**Copy:** #1

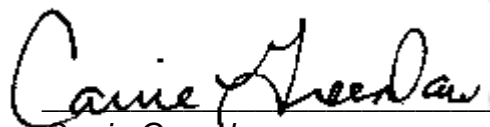
Phone: 519-666-0190 ext 255  
Fax:519-666-0271

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: 1A0C6 Final Effluent
Sample Date & Time					26-Dec-23 08:10
Temperature Upon Receipt [at London Lab °C]	---	---	---	---	7.5
Temperature Upon Receipt [at Lakefield Lab °C]	---	---	---	---	7.0
Carbonaceous Biochemical Oxygen Demand [(CBOD5) mg/L]	28-Dec-23	17:30	02-Jan-24	15:40	3
Total Suspended Solids [mg/L]	28-Dec-23	15:03	29-Dec-23	15:06	2
Phosphorus (total) [mg/L]	29-Dec-23	14:22	02-Jan-24	11:07	0.16
Ammonia+Ammonium (N) [as N mg/L]	28-Dec-23	16:09	29-Dec-23	11:26	0.9
Unionized Ammonia @temp15 [mg/L as N]	28-Dec-23	16:09	04-Jan-24	09:40	0.001
pH@temp15 [pH Units]	02-Jan-24	10:02	02-Jan-24	15:52	6.72

\*E. Coli analysis was completed at the SGS Environmental Services - London Laboratory.



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety

## ***APPENDIX B – BYPASS EVENT AND MECP REPORTS***

April 11, 2023  
Ministry of the Environment, Conservation and Parks  
Southwest Region  
733 Exeter Road  
London ON, N6E 1L3  
[Angela.Stroyberg@ontario.ca](mailto:Angela.Stroyberg@ontario.ca)

**RE: Komoka WWTF Bypass Event – # 1-345WLN**

---

Dear Angela,

This letter is to serve as written notice for the tertiary bypass at Komoka WWTF that occurred on Friday March 31, 2023. An estimated two (2) cubic meters had bypassed, during this distinct instance, over a six (6) minute period. The start of the bypass occurred at 18:51 during higher flows which the filters could not maintain and stopped at 18:57.

Throughout the bypass all wastewater entering the facility continued to receive treatment with a portion overflowing the tertiary filters and remixing with final effluent before being discharged from the facility. Samples were taken during this event.

Parameter	Concentration (mg/l)
Carbonaceous Biochemical Demand (cBOD <sub>5</sub> )	<4 mg/l
Total Suspended Solids	9 mg/l
Total Phosphorus	0.24 mg/l
Ammonia + Ammonium (N)	0.1 mg/l

The Certificate of Approval number for the Komoka WWTF is # 1847-87RK6Q and works # 120002585.

This incident was reported at the start to Aaron at 18:59 March 31, receiving reference # 1-345WLN.

Should you have any questions please feel free to contact me.



Sincerely,



**Eric Joudrey**

Water/Wastewater Operations Manager

<http://middlesexcentre.on.ca> | [joudrey@middlesexcentre.ca](mailto:joudrey@middlesexcentre.ca)

22280 Komoka Road, RR#3 | Komoka, Ontario, N0L 1R0

C: 519-859-3473

Cc:

Robert Cascaden, Director of Public Works and Engineering – Municipality of Middlesex Centre

Brian Watson, Operations Supervisor - Municipality of Middlesex Centre

Jocelyn Tyler, Compliance Coordinator – Municipality of Middlesex Centre



April 11, 2023  
Ministry of the Environment, Conservation and Parks  
Southwest Region  
733 Exeter Road  
London ON, N6E 1L3  
[Angela.Stroyberg@ontario.ca](mailto:Angela.Stroyberg@ontario.ca)

**RE: Komoka WWTF Bypass Event – # 1-345ZGJ**

---

Dear Angela,

This letter is to serve as written notice for the tertiary bypass at Komoka WWTF that occurred on Friday March 31, 2023. An estimated one (1) cubic meter had bypassed, during this distinct instance, over an eight (8) minute period. The start of the bypass occurred at 22:30 during higher flows which the filters could not maintain and stopped at 22:38.

Throughout the bypass all wastewater entering the facility continued to receive treatment with a portion overflowing the tertiary filters and remixing with final effluent before being discharged from the facility. Samples were taken during this event.

Parameter	Concentration (mg/l)
Carbonaceous Biochemical Demand (cBOD <sub>5</sub> )	<4 mg/l
Total Suspended Solids	8 mg/l
Total Phosphorus	0.22 mg/l
Ammonia + Ammonium (N)	0.1 mg/l

The Certificate of Approval number for the Komoka WWTF is # 1847-87RK6Q and works # 120002585.

This incident was reported at the start to Sofia at 22:43 March 31, receiving reference # 1-345ZGJ.

Should you have any questions please feel free to contact me.



