

# 2025 Annual Report

Final

Black Donald Waste Disposal Site

ECA No. A411902

March 11, 2026

Jp2g Project # 22-6213E





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## DISTRIBUTION LIST

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1	Township of Greater Madawaska
1	Ministry of the Environment, Conservation and Parks (Ottawa District Office)
1	Jp2g Consultants Inc.

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## EXECUTIVE SUMMARY

Jp2g Consultants Inc. (Jp2g) was retained by the Township of Greater Madawaska to conduct the 2025 ground and surface water monitoring at the Black Donald Waste Disposal Site (WDS or landfill), located on part of Lot 9, Concession 2 and 3 within the geographic Township of Brougham, in the amalgamated Township of Greater Madawaska, in the County of Renfrew. This annual report summarizes the results of the groundwater and surface water sampling that was completed at the site in April, July, and October 2025, and the results are compared to historical results dating from 2016 to 2024. The amended ECA dated January 27, 2026, approved an expansion of the landfilling area, providing an additional 38,935 m<sup>3</sup> of disposal capacity and increasing the site's total maximum volumetric capacity to 73,185 m<sup>3</sup> (excluding final cover).

The groundwater flow direction at the site was similar to historical interpretations with predominant groundwater flow direction to the southeast.

Groundwater immediately downgradient from the site at monitoring wells BH1 and BH4 are interpreted to be impacted from landfill-related activities in 2025. At monitoring wells BH1 and BH4, all parameters met the ODWQS except for alkalinity, hardness, Dissolved Organic Carbon (DOC), manganese, aluminum, and iron. Results from monitoring well BH1 were interpreted to be most representative of leachate quality at the Site. As per the ECA, volatile organic compound (VOC) samples are to be collected from BH1 every five (5) years. VOC samples were last collected from BH1 in 2023, and all values were below ODWS limits at that time. The next sampling event for VOC analysis at monitoring well BH1 is scheduled for the spring of 2028.

In 2025, all parameters met the Reasonable Use Criteria (RUC) at MW08-7S except for DOC (fall only), therefore the Black Donald site was interpreted to meet the intent of Ministry Guideline B-7 at the downgradient eastern CAZ boundary in 2025. All parameters met the Reasonable Use Criteria (RUC) at MW23-7D in 2025 except for Total Dissolved Solids (TDS), alkalinity, DOC, and manganese (fall only). Given the considerations to naturally occurring concentrations of alkalinity, DOC, manganese, and TDS in the background (BH2), the Black Donald site was interpreted to meet the intent of Ministry Guideline B-7 and was interpreted to be in compliance with RUC at the southeastern CAZ boundary.

As per the amended ECA dated January 27, 2026, three (3) surface water stations were added to the monitoring program including SW2, SW8, and SW9 (**Figure 3**). Based on the surface water quality results in 2025, and the significant distance of each sampling location from the Approved Landfilling Area, the surface water systems around the Black Donald site were not interpreted to be impacted from landfill-related activities.

Based on a review of five (5) year time trend analysis for (un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus), the Trigger Mechanism was not interpreted to be activated in 2025.

Based on a capacity survey completed on December 20, 2023, the remaining lifespan of the site was estimated at approximately 3 years (i.e., a remaining capacity of approximately 2,718m<sup>3</sup> and an annual landfilling rate of 857 m<sup>3</sup>). The site did not receive any C&D and bulky waste in 2023, 2024, and 2025 as it was directed to the Mount St. Patrick site for disposal. All other municipal waste generated within the Township was directed to the Township's transfer stations at the Griffith, Norway Lake, and Mount St. Patrick Sites for storage and haulage to its end use.



The amended ECA dated January 27, 2026, provided an additional 38,935 m<sup>3</sup> of disposal capacity. As a result, the remaining lifespan of the Site is now estimated at approximately 48 years as of January 2026, (i.e., based on a total remaining capacity of approximately 41,653 m<sup>3</sup> (38,935 m<sup>3</sup> + 2,718 m<sup>3</sup>) and the same annual landfilling rate of 857 m<sup>3</sup>.)

