



SUMMARY OF RESULTS

DATE: March 31, 2022
MEMO TO: Kerstin Vroom
FROM: Tim McBride
RE: 2021 Annual Monitoring Report, Chapman Waste Disposal Site, Magnetawan, Ontario
PINCHIN FILE: 225335.006

Pinchin Ltd. (Pinchin) was retained by the Corporation of the Municipality of Magnetawan (Client) to prepare the 2021 annual groundwater and surface water monitoring report for the Chapman 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 **A521202** and the applicable regulatory requirements.

As per previous annual monitoring events, groundwater and surface water was sampled twice annually by Pinchin during 2021, in the spring and fall.

Seven overburden groundwater monitoring wells have historically been utilized at the Site (BH1, BH2, BH3, BH4, BH5-II, BH6-II and BH7-II). As part of the leachate management plan study completed by Pinchin, several additional monitoring wells were installed at the Site during September 2018 to support the existing monitoring well network. This included the addition of two new background wells (BH11 and BH3-II) to replace the previously destroyed BH3, one cross-gradient well (BH10-I), deeper nested wells at two existing monitoring locations which are consistently dry (BH4-II and BH6-III) and two additional downgradient wells (BH8-I and BH9-I). All wells were inspected and found to be in good condition. No wells displayed evidence of a condition non-compliant with Ontario Regulation 903, with the exception of BH1, BH2, BH4 and BH6-II which were observed to be missing well caps and BH3-II which has the PVC riser too tall to close the casing lid. Additionally, four surface water locations were monitored for the Site (SW1, SW2, SW3 and SEEP).

The Site currently operates as a typical natural attenuation waste disposal facility. No liner or other leachate collection/management system is in place at the Site. The 2019 Leachate Management Plan Study report indicated that a leachate-impacted groundwater seep/spring had been identified in a downgradient area (east of the Site, upstream from SW3 and in the vicinity of well BH9), resulting in the discharge of said waters to an adjacent surface water feature. This discharge essentially short circuits the natural attenuation process and has the potential to have negative effects on the surface water feature. The Corporation of the Municipality of Magnetawan initiated a proactive approach to leachate management and retained Pinchin to complete the Leachate Management Plan Study. The surface water quality data collected for the study indicated that an impact



from the leachate seep is being observed in the two adjacent creeks and it was recommended that steps should be taken to eliminate the seep.

These steps include infilling the incised valley and relocating the creek to eliminate the seep, creating an extended CAZ boundary for additional leachate attenuation to occur prior to discharge to surface water bodies.

As part of the 2019 Leachate Management Study Report completed by Pinchin in April 2019, a trigger level monitoring program and contingency plan has been proposed for the Chapman Waste Disposal Site, which is to be implemented at the Site following the elimination of the seep. The proposed Trigger Level Monitoring Program is a three-tiered program that includes routine monitoring (i.e. the semi-annual monitoring program), compliance monitoring and confirmation monitoring. The current proposed trigger program has been included in the 2021 monitoring report for discussion purposes but is not utilized for the determination of compliance as the other mitigation measures pertaining to the seep have yet to be implemented. While this trigger level monitoring program has been developed following industry standard/best management practices it is subject to revision. These revisions are currently underway and will be submitted to the MECP for review under a separate cover. Following acceptance of the revised trigger level monitoring program, the evaluation of the Site performance will be completed utilizing the new criteria.

The results of the Trigger Level Monitoring program indicated that one exceedance of the trigger level concentrations was quantified at BH6-III and BH8-I. However, at the time of preparation of this report, only 6 successive sampling events have been completed for newly installed monitoring wells BH6-III and BH8-I; further monitoring is required to establish a more robust data set before an accurate evaluation of the trigger levels can be completed for these monitoring locations. All surface water trigger concentrations were satisfied.

Actual Site compliance was evaluated based on the MECP's Guideline B-7 criteria. 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. Concentrations of TDS, iron, nitrate, DOC, and manganese parameters within the groundwater samples analyzed at the furthest downgradient monitoring locations (BH5-II, BH6-III, BH7-II, BH8-I and BH9-I) which exceeded the Guideline B-7 criteria 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. Concentrations of aluminum at BH5-II, BH7-II and BH8-I are interpreted to be anomalous.

All exceedances of the Guideline B-7 RUC are related to operational guidelines and/or aesthetic objectives associated with drinking water systems and are not considered to be an immediate significant human health or environmental concern originating from the Site, with the exception of nitrate which is a health-related parameter. The elevated concentrations of nitrate are only quantified in some downgradient wells and often fluctuate throughout the historical record. Therefore, these concentrations should be confirmed during the next monitoring period. Furthermore, concentrations of nitrate quantified at the downgradient groundwater wells are not