Sincerely,



**Eric Joudrey**

Water/Wastewater Operations Manager

<http://middlesexcentre.on.ca> | [joudrey@middlesexcentre.ca](mailto:joudrey@middlesexcentre.ca)

22280 Komoka Road, RR#3 | Komoka, Ontario, N0L 1R0

C: 519-859-3473

Cc:

Robert Cascaden, Director of Public Works and Engineering – Municipality of Middlesex Centre

Brian Watson, Operations Supervisor - Municipality of Middlesex Centre

Jocelyn Tyler, Compliance Coordinator – Municipality of Middlesex Centre

April 11, 2023  
 Ministry of the Environment, Conservation and Parks  
 Southwest Region  
 733 Exeter Road  
 London ON, N6E 1L3  
[Angela.Stroyberg@ontario.ca](mailto:Angela.Stroyberg@ontario.ca)

**RE: Komoka WWTF Bypass Event - # 1-345ZX3 & 1-347SY8**

---

Dear Angela,

This letter is to serve as written notice for the tertiary bypass at Komoka WWTF that occurred on April 1, 2023 and ended on April 2, 2023. The duration of the overflow event was approximately thirty-five (35) hours. The start of the bypass occurred at 01:01 on Saturday April 1<sup>st</sup> and ended at 11:46 on Sunday April 2<sup>nd</sup>. The event was a result of heavy rainfall that started on March 31 and ended late evening on Saturday April 1<sup>st</sup>. During the event the facility exceeded the average daily flow of the wastewater plant and the filter system. As a result of the high flows solids were carried out of the clarifiers causing the filter bags to clog and the facility unable to process the high flows. Starting on April 1<sup>st</sup> at 01:01 till 11:45 am April 2<sup>nd</sup> a total of 4,463 m<sup>3</sup> was processed through the final effluent meter.

**Table 1 – Total Flows**

Date	Total Flow during Event (m <sup>3</sup> )
Saturday April 1, 2023	3,363 m <sup>3</sup>
Sunday April 2, 2023	1,100 m <sup>3</sup>
Total Volume Processed during bypass	4,463 m <sup>3</sup>

It is estimated that approximately 2,008 m<sup>3</sup> was processed through the filters and 2,454 m<sup>3</sup> was bypassed. During the bypass all wastewater entering the facility continued to receive treatment with a portion overflowing the tertiary filters and remixing with final effluent. Throughout the event the operations staff maintained the sewage pump stations and managed the wastewater facility, completed filter bag changes and collected samples throughout the event. A summary of the effluent parameters during the bypass event are below.

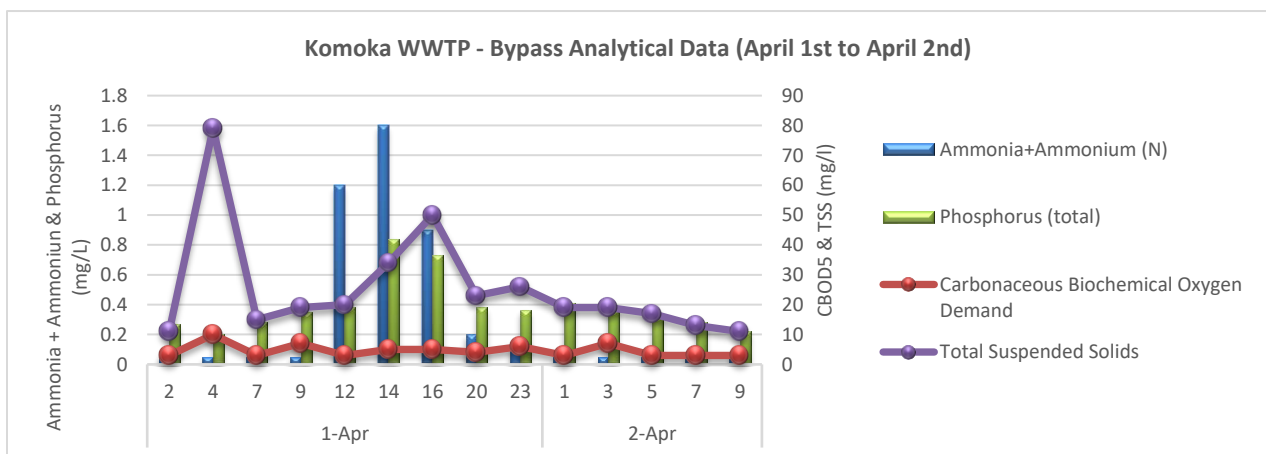
**Table 2- Analytical Sample Results**

Date	Ammonia + Ammonium (N) (mg/L)	CBOD5 (mg/L)	Total Phosphorus (mg/l)	Total Suspended Solids (mg/l)
April 1	0.05	3	0.27	11
April 1	0.05	10	0.20	79