### **2026 Monitoring Recommendations**

Based on the 2025 monitoring results and the amended ECA, no changes to the groundwater monitoring program are recommended for 2026. Groundwater monitoring should continue twice per year (May/June and October/November) in accordance with Table 7. In addition, as per the amended ECA, three (3) new surface water stations were added to the monitoring program. Surface water monitoring should continue to be completed three times per year (May/June, July/August, and October/November). These updates ensure the monitoring program remains compliant with the amended ECA requirements.



## 1 INTRODUCTION

This report was prepared by Jp2g Consultants Inc. (Jp2g) to present and interpret the results of the 2025 ground and surface water monitoring program completed at Black Donald Waste Disposal Site (WDS). The site is located centrally in the Township of Greater Madawaska, and according to the Township's long-term waste management plan, the Black Donald WDS was identified for the landfilling of waste received from the Griffith, Norway Lake, and Mount St. Patrick transfer stations. The site was closed to the public on April 5, 2010, with disposal operations available for municipal vehicles and Township-approved haulers only for construction and demolition (C&D) and bulky waste, with other municipal waste generated within the Township directed to the Township's existing transfer stations for transfer and disposal to GFL Environmental Inc.

Jp2g Consultants Inc. has been conducting the environmental monitoring program since 2023 and also completed the program in 2025. Previously, Greenview Environmental provided this service for over 15 years. For consistency in reporting, details previously provided by Greenview (2023) have been repeated in part or in full in this report.

### 1.1 Site Location

A detailed description of the site location is as follows:

- The site is located on part of Lot 9, Concession 2 and 3 within the geographic Township of Brougham, in the Township of Greater Madawaska as shown on **Figure 1**.
- The civic address of the site is 34 Hydro Dam Road.
- The site coordinates are:
  - 45°14'00" N 76°52'13"W
  - NAD 1983 UTM Zone 18 – 353188E 5010581N
- Access to the site is provided by Hydro Dam Road, located off County Road 508, approximately fifteen (15) kilometers (km) southwest of the Village of Calabogie.
- The site is situated on Township-owned lands and consists of a 1.48-hectare (ha) (per the amended ECA) waste disposal site within a total licensed property area of 21.36 ha, which includes lands used for operational buffer and contaminant attenuation zone (CAZ) purposes.
- The site is operated as a solid waste landfill for the Township of Greater Madawaska (Township) under Environmental Compliance Approval (ECA) A411902 as most recently amended on January 27, 2026. A copy of the ECA is included in **Appendix A**.

### 1.2 Site Ownership and Key Personnel

Site operations are directed by the Township of Greater Madawaska. Contacts for the municipality and the Competent Environmental Practitioner (CEP) for both groundwater and surface water as defined by the Ministry (2010) are as follows:

#### **Municipal Contact**

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### 1.3 Description and Development of the Waste Disposal Site

The following section provides a general description of the site, including operational details:

*Environmental Compliance Approval:*

The site operates under ECA No. A411902 dated March 27, 1980, and amended October 22, 2001, July 12, 2002, January 24, 2013, and for 2026 and onwards under the January 27, 2026 version which replaced the previous versions (**Appendix A**).

*Site Status:*

The site is currently operational, with disposal operations available for municipal vehicles and Township-approved haulers only for construction and demolition (C&D) and bulky waste.

*Site Capacity:*

Under Condition 23 of the amended ECA, the approved total waste disposal volume is 73,185 m<sup>3</sup>. This total includes waste, daily cover, and intermediate cover, but excludes final cover.

