



## MEMORANDUM

**DATE:** 01 February 2021  
**TO:** Chris Prucha, Bill McDonough and Jim Forney, Waste Management (WM)  
**FROM:** François Richard and Madeleine Corriveau (BluMetric)  
**PROJECT NO:** 210166-05  
**SUBJECT:** North Lagoon and Groundwater PFAS Sampling Summary,  
Waste Management Richmond Landfill, Town of Greater Napanee

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### BACKGROUND AND OBJECTIVE

The Ministry of the Environment, Conservation and Parks (MECP) requested sampling of the North Lagoon and two groundwater monitoring well locations for per- and polyfluoroalkyl substances (PFAS). The two groundwater monitoring wells, M217 and M218, are installed in the shallow flow zone and located immediately downgradient of the North Lagoon.

### SAMPLING

Samples were collected on January 11, 2021 and were submitted to Maxxam Analytics for analysis of the PFAS parameters listed in Table 1.

**Table 1: PFAS Parameters Analyzed**

Parameter	Acronym	Parameter	Acronym
Perfluorobutanoic acid	PFBA	Perfluoroundecanoic acid	PFUnA
Perfluoropentanoic acid	PFPeA	Perfluorodecanesulfonic acid	PFDS
Perfluorohexanoic acid	PFHxA	Perfluorododecanoic acid	PFDoA
Perfluoroheptanoic acid	PFHpA	Perfluorobutanesulfonic acid	PFBS
Perfluorooctanoic acid	PFOA	Perfluorohexanesulfonic acid	PFHxS
Perfluorononanoic acid	PFNA	Perfluorooctanesulfonic acid	PFOS
Perfluorodecanoic acid	PFDA	Perfluorooctane sulfonamide	PFOSA



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One field blank sample, using PFAS-free de-ionised (DI) water was supplied by the laboratory, was also submitted for analysis.

Due to the very low analytical method detection limits and the numerous potential sources of trace PFAS concentrations that can lead to false positive results, PFAS sampling programs require additional precautions to reduce the potential for cross-contamination. Sample collection followed current industry standard guidance for aqueous sampling for PFAS.

For the North Lagoon sample, a hole was augured through the ice, the sample bottles were submerged, the lids were removed to fill the bottles and then replaced, before removing the sample bottles from the water.

For the monitoring wells:

- New ¼” High Density Polyethylene (HDPE) tubing was installed;
- New pump head tubing (silicone) was used at each location; and,
- Purging and sampling was conducted with a peristaltic pump at low flow to achieve parameter stabilization in flow through cell (temperature, pH and conductivity, dissolved oxygen and Eh).

All purge water was collected and disposed of in the South Chamber leachate collection station.

## RESULTS AND DISCUSSION

A summary of results is presented in Table 2. Total PFAS concentrations were calculated for each sample by adding individual constituent concentrations (non-detects were treated as zero).

The sample collected from the North Lagoon had several PFAS compounds detected (PFBS, PFBA, PFHpA, PFHxS, PFHxA, PFOS, PFOA and PFPeA) with concentrations ranging from 20 to 250 ng/L, and a total PFAS concentration of 912 ng/L. PFAS compounds detected in the North Lagoon are consistent with those previously detected in leachate<sup>1</sup>.

As expected, results from groundwater monitoring locations M217 and M218 were below detection for PFAS compounds. The field blank sample was also non-detect for PFAS compounds.

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<sup>1</sup> *PFAS Sampling Summary, Waste Management Richmond Landfill, Town of Greater Napanee*, prepared by BluMetric Environmental Inc., 5 February 2019

**Table 2: Per- and Polyfluoroalkyl Substances (PFAS) Sampling Results**

Reading Name	Acronym	Units	North Lagoon	M217	M218
			2021-01-11	2021-01-11	2021-01-11
<b>Total PFAS</b>	-	<b>ng/L</b>	<b>912</b>	<b>0</b>	<b>0</b>
Perfluorobutanesulfonic acid	PFBS	ng/L	27	<20	<20
Perfluorobutanoic acid	PFBA	ng/L	120	<20	<20
Perfluorodecanesulfonic acid	PFDS	ng/L	<20	<20	<20
Perfluorodecanoic Acid	PFDA	ng/L	<20	<20	<20
Perfluorododecanoic Acid	PFDoA	ng/L	<20	<20	<20
Perfluoroheptanoic Acid	PFHpA	ng/L	79	<20	<20
Perfluorohexanesulfonic acid	PFHxS	ng/L	36	<20	<20
Perfluorohexanoic Acid	PFHxA	ng/L	250	<20	<20
Perfluorononanoic Acid	PFNA	ng/L	<20	<20	<20
Perfluorooctane Sulfonamide	PFOSA	ng/L	<20	<20	<20
Perfluorooctanesulfonic acid	PFOA	ng/L	20	<20	<20
Perfluorooctanoic Acid	PFOA	ng/L	170	<20	<20
Perfluoropentanoic Acid	PFPeA	ng/L	210	<20	<20
Perfluoroundecanoic Acid	PFUnA	ng/L	<20	<20	<20

**SUMMARY AND CONCLUSION**

The results indicate that PFAS compounds are present in the North Lagoon. Groundwater monitoring locations downgradient of the North Lagoon did not have detections of PFAS compounds.

We trust the above is satisfactory. If you have any questions or need further information please do not hesitate to contact the undersigned.

Respectfully submitted,  
**BluMetric Environmental Inc.**

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