April 1	0.05	3	0.28	15
April 1	0.05	7	0.35	19
April 1	1.20	3	0.38	20
April 1	1.60	5	0.84	34
April 1	0.90	5	0.73	50
April 1	0.40	7	0.40	28
April 1	0.20	4	0.38	23
April 1	0.10	6	0.36	26
April 2	0.05	3	0.41	19
April 2	0.05	7	0.36	19
April 2	0.05	3	0.32	17
April 2	0.05	3	0.28	13
April 2	0.05	3	0.22	11
<b>Average</b>	<b>0.32</b>	<b>4.8</b>	<b>0.39</b>	<b>25.6</b>

**Graph 1 - Analytical Sample Results**



Certificate of Approval number for the Komoka WWTF is # 1847-87RK6Q and works # 120002585.



This incident was reported at the start to Sofia at 03:45 April 1<sup>st</sup> and again at 20:04 April 1<sup>st</sup> to Aaron and at the end to Justin at 11:46 on April 2<sup>nd</sup>, receiving a reference #'s 1-345ZX3 & 1-347SY8.

Should you have any questions please feel free to contact me.

Sincerely,



**Eric Joudrey**

Water/Wastewater Operations Manager

<http://middlesexcentre.on.ca> | [joudrey@middlesexcentre.ca](mailto:joudrey@middlesexcentre.ca)

22280 Komoka Road, RR#3 | Komoka, Ontario, N0L 1R0

C: 519.854.7618

Cc:

Robert Cascaden, Director of Public Works and Engineering – Municipality of Middlesex Centre

Brian Watson, Operations Supervisor - Municipality of Middlesex Centre

Jocelyn Tyler, Compliance Coordinator – Municipality of Middlesex Centre

July 18, 2023

Ministry of the Environment, Conservation and Parks  
Southwest Region  
733 Exeter Road London  
ON, N6E 1L3  
[Angela.Stroyberg@ontario.ca](mailto:Angela.Stroyberg@ontario.ca)

**RE: Komoka WWTF Total Suspended Solids and Total Phosphorus Monthly Average Concentration Exceedance**

Dear Angela,

This is written follow up report concerning the final effluent total suspended solids (TSS) and total phosphorus (TP) monthly average concentration for the month of June 2023. As outlined in Certificate of Approval number 1847-87RK6Q and works # 120002585 the owner shall report any exceedance of any parameter specified in Section 10 (3) 'the owner shall report to the *District Manager* or designate, any exceedance of any parameter specified in Condition 7 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedance

After tabulating the monthly analytical data from the Komoka WWTP it was calculated that the monthly average limit of 10.0 mg/l for total suspended solids and the limit of 0.50 mg/l for total phosphorus was also exceeded. The monthly average concentration for June 2022 is shown in the below table.

June 2022			
Total Suspended Solids (TSS)		Total Phosphorus (TP)	
CofA Effluent Limits	10 mg/l	CofA Effluent Limits	0.50 mg/l
Average concentration	12 mg/l	Average concentration	0.58 mg/l

Please let me know if you require any further information from the Municipality at this time.

If you have any questions or concerns, please contact me at 519-666-0190 x 5255.

Yours truly,



Eric Joudrey, Water & Wastewater Operations Manager, Municipality of Middlesex Centre

cc: Robert Cascaden, Director of Public Works and Engineering  
Brian Watson, Operations Supervisor

## ***APPENDIX C – CALIBRATION REPORTS***



# **FLOW, PRESSURE and LEVEL INSTRUMENTATION**

**Verification/Calibration**

## **REPORT**



**- KOMOKA WWTP -**

**OCTOBER 2023**

October 29, 2023

Middlesex Centre  
Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: [joudrey@middlesexcentre.ca](mailto:joudrey@middlesexcentre.ca)

---

**RE: Annual Verification/Calibration for Middlesex Centre - Komoka WWTP**  
**October 10<sup>th</sup> – 12<sup>th</sup>, 2023**

---

Dear Eric,

SCG Flowmetrix appreciates the opportunity to complete your annual instrument verification/calibration services. This letter of transmittal confirms completion of this service project.

The following service report contains the individual instrument reports for all verification/calibrations as well as an Equipment List Summary.

***Note: Equipment List Summary is only included where 5 or more instruments are verified/calibrated for the same client/area. Otherwise, only individual reports are provided.***

In addition to the base report, relevant information related to standard approach and methodologies for various instruments verified and/or calibrated, and a statement of qualifications for all verification/calibrations completed by trained, knowledgeable and experienced personnel is found in the section Quality Assurance and Quality Control.

If you have any additional questions or concerns with regards to this report, please do not hesitate to contact me directly.