*Projected Site Life:*

The site did not receive waste in 2023, 2024, and 2025. Based on a capacity survey completed on December 20, 2023, the remaining lifespan of the site was estimated at approximately 3 years, based on a remaining capacity of about 2718m<sup>3</sup> and an annual landfilling rate of 857 m<sup>3</sup>. The amended ECA dated January 27, 2026, provided an additional 38,935 m<sup>3</sup> of disposal capacity, increasing the Site's total maximum volumetric capacity to 73,185 m<sup>3</sup> (excluding final cover). As a result, the remaining lifespan of the Site is now estimated at approximately 48 years as of January 2026, based on a total remaining capacity of approximately 41,653 m<sup>3</sup> (38,935 m<sup>3</sup> + 2,718 m<sup>3</sup>) and the same annual landfilling rate of 857 m<sup>3</sup>.

*Area of current waste cell footprint and approved footprint:*

The amended ECA recognizes a 1.48 ha landfilling area within a total site area of 21.36 ha.

*Dates when the site opened, operated and closed as applicable:*

The site was opened in the 1960's and ceased receiving municipal solid waste and was closed to the public on April 5, 2010. Under the amended ECA the site receives construction and demolition (C&D) and bulky waste.



*Information on final cover, slopes and engineering controls:*

Details are found in the Site Design, Operations and Development Plan dated December 22, 2010 (Greenview 2010). Final cover was applied to portions of the landfill site and the side slopes. In 2026 to be replaced with the Design and Operations Report dated May 28, 2025.

*Any Permits To Take Water associated with the site:*

There are no permits to take water associated with the site.

*Other authorizing and/or control instruments associated with the site:*

There are no storm water management facilities associated with the site.

*Description of any leachate collection systems; and any sewage works, including the C of A number of the works:*

The Black Donald Waste Disposal Site is designed for the natural attenuation of leachate. There are no collection systems or sewage works at the site.

*Any site developments which occurred during the year of the monitoring report:* None

*Any new developments in the vicinity of the site of relevance from a monitoring perspective:* None.

Historical Site Overview

*Environmental Baseline Investigations which were undertaken:*

Investigations of the Black Donald Waste Disposal Site have been carried out since 1999. Reports have been submitted annually to the Ministry.

*Design and Construction of the Site:*

The site design, development and operational requirements for the current waste disposal site are outlined in Greenview (2010) listed as item 7 in Schedule A of the ECA.

*Development of environmental monitoring systems:*

Environmental monitoring is conducted annually in accordance with Condition 26 and Schedule "B" of the ECA and recent TSS review comments on the expansion feasibility study.

*Conceptual site model:*

Infiltrating groundwater at the site will migrate vertically through more porous overburden material until intersected by the shallow groundwater table over bedrock. Groundwater flow is governed by local topography and is predominantly directed downhill to the southeast and southwest.

*Initial placement of waste materials:* Within the 1.48 landfilling area.

*Filling, closure and placement of final cover over waste cells:*

The processed C&D and bulky waste is ground on site and is applied to the waste mound as cover as required.

*Problems associated with of final cover over waste:*

There have been no documented issues with the operation of the waste disposal site. On occasion there has been Fill Beyond Approved Limits (FBAL) which has been addressed with the site operator.

*Date of site closure, actual or projected, including any closure plans:* There are no closure plans.



## 1.4 Ministry Consultation

Further to the Ontario Ministry of the Environment, Conservation, and Parks (MECP and or the Ministry) Technical Support Section (TSS) groundwater review comments (March 17, 2008) three (3) additional monitoring wells were installed at the Black Donald WDS in June 2008 to more adequately interpret groundwater quality southeast, southwest and west of the site, and to establish the site's conformance with the Reasonable Use Concept (RUC) and Guideline B-7 near the site and CAZ boundaries. One of the new monitoring wells (MW08-6) was installed west of the site on Crown Land, with authorization from the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (Greenview, 2023).

On November 16, 2010, the Township responded to the Ministry regarding the Township's intent to submit an application to amend the ECA and support the technical documentation in the form of a *Design, Operations and Development Plan* for the Black Donald WDS by December 31, 2010 (Greenview, 2023). On December 22, 2010, the Township submitted the Report (Greenview, 2023) to the Environmental Assessment and Approvals Branch (EAAB) and the Ottawa District Office, and confirmation of receipt was received by the Township from the Ministry on January 17, 2011. The Township received surface and groundwater review comments dated April 30, 2012, and May 30, 2012, respectively. The Ministry TSS accepted the surface water and groundwater Trigger Mechanisms presented (Greenview, 2023).

