



April 15, 2024

Mr. Andy De Jong, Supervisor, Landfill Operations  
Regional Municipality of Halton  
Public Works - Waste Management & Road Operations  
1151 Bronte Road  
Oakville, Ontario  
L6M 3L1

Dear Mr. De Jong:

**Subject: Closed Oakville Ninth Line Landfill Site  
2023 Combustible Gas Monitoring**

We are pleased to provide a summary of the 2023 combustible gas monitoring results at the Closed Ninth Line Landfill Site (Site). Field measurements were obtained from gas monitoring wells at the Site on a monthly basis throughout 2023. Additionally, water level measurements were obtained within the gas probes on three occasions in 2023. The locations of the gas monitoring wells are provided on Figure 1, the combustible gas results are summarized in Table 1 and the groundwater elevations are summarized in Table 2.

## COMBUSTIBLE GAS

Combustible gas concentrations were frequently detected at monitors 99-1 and 99-2 in 2023. The measured combustible gas concentrations in 2023 ranged from 0% to 57% by volume in air at monitors 99-1 and 99-2. Combustible gas has historically been detected at monitors 99-1 and 99-2, although elevated liquid levels have reduced the frequency of detections at monitor 99-2.

Additionally, combustible gas concentrations of 0.1% by volume in air or lower were detected at gas monitors GP6, GP11 and GP106 on a least one occasion in 2023. Historically, combustible gas has been infrequently detected at these locations. Monitoring will continue to confirm combustible gas detections.

In general, the combustible gas readings in 2023 were comparable to the historical results. It is noted that monitors 99-1, 99-2, GP6, GP107 and GP108 are located within the refuse area and the presence of combustible gas at these locations is not unexpected.



A gas measurement was obtained within the Club House during the December 2023 monitoring event and no combustible gas was detected. Combustible gas concentrations have not been detected during historical monitoring events. Gas measurements will continue to be obtained within this building during future monitoring events, when access is available.

It is expected that the principal combustible gas generated within a landfill is methane, which has a lower explosive limit of 5% gas by volume in air, and an upper explosive limit of 15% gas by volume in air.

Based on the 2023 results, there was minimal hazard to structures on-site from combustible gases detected during the monitoring period.

## GROUNDWATER ELEVATIONS

Water level measurements were completed in June, September and December 2023. Based on the available well construction information, the screened intervals at gas probe GP106 and BH99-1 and BH99-2 were not flooded during the June, September and December 2023 monitoring events. Screen interval information is not currently available for the other gas monitoring wells.

## CLOSING

We trust that this letter is satisfactory for your needs. If you have any questions or comments, please contact our office.

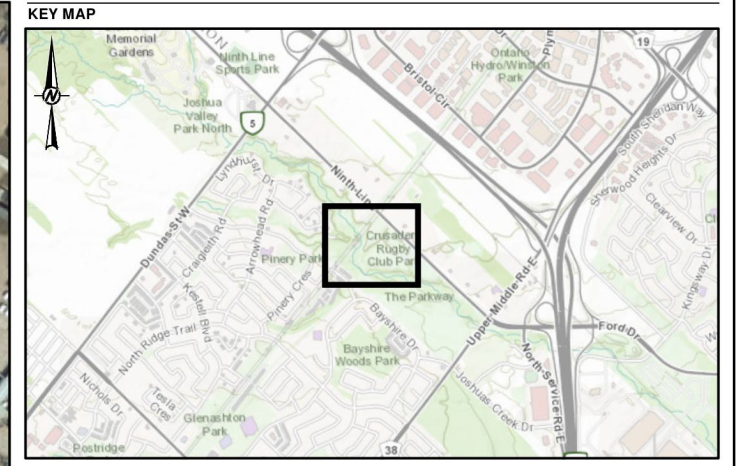
Yours truly,

A handwritten signature in black ink, appearing to read 'Craig Leger'.

Craig Leger, M.Sc., C.E.T.  
Team Lead / Environmental Consultant

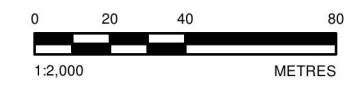
Encl. Figure 1, Table 1, Table 2

WSP ref.: CA0002839.6572 00090



SCALE 1:50,000

- LEGEND**
- ▲ SURFACE WATER SAMPLING LOCATION AND DESIGNATION
  - PREVIOUS GAS PROBE LOCATION AND DESIGNATION
  - EXISTING GAS PROBE LOCATION, DESIGNATION, AND WATER LEVEL ELEVATION
  - ◆ LEACHATE MONITOR LOCATION, DESIGNATION, AND LEACHATE ELEVATION
  - WATERCOURSE
  - APPROXIMATE EXTENT OF RUGBY PRACTICE FIELD
  - APPROXIMATE EXTENT OF REFUSE
  - WATERBODY



**NOTE(S)**  
1. ALL LOCATIONS ARE APPROXIMATE

**REFERENCE(S)**  
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO  
2. IMAGERY CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDINANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY  
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY  
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