Kind Regards,



Sarah Cawston  
Sales & Service Coordinator  
2088 Jetstream Rd.  
London, ON N5V 3P6  
c. 519-281-9660  
[scawston@scgflowmetrix.com](mailto:scawston@scgflowmetrix.com)

## QUALITY ASSURANCE/QUALITY CONTROL

Flowmetrix adheres to a rigid scope of service and deliverables for each client and instrument verified, calibrated, and reported. We follow a standard guideline while performing verification and calibration procedures for each instrument, using original equipment manufacturer (OEM) tools, where possible. The values are field reported and entered in a standard report format for client review. A digital report is completed for each instrument and collated into a single document for client record.

### Approach & Methodology

Flowmetrix conducts verification of each instrument and subsequent calibrations on instruments that are outside the expected tolerance of the instrument response, where possible. Manufacturers OEM suggested testing guidelines are used to verify and/or calibrate each instrument. Where, unable to perform the verification or calibration as suggested by the manufacturer, a best management practice is performed to validate the performance of such instruments.

### **REPORTING**

Flowmetrix report is divided into (2) sections. Section (i) identifies an equipment summary of all instruments verified during this service project including instruments that PASS or FAIL; section (ii) identifies individual equipment reports for client review and record and identifies any comments and deficiencies that should be noted for client review and possible response.

#### Section (i) - Equipment Summary

An equipment summary sheet identifying all instruments; both PASSING and FAILING verification and/or calibration while completed during this service project.

The Summary Equipment List is only included where 5 or more instruments are verified/calibrated for the same client/area. Otherwise, only individual reports are provided.

#### Section (ii) - Individual Equipment Reports

Individual equipment reports are completed for easy review and are found in Appendix B. These reports outline all specific information pertaining to the equipment to be tested; noted as meter under test (MUT). Date, time, location, meter make, model and serial number accompany this report for tracking and identification. Each report identifies a PASS or FAIL comment 'as found' and 'as left' upon completion of the verification and/or calibration.

Where possible, a verification is performed prior to calibration, if the OEM testing procedures allow, otherwise an 'as left' report is provided for such equipment.

**Note: If a meter under test (MUT) is (AS FOUND) to be operating outside of the allowable tolerance, the report will indicate "NA". The "NA" statement is NOT suggesting the MUT, or a component of the MUT is not functional or has failed; but simply indicates at the time the test was conducted the verification reported values are found outside the allowable tolerance.**

**Only if the MUT is failed due to equipment failure and not verification/calibration tolerances, the report will indicate "FAIL" (AS FOUND) and will be commented on in the individual equipment report.**

### **STATEMENT OF QUALIFICATIONS**

To comply with our clients DWQMS standards, Flowmetrix adheres to a rigid approach to conducting our equipment verification/calibration services including the training received by our company and our personnel conducting service. A Statement of Qualifications outlining Flowmetrix qualifications to conduct this level of service is available in a separate document upon request.