In addition, the Township received a request for additional information with respect to the application from the Ministry's Operations Division, in correspondence dated May 2012. The Township provided a response to the Ministry to address TSS surface water and groundwater review comments and the request for additional information. The application to amend the ECA for the Black Donald was approved by the Ministry through the ECA, issued January 24, 2013 (Greenview, 2023).

The Black Donald WDS was inspected by the Ministry Ottawa District Office on May 26, 2015, and a related Inspection Report was provided to the Township dated July 6, 2015. Action items were required by the Inspection Report, and the Township provided a Compliance Action Plan to the Ministry dated October 1, 2015. The Township committed to completion of the compliance items in accordance with the dates identified in the Compliance Action Plan. All actions were understood to have been completed by November 15, 2015 (Greenview, 2023).

As part of the 2015 Annual Report, the Township requested that the Ministry consider removing the requirement for surface water sampling as part of the environmental monitoring program for the Black Donald WDS, given that historical surface water quality data was not interpreted to be impacted by landfill-related activities. The Ministry at this time recommended that surface water monitoring continue consistently with historical practices. A subsequent letter from the Ministry's Ottawa District Office dated July 7, 2016, reiterated that surface water monitoring should continue as part of the annual environmental monitoring program for the Black Donald site (Greenview, 2023).

On October 16, 2019, the Township received an Inspection Report from the Ministry's Ottawa District Office regarding the Black Donald site. The Inspection Report included action items to be addressed by the Township and accordingly an Action Plan was prepared (Greenview dated November 25, 2019) and submitted to the Ministry Ottawa District Office on November 26, 2019. Confirmation of completion of the action items was received from the Ministry dated February 6, 2020. As part of the response, the Township was required to submit photographs to the Ministry in accordance with their request. The Township submitted their response to the Ministry Ottawa District Office on February 14, 2020, which was approved by the Ministry in an electronic communication dated February 18, 2020 (Greenview, 2023).

An Inspection Report dated November 21, 2022, was received by the Township from the Ministry Ottawa District Office. The only issue of concern was that the site may not have the remaining capacity as stated in the 2021 Annual Report prepared by Greenview (2022), the Inspection Report was not acknowledged by Greenview (2023). A copy of the Inspection Report is included in **Appendix B**.

The Township retained Jp2g to determine the feasibility of expanding the capacity of the Black Donald WDS. An Expansion Feasibility Study dated October 25, 2022, was filed with the Ministry's Ottawa District Office. Ministry Technical Support Section comments (Groundwater January 6, 2023, and Surface Water January 11, 2023) were addressed by Jp2g in a letter dated January 23, 2023. Jp2g filed a follow up letter dated December 29, 2023, describing the activities completed to support the expansion including additional monitoring well installation, enhanced monitoring program and assessment of surface water control requirements. A revised Expansion Feasibility Study dated October 10, 2024, was submitted by Jp2g to the Ministry's Ottawa District Office. Copies of this documentation are included in **Appendix B**. The amended ECA dated January 27, 2026, approved the proposed expansion of the landfilling area to 1.48 hectares. This expansion provides an additional 38,935 cubic metres of disposal capacity, increasing the Site's total maximum volumetric capacity to 73,185 cubic metres (excluding final cover).

## 1.5 Purpose and Scope

The purpose of this report is to provide an overview of the annual monitoring, environmental compliance, and operations at the Black Donald WDS, in accordance with Condition 27 of the ECA (A411902), including the following:

- Groundwater quality assessment and RUC (Guideline B-7) compliance
- Surface water quality assessment
- Trigger Mechanism review
- Site operational overview and capacity assessment.
- Preparation of an annual report that summarises the results of the monitoring program and submitting the report to the Ministry.