**CLIENT**  
REGIONAL MUNICIPALITY OF HALTON

**PROJECT**  
2023 MONITORING PROGRAM  
NINTH LINE

**TITLE**  
SITE PLAN

CONSULTANT	YYYY-MM-DD	2024-04-15
DESIGNED	----	
PREPARED	AR	
REVIEWED	SCL	
APPROVED	SCL	

PROJECT NO. CA0002839.6572 CONTROL 0001 REV. D FIGURE 1

PATH: S:\Client\Region of Halton\Closed\_Cowville\_Ninth\_Line\_Leachate\_Sw99\_PFOU\CA0002839\_6572-46\_PFOU\001\_Monitoring\_Program\CA0002839\_6572-001\_HS-002.mxd PRINTED ON: 2024-04-15 AT: 9:57:29 AM

26mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

**TABLE 1  
COMBUSTIBLE GAS READINGS  
CLOSED OAKVILLE NINTH LINE LANDFILL SITE**

LOCATION	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Historical	
													Minimum	Maximum
GP6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	35.0
GP8R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
GP9R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
GP10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
GP11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.7
GP15R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
GP106	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	2.7
GP107	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
GP108	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
BH99-1	11	7.0	0.3	0.0	0.0	15	26	57	45	26	20	24	0.0	70.0
BH99-2	0.1	0.1	0.0	0.0	0.0	9.0	8.0	15	20	9.0	7.5	5.0	0.0	26.5
CLUB HOUSE	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.1

NOTES: 1) All values are percent methane.

2) "-" - Indicates access not available to collect combustible gas measurement.

3) Gas probes GP101, GP102, and GP103 were decommissioned in spring 2014 due to the roadwork expansion, and were replaced by gas probes GP107 and GP108 in June 2015.

4) Gas probes GP8, GP9 and GP15 were decommissioned and replaced with GP8R, GP9R, and GP15R in early September 2016.

**TABLE 2  
WATER LEVEL ELEVATIONS  
CLOSED OAKVILLE NINTH LINE LANDFILL SITE**

MONITOR	T.O.P. ELEVATION (mASL)	GROUND SURFACE (mASL)	SCREENED INTERVAL (mASL)	WATER LEVEL ELEVATION (mASL)								
				Sep-99	Oct-18	Jun-19	Sep-19	Dec-19	May-20	Jul-20	Sep-20	Dec-20
<b>GP6</b>	148.77	147.71				144.75	144.11	144.80	145.25	145.06	144.94	144.91
<b>GP8R</b>	149.57	148.44				147.43	146.52	148.03	147.46	146.82	146.48	146.67
<b>GP9R</b>	148.47	147.35				146.54	Dry	144.06	146.98	144.91	Dry	Dry
<b>GP10</b>	146.72	145.86					144.55	Frozen	145.84	144.84	144.62	145.66
<b>GP11</b>	149.27	148.25					146.90	Frozen	148.32	147.12	146.34	147.36
<b>GP15R</b>	151.35	150.30				149.69	147.47	149.99	149.81	147.99	147.60	148.82
<b>GP106</b>	150.90	149.94	149.54 - 147.44	147.88	147.73	149.39	147.94	149.65	149.03	148.38	147.84	147.33
<b>GP107</b>	152.89	152.98				151.81	150.37	152.02	151.31	150.87	150.40	149.94
<b>GP108</b>	152.75	152.88				151.85	150.38	152.50	151.42	151.02	150.43	150.67
<b>BH99-1</b>	152.43	152.53	150.73 - 142.78	145.54	147.29	148.06	147.41	147.25	147.75	147.59	147.42	147.15
<b>BH99-2</b>	152.76	152.97	151.17 - 144.74	145.97	148.18	149.24	148.40	Frozen	149.10	148.78	148.46	148.31

- NOTES: 1) T.O.P. Elevations obtained by Halton Region staff in 2023  
2) mASL - Metres Above Sea Level  
3) Screened interval estimated from available borehole logs  
Details of the screened intervals for GP6, GP8R, GP9R,  
GP10, GP11, GP15R, GP107 and GP108 are not available  
4) Shading indicates screened interval is flooded

**TABLE 2  
WATER LEVEL ELEVATIONS  
CLOSED OAKVILLE NINTH LINE LANDFILL SITE**

MONITOR	T.O.P. ELEVATION (mASL)	GROUND SURFACE (mASL)	SCREENED INTERVAL (mASL)	WATER LEVEL ELEVATION (mASL)		
				Jun-23	Sep-23	Dec-23
<b>GP6</b>	148.77	147.71		145.46	145.04	144.91
<b>GP8R</b>	149.57	148.44		146.52	147.24	145.93
<b>GP9R</b>	148.47	147.35		144.83	143.09	Dry
<b>GP10</b>	146.72	145.86		145.20	143.82	143.63
<b>GP11</b>	149.27	148.25		147.28	146.05	146.07
<b>GP15R</b>	151.35	150.30		149.23	147.48	147.30
<b>GP106</b>	150.90	149.94	149.54 - 147.44	148.51	147.36	147.36
<b>GP107</b>	152.89	152.98		151.12	150.12	149.69
<b>GP108</b>	152.75	152.88		151.18	150.16	149.99
<b>BH99-1</b>	152.43	152.53	150.73 - 142.78	147.88	147.09	147.40
<b>BH99-2</b>	152.76	152.97	151.17 - 144.74	148.28	147.74	147.30

- NOTES: 1) T.O.P. Elevations obtained by Halton Region staff in 2023  
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