**A P P E N D I X - A**  
**S U M M A R Y   E Q U I P M E N T   L I S T**

**L O N D O N   |   T O R O N T O**





# Instrument Verification Certificate of Completion

**CLIENT** MIDDLESEX CENTRE  
**LOCATION** VARIOUS LOCTIONS WITH IN THE MIDDLESEX AREA

Summary - Equipment List										
#	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	SERIAL NUMBER	FIT #	TECH	VERIFICATION INFO.		
								DATE	FREQ.	DUE
EQUIPMENT LIST - PASS										
1	Komoka WWTP	Filter Effluent Water SPC2	Endress & Hauser	Promag 53W	E8050316000	FIT-1560	DK	10-Oct-23	Annual	Oct-24
2	Komoka Booster	Inlet Flow FIT-01	Endress & Hauser	Promag 50W	CB03A616000	FIT-01	DK	10-Oct-23	Annual	Oct-24
3	Komoka Booster	Discharge Flow FIT-02	Endress & Hauser	Promag 50W	CB03A516000	FIT-02	DK	10-Oct-23	Annual	Oct-24
4	Komoka Booster	Discharge Flow Pressure	Endress & Hauser	PMC71	CB011F1509C	PIT-03	DK	10-Oct-23	Annual	Oct-24
5	Komoka Tower	Tower Pressure	Endress & Hauser	PMC71	J602351509C	N/A	DK	10-Oct-23	Annual	Oct-24
6	Komoka WWTP	Distribuiton Flow	Endress & Hauser	Promag 400	P1223519000	FIT-02	DK	10-Oct-23	Annual	Oct-24
7	Komoka WWTP	Pressure	Endress & Hauser	Cerabar 'S'	P104731509C	PIT-01	DK	10-Oct-23	Annual	Oct-24
8	Komoka WWTP	Inlet Flow	Endress & Hauser	Promag 400	P1223419000	FIT-01	DK	10-Oct-23	Annual	Oct-24
9	Komoka WWTP	Pressure	Endress & Hauser	Cerabar 'S'	P104741509C	PIT-02	DK	10-Oct-23	Annual	Oct-24
10	Delaware Tower	Tower Pressure	Endress & Hauser	PMP-71	NB04EC1509C	LIT-01	DK	10-Oct-23	Annual	Oct-24
11	Delaware Tower	Inlet Flow FIT-01	Endress & Hauser	Promag 400	P104C016000	FIT-01	DK	10-Oct-23	Annual	Oct-24
12	Delaware Tower	Outlet Flow FIT-02	Endress & Hauser	Promag 400	P104C116000	FIT-02	DK	10-Oct-23	Annual	Oct-24
13	Melrose WTP	Well #3	Endress & Hauser	Promag 50W	5200D916000	FIT-03	DK	11-Oct-23	Annual	Oct-24
14	Melrose WTP	Well #2	Endress & Hauser	Promag 50W	5200D816000	FIT-02	DK	11-Oct-23	Annual	Oct-24
15	Melrose WTP	Discharge Flow Pressure	Foxboro	IGP10-A22D1C	09500421	PIT-01	DK	11-Oct-23	Annual	Oct-24
16	Melrose WTP	Distribution Flow	Endress & Hauser	Promag 50W	CC030D16000	FIT-05	DK	11-Oct-23	Annual	Oct-24
17	Birr WTP	Disribution Flow	Endress & Hauser	Promag 50W	4C004616000	N/A	DK	12-Oct-23	Annual	Oct-24
18	Birr WTP	Raw Flow	Endress & Hauser	Promag 50W	6A000716000	N/A	DK	12-Oct-23	Annual	Oct-24
19	Arva Water BPS	Plant Flow	ABB	50XM4000	125912	N/A	DK	12-Oct-23	Annual	Oct-24
20	Arva Sewage PS	Flow Meter	Krohne	IFC010D	n/a	N/A	DK	12-Oct-23	Annual	Oct-24
21	Denfield BPS	Discharge Pressure	Endress & Hauser	Cerabar 'S'	DB02851509C	PIT-03	DK	11-Oct-23	Annual	Oct-24
22	Denfield BPS	Treated	Endress & Hauser	Promag 53W	DB023216000	FIT-02	DK	11-Oct-23	Annual	Oct-24
23	Ballymont	Flow	ABB	WaterMaster	3K620000222992	N/A	DK	12-Oct-23	Annual	Oct-24
24	Ilderton BPS	Station Pressure	Endress & Hauser	Cerabar 'S'	J9034B1509C	WBIL-PIT02	DK	12-Oct-23	Annual	Oct-24
25	Ilderton BPS	Distribution Flow FIT-01	Siemens	FM MAG5000	N1E9170248	FIT-01	DK	12-Oct-23	Annual	Oct-24
26	Ilderton Tower	Tower Level/Pressure	Endress & Hauser	Cerabar 'S'	J9034A1509C	N/A	DK	11-Oct-23	Annual	Oct-24



# Instrument Verification Certificate of Completion

**CLIENT** MIDDLESEX CENTRE  
**LOCATION** VARIOUS LOCTIONS WITH IN THE MIDDLESEX AREA

Summary - Equipment List										
#	LOCATION	DESCRIPTION	MANUFACTURER	MODEL	SERIAL NUMBER	FIT #	TECH	VERIFICATION INFO.		
								DATE	FREQ.	DUE
EQUIPMENT LIST - PASS										
27	Ilderton WWTP	Effluent Flow	Endress & Hauser	Promag 50W	SB000F16000	FIT-720	DK	11-Oct-23	Annual	Oct-24
28	Ilderton WWTP	Train #1 Flow	Endress+Hauser	Promag 500	N80DF916000	FIT-6	DK	11-Oct-23	Annual	Oct-24
29	Ilderton WWTP	Train #2 Flow	Endress+Hauser	Promag 500	N80DF816000	FIT-5	DK	11-Oct-23	Annual	Oct-24
30	Ilderton WWTP	Train #3 Flow	Endress+Hauser	Promag 500	N80DFA16000	FIT-7	DK	11-Oct-23	Annual	Oct-24
31	Ilderton WWTP	RSP-101	Endress+Hauser	Promag 500	N80DF516000	FIT-2	DK	11-Oct-23	Annual	Oct-24
32	Ilderton WWTP	RSP-102	Endress+Hauser	Promag 500	N80DF616000	FIT-3	DK	11-Oct-23	Annual	Oct-24
33	Ilderton WWTP	RSP-103	Endress+Hauser	Promag 500	N80DF716000	FIT-4	DK	11-Oct-23	Annual	Oct-24
34	Ilderton WWTP	RSP-104	Endress+Hauser	Promag 500	N80DF416000	FIT-1	DK	11-Oct-23	Annual	Oct-24
<p>This Instrument Verification Certificate of Completion summary sheet identifies all instruments tested that PASSED verification/calibration testing during our service contract. Any instrument that does not PASS verification or cannot be calibrated during this contract is highlighted for quick identification. Further information should be identified within the body of our report.</p>										