## 2 SITE DESCRIPTION

The following sections present a summary of the physical characteristics for the Black Donald WDS and is based in part on the descriptions in the Annual Monitoring Reports 2008-2022 prepared by Greenview (2009-2023). The Black Donald site is bordered on the south and east by forested lands, and by a utility corridor to the west as shown in **Figure 2**.

### 2.1 Topography and Drainage

The site is located on a topographic bedrock high with slopes extending from the waste pile to the southeast and east towards Hydro Dam Road. Topography south and west of the site slopes to the south and then east towards Hydro Dam Road as shown in **Figure 2**.

Surface water drainage patterns at the site were altered in 2001 with the construction of drainage ditches along the northeastern boundary of the site adjacent to Hydro Dam Road and at the southwest corner of the site. The drainage ditches were constructed in the fall of 2001 to avoid on-site surface water ponding and to promote runoff. Historically, surface water at and adjacent to the site was monitored three (3) times annually, in the

spring, summer, and fall, at seven (7) established surface water monitoring locations. Following receipt of TSS surface water review comments in October 2009, three (3) surface water locations were removed from the environmental monitoring program (Greenview, 2023). In 2023, two (2) additional surface water monitoring locations were removed from the environmental monitoring program as requested by Jp2g October 25, 2022, and approved by the Ministry (January 11, 2023). As part of the expansion design, new surface water monitoring locations representative of run-off from the landfill site may be established. Relevant correspondence is provided in **Appendix B**.

## 2.2 Hydrogeological Conditions

The Black Donald site is located on terrain consistent with rugged aspects of the Canadian Shield. Groundwater flow is governed largely by local topography and the presence of a dense bedrock unit beneath a more permeable overburden unit (Gartner Lee, 1999). The predominant pathways of groundwater flow were interpreted to be downhill to the southeast and southwest.

Overburden geology at the Site is characterized by a thin veneer of sandy overburden materials, approximately 0.3 to 1.5 metres (m) in thickness, overlying a fractured marble bedrock unit (Golder, 2007). Bedrock outcrops, knolls, and knob hills are prevalent in the vicinity of the Black Donald site, which confirms the shallow nature of overburden, and the proximity of the bedrock contact to surface near the site (Gartner Lee, 1999).

A site reconnaissance was conducted further to the Ministry's TSS groundwater review comments dated December 18, 2006. Following approval from the MNRF to install a monitoring well on Crown Land to the northwest of the site, monitoring well (MW08-6) was installed on June 5, 2008, to assist in establishing the site's conformance with Guideline B-7 at the western CAZ boundary. Monitoring wells MW08-5 and MW08-7 were installed on June 5, 2008, to the southwest and southeast of the site to assess conformance with the Ministry Guideline B-7 at the respective CAZ boundaries. MW08-7 was extended 7.5m into a sand and gravel deposit. All other monitoring wells were installed through a thin sand overburden layer into bedrock.

Historical groundwater elevations recorded at the site indicate that a shallow groundwater divide is present in the vicinity of the waste mound and that predominant directions of groundwater flow are to the southeast and southwest (Golder, 2007; SGS Lakefield Research Ltd. [SGS], 2005). In 2008, an eastward trending groundwater flow direction was interpreted in the vicinity of MW08-6. Based on the upgradient location of MW08-6 relative to the waste mound, groundwater quality at MW08-6 was interpreted to be characteristic of background groundwater quality at the site. A north-south oriented groundwater basin was also interpreted to exist in the vicinity of BH4 and MW08-5, based on groundwater elevations and contours measured and calculated from field measurements.

## 2.3 Land Use

The Black Donald WDS is designated as Active Waste Disposal Site on Schedule "A", of the County's Official Plan. Adjacent land use is designated as Rural, Mineral Aggregate and Crown Land. On Schedule "B" of the Township of Greater Madawaska Zoning By-Law the site is zoned as Waste Disposal (WD) and Extractive Industrial (EM). A utility corridor with an overhead electricity transmission line exists west of the site, in a northeasterly-southwesterly orientation.

