



April 23, 2020

Ministry of the Environment, Conservation and Parks
1259 Gardiners Road, Unit 3
Kingston, ON K7P 3J6

E-mail: thandeka.ponalo@ontario.ca

Attention: Ms. Thandeka Ponalo
Senior Environmental Officer

Re: 2019 Annual Monitoring Report
Bark Lake Waste Disposal Site, Township of Madawaska Valley, Ontario
Pinchin File: 202412

Pinchin Ltd. (Pinchin) on behalf of the Township of Madawaska Valley, completed the 2019 Annual Monitoring Report for the Bark Lake Waste Disposal Site (Site). The Site operates in accordance with the amended Environmental Compliance Approval (ECA) A413404, for the disposal of municipal solid waste generated within the Township of Madawaska Valley.

Based on the results of the Pinchin 2019 monitoring program, the following recommendations were provided:

- Based on Pinchin's review of the historical groundwater quality observed at downgradient monitoring wells located west and southwest of the Site, it is Pinchin's opinion that the leachate plume is sufficiently monitored at multiple monitoring locations. It is Pinchin's opinion that the current downgradient monitoring well network modified through the removal of monitoring wells BH7, BH10C and BH11A from the sampling component of the monitoring program, but be maintained for monitoring of groundwater elevations;
- It is Pinchin's opinion that groundwater quality observed at monitoring wells MW09-15A and MW09-15B are geochemically similar in nature and are not being influenced by landfill leachate at this time. As such, it is Pinchin's opinion that routine sampling of MW09-15B would suffice until landfill related impacts are confirmed at this location;
- Pinchin recommends routine spring and fall monitoring of BH2, BH3A, BH3B, BH6A, BH6B, BH14A, BH14B, BH11A, BH9A, BH9B, BH7, BH12, BH13A, BH13B, MW09-15B, MW14-17A and MW14-17B;
- BH2 should continue to be utilized as the source of background concentrations within the shallow wells and BH12 be considered representative of background conditions for the intermediate and deep wells for the purpose of facilitating the Guideline B-7 derived trigger mechanism for the Site;



- Given the recent appearance of benzene at nested wells BH3A/B since the last round of VOC sampling (2017) Pinchin recommends the addition of a comprehensive VOC parameter suite at nested wells BH3A/B, BH9A/B and BH14A/B on an annual basis;
- It is Pinchin's opinion that the surface water monitoring program should include sampling events in the spring, summer and fall, inclusive of surface water sampling locations SW1, SW2, SW3, and SW4;
- Routine monitoring of storm water facilities should be conducted at least once during the 2020 sampling program;
- At this time no evidence has been documented to suggest that methane gas generation from the Site is a significant concern. As such, Pinchin recommends that the landfill monitoring of gasses be discontinued;
- Groundwater monitoring locations MW14A and MW14B continue to be compared to the PWQO and CWQG;
- Trend analysis of nitrate and barium should be added to future monitoring reports for monitoring well nests BH6, MW14-16 and MW14-17 as well as all surface water locations; and
- The Client should continue to ensure that the requirements as specified in the ECA are complied with.

Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Pinchin Ltd.

Prepared by:

Reviewed by:

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Cc: Hilary Kutchkoskie - Township of Madawaska Valley