**A P P E N D I X - B**  
**I N D I V I D U A L I N S T R U M E N T R E P O R T S**

**L O N D O N | T O R O N T O**



AS FOUND CERTIFICATION  
FORWARD FLOW DIRECTION  
**PASS**

**CLIENT DETAIL**

CUSTOMER Middlesex Centre  
CONTACT Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: joudrey@middlesexcentre.ca

[MUT] MANUFACTURER  
MODEL  
CONVERTER S/N:  
FUSE

PLANT ID  
METER ID  
FIT ID  
CLIENT TAG  
OTHER  
GPS COORDINATES

**EQUIPMENT DETAIL**

ENDRESS & HAUSER  
PROMAG 53W  
E8050316000  
Pull Plug on Unit

Komoka WWTP  
"SCP2" - Filter Effluent Water  
FIT-1560  
"FIT-1560" "SCP2"  
N/A  
N/A

22280 Komoka Rd., Komoka, Ontario  
VERIFICATION DATE October 10th 2023  
CAL. FREQUENCY Annual  
CAL. DUE DATE October 2024

VER. BY - FM Daniel Kettlewell

Quality Management Standards Information -  
Reference equipment and instrumentation used  
to conduct this verification test is found in our AC-  
QMS document at the time this test was  
conducted.

**PROGRAMMING PARAMETERS**

DIAMETER (DN)	mm	300
F.S. FLOW - MAG	LPS	706.838
F.S. RANGE - O/P	LPS	130.000
TUBE k-FACTOR		1.07090
TUBE zero		5

**FORWARD TOTALIZER INFORMATION**

AS FOUND	3557938	M3
AS LEFT	3557958	M3
DIFFERENCE	20	M3

**TEST CRITERIA**

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

**COMPONENTS TESTED**

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

**FLOW TUBE SIMULATION**

		0.0	32.5	65.0	97.5	130.0	LPS
		0.0	4.6	9.2	13.8	18.4	% F.S. Flow
		0.0	25.0	50.0	75.0	100.0	% F.S. Range
<b>REF. FLOW RATE</b>		<b>0.000</b>	<b>32.500</b>	<b>65.000</b>	<b>97.500</b>	<b>130.000</b>	LPS
MUT [Reading]		0.000	32.534	65.026	97.489	129.980	LPS
MUT [Difference]		0.000	0.034	0.026	-0.011	-0.020	LPS
MUT [% Error]		n/a	0.10	0.04	-0.01	-0.02	%
<b>mA OUTPUT</b>		<b>4.000</b>	<b>8.000</b>	<b>12.000</b>	<b>16.000</b>	<b>20.000</b>	mA
MUT [Reading]	min. 4 mA	3.999	8.005	12.000	15.995	19.996	mA
MUT [Difference]	max. 20 mA	-0.001	0.005	0.000	-0.005	-0.004	mA
MUT [% Error]		-0.02	0.06	0.00	-0.03	-0.02	%
<b>TOTALIZER</b>					<b>REF. FLOW RATE</b>	<b>130.000</b>	LPS
					<b>TOTALIZER [MUT]</b>	9.0	M3
					<b>TEST TIME</b>	69.02	SECONDS
					<b>TOTALIZER [REF]</b>	8.973	M3
					<b>ERROR</b>	0.30	%

**COMMENTS**

**QUALITY MANAGEMENT STANDARDS INFO.**

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	1
PROCESS METER	DMM	0
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

**RESULTS**

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.03	PASS
mA OUTPUT	0.00	PASS
TOTALIZER	0.30	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.



**RESULTS**  
**PASSED**

**CLIENT DETAIL**

CUSTOMER Middlesex Centre  
CONTACT Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: joudrey@middlesexcentre.ca

**DEVICE INFORMATION**

[MUT] MANUFACTURER Endress & Hauser  
MODEL Promag 400  
CONVERTER SERIAL NUMBER P104C016000  
ORDER CODE 5L4C2H-EM26/0  
  
PLANT ID Komoka WWTP  
METER ID Distribution Flow  
FIT ID FIT-02  
CLIENT TAG n/a  
OTHER n/a  
GPS COORDINATES

VER. BY - FM Daniel Kettlewell

Quality Management Standards Information -  
Reference equipment and instrumentation used to  
conduct this verification test is found in our AC-QMS  
document at the time this test was conducted.

