SUMMARY OF RESULTS

DATE: February 8, 2021

MEMO TO: Kerstin Vroom

FROM: Tim McBride

RE: 2020 Annual Monitoring Report, Croft Waste Disposal Site, Magnetawan, Ontario

PINCHIN FILE: 225335.003

Pinchin Ltd. (Pinchin) was retained by the Corporation of the Municipality of Magnetawan (Client) to prepare the 2020 annual groundwater and surface water monitoring report for the Croft Waste Disposal Site (the Site) to assess the hydraulic media for contaminants of concern as a compliance requirement under the Site Certificate of Approval (CofA) Number **A7034002** and the applicable regulatory requirements.

The configuration of the previous monitoring well network was interpreted to be sufficient to monitor the performance of the landfill, however, was deemed to be overly conservative as a measure of compliance, as these wells were being utilized for the evaluation of the Site versus the MECP Guideline B-7 procedure, which is applicable at the downgradient property line (the previous wells were located near the toe of the waste deposits, as opposed to at the property line). As a result, the installation of three additional bedrock monitoring wells (BH12, BH13 and BH14) was recommended in the 2019 Pinchin Annual Monitoring Report, in order to allow for further characterization of groundwater quality downgradient of the Site in the downgradient (north and east) flow directions. The installation of these additional monitoring wells was completed on April 22, 2020. The details of the well installations are included in the Pinchin Aquifer Instrumentation Memo, dated June 16, 2020.

The current groundwater monitoring well network at the Site now consists of eight bedrock groundwater monitoring wells (BH1, BH8, BH9, BH10, BH11, BH12, BH13 and BH14) and three drive point monitors (DP7, DP8 and DP9). All wells were inspected and found to be in good condition. No wells displayed evidence of a condition non-compliant with Ontario Regulation 903. Additionally, three surface water locations were monitored for the Site (SW1, SW2 and SW3).

As per previous annual monitoring events, groundwater and surface water was sampled twice annually by Pinchin during 2020, in the spring and fall.

Based on the results obtained from the existing groundwater monitoring wells and surface water monitoring locations, Pinchin has not identified any significant landfill related impacts at the Site. Elevated concentration parameters within the groundwater samples analyzed at the furthest downgradient monitoring locations (i.e. BH8, BH9, BH12, BH13 and BH14) are likely attributed to either naturally occurring conditions within the shallow unconfined aquifer on-site or from temperate impacts from leachate sourced from the waste deposits at the Site.

In summary, the current 2020 groundwater monitoring data collected from the historical monitoring network, and further supported by the newly installed groundwater monitoring wells installed near the property boundary, indicates that the Site is continuing to effectively operate as designed, as a natural attenuation type facility, with any landfill derived groundwater impacts attenuated to acceptable levels prior to the downgradient property boundaries.

Based on a review of the existing dataset and regulatory requirements to date, Pinchin recommends the following:

- Continue with routine monitoring of all the available groundwater monitoring wells and surface water monitoring locations. Considering the dataset completed thus far, it is Pinchin's opinion that sampling should continue in 2021 before the adequacy of the monitoring program can be fully evaluated;
- The Client should continue to ensure that the requirements as specified in the CofA are complied with;
- In the future, the component of the surface water samples identified for the analysis of aluminum should be filtered prior to analysis, in order to provide a clay free sample (as per the requirements of the PWQO); and
- It is recommended that the drive point well locations DP7, DP8 and DP9 be removed from the sampling program as these locations have consistently been found to have insufficient volume to sample. It is recommended that these wells should be retained as water level only monitoring locations to supplement the groundwater elevation monitoring for the Site; however, the drive point monitors should be equipped with appropriate lockable caps to ensure representative water level data is obtained.