There are no residential drinking water or commercial wells near the Black Donald WDS. The closest residential well is located approximately 700 m northwest and upgradient of the site, on Black Donald Road.

## 2.4 Operational Setting

The Black Donald WDS currently consists of a 1.481.2 ha (per the amended ECA) waste disposal site within a total licensed property area of 21.36 ha, inclusive of land used for operational buffers and CAZ purposes as shown on **Figure 3**. The Black Donald WDS was closed to the public for waste and recycling operations on April 5, 2010, as detailed in correspondence to the Ministry dated March 9, 2010, regarding a waste management plan update from the Township.

The Black Donald WDS is approved to accept waste from the entire Township and currently operates as an active waste disposal site receiving municipal C&D and bulky wastes for processing and disposal. As part of the waste management plan for the site, disposal operations at the site are currently available for municipal vehicles and Township-approved haulers only, under the supervision of Township operations staff. Bentonite clay material was emplaced at the site and used for regular and/or final cover in 2021. In 2023, 2024, and 2025, no waste was accepted at the site, only C&D and bulky waste stockpiled from 2022 was ground and landfilled in 2023. The amended ECA dated January 27, 2026, approved the proposed expansion of the landfilling area to 1.48 hectares. This expansion provides an additional 38,935 cubic metres of disposal capacity, increasing the Site's total maximum volumetric capacity to 73,185 cubic metres (excluding final cover).

## 3 ENVIRONMENTAL MONITORING PROGRAM

### 3.1 Monitoring Locations

**Table 1** (in the Tables section) summarizes the location of monitoring wells and surface water monitoring stations. All monitoring locations including groundwater wells and the surface water monitoring stations are provided in **Figure 3**. Borehole logs are provided in **Appendix C**, and **Appendix D** contains photographs of the wells and surface water monitoring stations in Fall 2025.

#### 3.1.1 Groundwater Monitoring Locations

Ten (10) ground water wells were installed at and around the Black Donald WDS. Details are as follows:

- **Monitoring Well BH1**  
A bedrock well at a depth of 8.83 m located approximately 25 m northeast and downgradient of the landfilling area on the northwest side of Hydro Dam Road.
- **Monitoring Well BH2**  
A bedrock well at a depth of 7.91 m located north and upgradient of the site.
- **Monitoring Well BH3**  
A bedrock well at a depth of 8.83 m. This well was destroyed by site equipment in 2021 (Greenview, 2023). No samples were collected from this well in spring and fall 2025.
- **Monitoring Well BH4**  
A bedrock well at a depth of 7.80 m located adjacent to the western corner of the landfilling area. It is interpreted to be located downgradient of the waste mound.
- **Monitoring well MW08-5**  
A bedrock well at a depth of 13.52 m situated approximately 140 m southwest of the landfilling area, and approximately 15 m from the western CAZ boundary in an area of elevated topography.
- **Monitoring Well BH08-6**  
A bedrock well at a depth of 23.8 m on Crown land approximately 90 m west and upgradient of monitoring well **BH4**. This well was installed in 2008 to determine whether impacts resultant of landfill-related activities were occurring west of the site. This location was subsequently interpreted

as upgradient of the flow direction and more representative of background conditions.

- **Monitoring Well BH08-7S**  
An overburden well at a depth of 8m located approximately 180 m southeast and downgradient of the landfilling area, along the eastern CAZ boundary (installed in 2008).
- **Monitoring Well BH23-7D**  
A bedrock well at a depth of 16.56 m located approximately 180 m southeast and downgradient of the Approved Waste Disposal Area AWDA, along the eastern CAZ boundary, was installed in November 2023.
- **Monitoring Well BH23-8S**  
A bedrock well at a depth of 14.35 m located approximately 40 m east of the landfilling area, was installed in November 2023.
- **Monitoring Well BH23-8D**  
A bedrock well at a depth of 20.5 m located approximately 40 m east of the landfilling area, was installed in November 2023.