VERIFICATION DATE October 10th 2023  
CAL. FREQUENCY Annual  
CAL. DUE DATE October 2024

**CALIBRATION**

DIAMETER (DN) mm 200  
CALIBRATION FACTOR 1.1400  
ZERO POINT 3

**TOTALIZER**

AS FOUND n/a M3  
AS LEFT n/a M3  
DIFFERENCE n/a M3

**VERIFICATION INFORMATION**

OPERATING TIME (d/h/m/s) d 600  
h 22  
m 11  
s 49  
  
DATE/TIME date (dd.mm.yy) 10.10.23  
time (hh:mm) 9:11

**COMPONENTS TESTED**

SENSOR - Coil Current Shot Time yes  
SENSOR - Coil Hold Voltage yes  
SENSOR - Coil Current yes  
SENSOR - Electrode Reference Voltage yes  
SENSOR - Linearity Electrode Circuit yes  
SENSOR - Offset Electrode Circuitry yes  
I/O Module yes

VERIFICATION ID 6

**OVERALL VERIFICATION**

**PASSED**

**SENSOR**

Coil Current Shot Time  
Coil Hold Voltage  
Coil Current

**PASSED**

PASSED  
PASSED  
PASSED

**SENSOR ELECTRONIC MODULE**

Reference Voltage  
Linearity of Electrode Measuring Circuit  
Offset of Electrode Measuring Circuit

**PASSED**

PASSED  
PASSED  
PASSED

**SENSOR ELECTRONIC MODULE**

Reference Voltage

**PASSED**

PASSED

**COMMENTS**

This report reflects the results based on the manufacturers HEARTBEAT diagnostic technology for flow meter verification for all Promag 400 series meters with an active HEARTBEAT.



AS FOUND CERTIFICATION

PASS

**CLIENT DETAIL**

CUSTOMER Middlesex Centre  
CONTACT Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: joudrey@middlesexcentre.ca

**EQUIPMENT DETAIL**

[MUT] MANUFACTURER Endress+Hauser  
MODEL Cerabar S  
CONVERTER SERIAL NUMBER P104731509C  
  
PLANT ID Komoka WWTP  
METER ID Pressure  
PIT ID PIT 01  
CLIENT TAG N/A  
OTHER N/A  
GPS COORDINATES N42 54.435 W081 24.505  
  
VERIFICATION DATE October 10th 2023  
CAL. FREQUENCY Annual  
CAL. DUE DATE October 2024

VER. BY - FM Daniel Kettlewell

Quality Management Standards Information -  
Reference equipment and instrumentation used  
to conduct this verification test is found in our AC-  
QMS document at the time this test was  
conducted.

**TRANSMITTER INFORMATION**

USL (Upper Sensor Limit) kPa  
LSL (Lower Sensor Limit) kPa

**TEST CRITERIA**

AS FOUND CERTIFICATION TEST Yes  
ALLOWABLE [%] ERROR 5

**SCALING INFORMATION**

UVL (Upper Value Limit) kPa 700.0  
LVL (Lower Value Limit) kPa 0.0

**COMPONENTS TESTED**

CONVERTER DISPLAY yes  
mA OUTPUT yes

**COMPARISON TESTING**

	0.0	25.0	50.0	75.0	100.0	% Full-scale
	0.0	175.0	350.0	525.0	700.0	psi, NOM.
<b>REF. PRESSURE</b>	0.0	175.0	350.0	525.0	700.0	kPa
MUT [Reading]	-0.50	174.80	349.60	524.30	699.10	kPa
MUT [Difference]	-0.500	-0.200	-0.400	-0.700	-0.900	kPa
MUT [% Error]	n/a	-0.11	-0.11	-0.13	-0.13	%
<b>mA OUTPUT</b>	<b>4.000</b>	<b>8.000</b>	<b>12.000</b>	<b>16.000</b>	<b>20.000</b>	mA
MUT [Reading] min. 4.000 mA	4.000	7.985	11.991	15.985	19.979	mA
MUT [Difference] max. 20.000 mA	0.000	-0.015	-0.009	-0.015	-0.021	mA
MUT [% Error]	0.00	-0.19	-0.08	-0.09	-0.11	%

**COMMENTS**

**QUALITY MANAGEMENT STANDARDS INFO.**

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE]	CRYS	1
PROCESS METER	DMM	0

**RESULTS**

TEST	AVG % O.R.	PASS FAIL
DISPLAY	-0.12	PASS
mA OUTPUT	-0.09	PASS

A reference pressure gauge was used to verify the overall reading accuracy of this device to within the tolerance limits as define above in this report.



**RESULTS**

**PASSED**

**CLIENT DETAIL**

CUSTOMER Middlesex Centre  
CONTACT Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: joudrey@middlesexcentre.ca

**DEVICE INFORMATION**

[MUT] MANUFACTURER Endress & Hauser  
MODEL Promag 400  
CONVERTER SERIAL NUMBER P104C016000  
ORDER CODE 5L4C2H-EM26/0  
  
PLANT ID Komoka WWTP  
METER ID Distribution Flow  
FIT ID FIT-01  
CLIENT TAG n/a  
OTHER n/a  
GPS COORDINATES

VER. BY - FM Daniel Kettlewell

Quality Management Standards Information -  
Reference equipment and instrumentation used to  
conduct this verification test is found in our AC-QMS  
document at the time this test was conducted.

