

**B. M. ROSS AND ASSOCIATES LIMITED**  
Engineers and Planners  
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File No. 14067

**VIA EMAIL ONLY**

August 25, 2023

Pawel Kucharski, Senior Environmental Officer  
Ministry of the Environment, Conservation and Parks  
London District Office  
733 Exeter Road  
London, ON N6E 1L3

Dear Sir

**Re: Caradoc Landfill (Closed) Inspection and Response  
Certificate of Approval No. A041101**

As indicated in an earlier letter dated August 1, 2023, the Municipality of Strathroy-Caradoc collected a water sample from the ponded water on the north side of the closed Caradoc Landfill during a recent site inspection on July 31, 2023. We are now in receipt of those sample result (results attached to this letter).

The below table provides a summary of those results and compares it to MW2 (groundwater well most representative of leachate at this site) and surface water sites SEG and ESR (upstream and downstream surface water monitoring locations of stream to the north of the ponded area).

Parameter	ODWQS	MW2 (2022)	Ponded Water on North side of Mound	Stream East of Gate (b)	Stream East Side Rear (b)
Hardness, as CaCO <sub>3</sub>	500	351	166	237	276
Iron, as Fe	0.3	1.52	0.125	0.173	0.389
Chloride, as Cl	250	29	< 1	17	39
Lab pH (pH units)	6.5 - 8.5	7.93	7.97	8.21	8.16
DOC, as C	5	2	18	2	4
Nitrate, as N	10	0.62	< 0.06	2.66	5.29
Manganese, as Mn	0.05	2.08	0.07	0.04	0.08
Sodium, as Na	200	5.92	1.03	7.56	23.2
Sulphate, as SO <sub>4</sub>	500	39	< 2	27	43
Alkalinity, as CaCO <sub>3</sub>	30 - 500	299	147	213	222
Ammonia	-	0.2	0.06	0.1	0.4

**NOTES:**

- a) All above results reported as mg/L, unless otherwise noted.
- b) Average concentration from 2006 - 2022

With the exception of DOC, parameter results from the ponded water are much lower than recent (2022) groundwater results from MW2. The elevated DOC in the ponded water can be explained by the stagnant nature of the ponded water and the breakdown of organic matter occurring within it. Given that no other parameters appear elevated, this ponded water does not appear to be impacted by any leachate seepage and is more likely precipitation that has been trapped above the clay liner of the closed landfill in poorly graded areas.

The above table also shows the average (2006 – 2022) concentrations for the same parameters at upstream and downstream monitoring locations along the stream that traverses the north side of the landfill property. Again, nearly all of the concentrations in the ponded water are much lower than both the upstream and downstream stream concentrations.

This ponded water is not expected to be resulting in any offset impacts and as a result, the Municipality is not planning to do anything more with it (i.e. regrading) at this time. However, the ponded water sample result will be reconsidered in the fall once the additional stream testing samples (i.e. immediately upstream and downstream of the suspected field tile outlet) have been collected and the results received.

If you have any questions, please contact us.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per   
Ryan P. DeVries, P. Eng.

RPD:hv  
Encl.

c.c. Paul Zuberbuhler, Municipality of Strathroy-Caradoc



**SGS Canada Inc.**

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

24-August-2023

**Corp of the Twp of Strathroy-Caradoc (WWTP)**

Attn : Paul Zuberbuhler

52 Frank Street  
Strathroy, ON  
N7G 2R4, Canada

Phone: 519-245-3701  
Fax:

**Date Rec. :** 17 August 2023  
**LR Report:** CA12677-AUG23  
**Reference:** Stream Sampling

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: PWQO	6: Surface Water at Mount Brydges Landfill
Sample Date & Time						16-Aug-23 10:00
Temperature Upon Receipt [°C]	---	---	---	---	---	20.0
Biochemical Oxygen Demand (BOD5) [mg/L]	18-Aug-23	13:17	23-Aug-23	13:22	---	7
Alkalinity [mg/L as CaCO3]	18-Aug-23	06:51	21-Aug-23	09:38	---	147
pH [No unit]	18-Aug-23	06:51	21-Aug-23	09:38	---	7.97
Conductivity [uS/cm]	18-Aug-23	06:51	21-Aug-23	09:38	---	284
Chemical Oxygen Demand [mg/L]	21-Aug-23	08:50	23-Aug-23	13:22	---	58
Fluoride [mg/L]	21-Aug-23	15:36	22-Aug-23	09:56	---	0.11
Total Kjeldahl Nitrogen [as N mg/L]	21-Aug-23	19:34	22-Aug-23	10:06	---	1.5
Ammonia+Ammonium (N) [mg/L]	18-Aug-23	18:49	21-Aug-23	10:47	---	0.06
Sulphate [mg/L]	22-Aug-23	10:32	22-Aug-23	16:12	---	< 2
Chloride [mg/L]	22-Aug-23	10:34	22-Aug-23	16:12	---	< 1
Nitrite (as N) [mg/L]	22-Aug-23	16:43	23-Aug-23	10:20	---	< 0.03
Nitrate (as N) [mg/L]	22-Aug-23	16:43	23-Aug-23	10:20	---	< 0.06
Nitrate + Nitrite (as N) [mg/L]	22-Aug-23	16:43	23-Aug-23	10:20	---	< 0.06
Dissolved Organic Carbon [mg/L]	22-Aug-23	21:56	24-Aug-23	12:06	---	18
Total Reactive Phosphorous (o-phosphate as P) [mg/L]	18-Aug-23	10:09	21-Aug-23	09:52	---	0.04
Hardness [mg/L as CaCO3]	21-Aug-23	13:30	23-Aug-23	13:15	---	166
Silver (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	< 0.00005
Aluminum (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.071
Arsenic (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0018
Barium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0168
Beryllium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	< 0.000007
Bismuth (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	< 0.00001
Boron (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.102
Calcium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	53.9
Cadmium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.000025
Cobalt (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.000270
Chromium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00050
Copper (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0073

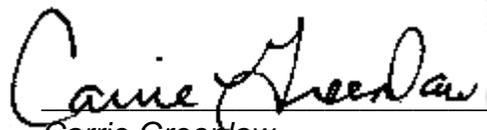
Online LIMS

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Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: PWQO	6: Surface Water at Mount Brydges Landfill
Iron (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.125
Potassium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	4.15
Lithium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0006
Magnesium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	7.55
Manganese (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0696
Molybdenum (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00174
Sodium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	1.03
Nickel (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.0018
Lead (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00020
Phosphorus (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.093
Phosphorus (dissolved) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.038
Antimony (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	< 0.0009
Selenium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00013
Silicon (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	3.04
Tin (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00011
Strontium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.133
Titanium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00181
Thallium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	< 0.000005
Uranium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.000199
Vanadium (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.00082
Zinc (total) [mg/L]	21-Aug-23	13:30	23-Aug-23	13:15	---	0.005
Total Coliform [cfu/100mL]	17-Aug-23	16:32	21-Aug-23	11:01	---	51000
E. Coli [cfu/100mL]	17-Aug-23	16:32	21-Aug-23	11:01	100	36
Heterotrophic Plate Count (HPC) [cfu/1mL]	17-Aug-23	16:32	21-Aug-23	11:01	---	NDOGHPC

PWQO - Provincial Water Quality Objectives

NDOGHPC - No Data: Overgrown with HPC



Carrie Greenlaw  
 Project Specialist,  
 Environment, Health & Safety