VERIFICATION DATE October 10th 2023  
CAL. FREQUENCY Annual  
CAL. DUE DATE October 2024

**CALIBRATION**

DIAMETER (DN) mm 150  
CALIBRATION FACTOR 1.1786  
ZERO POINT 18

**TOTALIZER**

AS FOUND n/a M3  
AS LEFT n/a M3  
DIFFERENCE n/a M3

**VERIFICATION INFORMATION**

OPERATING TIME (d/h/m/s) d 600  
h 22  
m 59  
s 11  
  
DATE/TIME date (dd.mm.yy) 10.10.23  
time (hh:mm) 9:18

**COMPONENTS TESTED**

SENSOR - Coil Current Shot Time yes  
SENSOR - Coil Hold Voltage yes  
SENSOR - Coil Current yes  
SENSOR - Electrode Reference Voltage yes  
SENSOR - Linearity Electrode Circuit yes  
SENSOR - Offset Electrode Circuitry yes  
I/O Module yes

VERIFICATION ID 6

**OVERALL VERIFICATION**

**PASSED**

**SENSOR**

Coil Current Shot Time  
Coil Hold Voltage  
Coil Current

**PASSED**

PASSED  
PASSED  
PASSED

**SENSOR ELECTRONIC MODULE**

Reference Voltage  
Linearity of Electrode Measuring Circuit  
Offset of Electrode Measuring Circuit

**PASSED**

PASSED  
PASSED  
PASSED

**SENSOR ELECTRONIC MODULE**

Reference Voltage

**PASSED**

PASSED

**COMMENTS**

This report reflects the results based on the manufacturers HEARTBEAT diagnostic technology for flow meter verification for all Promag 400 series meters with an active HEARTBEAT.



AS FOUND CERTIFICATION

PASS

**CLIENT DETAIL**

CUSTOMER Middlesex Centre  
CONTACT Eric Joudrey  
Manager Water & Wastewater Operations  
10227 Ilderton Road  
Ilderton, ON N0M2A0  
T: 519-666-0190 ext. 255  
E: joudrey@middlesexcentre.ca

**EQUIPMENT DETAIL**

[MUT] MANUFACTURER Endress+Hauser  
MODEL Cerabar S  
CONVERTER SERIAL NUMBER P104741509C  
  
PLANT ID Komoka WWTP  
METER ID Pressure  
PIT ID PIT 02  
CLIENT TAG N/A  
OTHER N/A  
GPS COORDINATES N42 54.435 W081 24.505  
  
VERIFICATION DATE October 10th 2023  
CAL. FREQUENCY Annual  
CAL. DUE DATE October 2024

VER. BY - FM Daniel Kettlewell

Quality Management Standards Information -  
Reference equipment and instrumentation used to  
conduct this verification test is found in our AC-  
QMS document at the time this test was conducted.

**TRANSMITTER INFORMATION**

USL (Upper Sensor Limit) kPa  
LSL (Lower Sensor Limit) kPa

**TEST CRITERIA**

AS FOUND CERTIFICATION TEST Yes  
ALLOWABLE [%] ERROR 5

**SCALING INFORMATION**

UVL (Upper Value Limit) kPa 700.0  
LVL (Lower Value Limit) kPa 0.0

**COMPONENTS TESTED**

CONVERTER DISPLAY yes  
mA OUTPUT yes

**COMPARISON TESTING**

	0.0	25.0	50.0	75.0	100.0	% Full-scale
	0.0	175.0	350.0	525.0	700.0	psi, NOM.
<b>REF. PRESSURE</b>	0.0	175.0	350.0	525.0	700.0	kPa
MUT [Reading]	1.30	176.10	351.50	525.30	702.10	kPa
MUT [Difference]	1.300	1.100	1.500	0.300	2.100	kPa
MUT [% Error]	n/a	0.63	0.43	0.06	0.30	%
<b>mA OUTPUT</b>	<b>4.000</b>	<b>8.000</b>	<b>12.000</b>	<b>16.000</b>	<b>20.000</b>	mA
MUT [Reading] min. 4.000 mA	4.028	8.002	11.989	15.986	20.083	mA
MUT [Difference] max. 20.000 mA	0.028	0.002	-0.011	-0.014	0.083	mA
MUT [% Error]	0.70	0.03	-0.09	-0.09	0.41	%

**COMMENTS**

**QUALITY MANAGEMENT STANDARDS INFO.**

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE]	CRYS	1
PROCESS METER	DMM	0

**RESULTS**

TEST	AVG % O.R.	PASS FAIL
DISPLAY	0.35	PASS
mA OUTPUT	0.19	PASS

A reference pressure gauge was used to verify the overall reading accuracy of this device to within the tolerance limits as define above in this report.