With the exception of monitoring well BH3, which was observed to have been destroyed in the fall of 2021 by site equipment (Greenview, 2023), all monitoring wells at the Black Donald Waste Disposal Site were observed to be in good condition in 2025, in accordance with O.Reg. 903 (Wells).

### 3.1.2 Surface Water Monitoring Locations

As part of the spring, summer, and fall 2025 surface water sampling program, the physical characteristics of sampling locations SW4 (background) and SW5 were recorded. Monitoring locations SW3 and SW6 were removed from the 2025 program. Historically, SW3 and SW6 were not interpreted to be impacted by landfill-related activities (Greenview, 2023), and their results were generally consistent with background surface water quality at SW4. Following the recommendations in the 2024 AMR and the Amended ECA dated January 27, 2026, three new surface water stations (SW2, SW8, and SW9) were added to the monitoring program in 2025.

In 2025, surface water samples were collected from five locations:

- **Monitoring Location SW2**  
A new surface water station located approximately 30 m southwest of the AWDA of the Site.
- **Monitoring Location SW4**  
Background surface water station located southeast and upstream of the AWDA of the Site.
- **Monitoring Location SW5**  
Surface water location SW5 was relocated prior to the 2007 surface water monitoring program as per the Ministry TSS surface water review comments (Greenview, 2023). SW5 was relocated downstream of SW4, at a wetland area southeast of the site, at approximately the mid-point between background location SW4 and the furthest downstream sampling location SW3, and approximately 600 m southeast of the AWDA of the Black Donald Site.
- **Monitoring Location SW8**  
A new surface water station located approximately 100 m northeast of the AWDA of the Site.
- **Monitoring Location SW9**  
A new surface water station located approximately 200 m north of the AWDA of the Site.

## 3.2 Monitoring Procedures and Methods

All sampling was completed in general accordance with Jp2g Consultants Inc.'s standard operating procedures. Sampling methods and quality assurance measures are summarized and provided in **Appendix E**.



### 3.3 Monitoring Program 2025

Three (3) environmental monitoring events were completed by Jp2g in 2025 (April 16, July 23, and October 23). Groundwater sampling was completed in April and October and surface water sampling was completed in April, July, and October. The monitoring program included the collection of groundwater levels and the collection of water quality samples from selected ground and surface water monitoring stations. **Table 2** summarizes the sampling completed in 2025.

During the spring and fall 2025 sampling events, MW08-5 was documented to have insufficient groundwater for sampling purposes. MW08-5 has not been sampled due to low water conditions since October 2008. Monitoring well BH3 was observed to have been destroyed in fall 2021 (Greenview, 2023).

Based on the approved groundwater monitoring program for the Black Donald site, analysis of volatile organic compounds (VOCs) is conducted every five (5) years with the next testing scheduled for 2028.

**Table 2: Monitoring Program 2025**

Station ID	Monitoring Location	Spring 2025	Summer 2025	Fall 2025	Notes
<b>Groundwater</b>					
BH1	Leachate well northwest side of Hydro Dam Road	√	--	√	
BH2	North and upgradient of the landfill	√	--	√	
BH3	South of the landfill	NS	--	NS	Destroyed in 2021
BH4	Adjacent to the western corner of the landfill	√	--	√	
MW08-5	Southwest of the landfill	NS	--	Dry	
MW08-6	West of the landfill	√ + DUP	--	√ + DUP	
MW08-7S	Southeast and downgradient of the landfill	√	--	√	Previously called MW08-7
MW23-7D (MW08-7D)	Southeast and downgradient of the landfill	√	--	√	Installed in Nov. 2023 Previously called (MW08-7D)
MW23-8S	East of the landfill	Dry	--	Dry	Installed in Nov. 2023
MW23-8D	East of the landfill	Dry	--	Dry	Installed in Nov. 2023
<b>Surface Water</b>					
SW2	Approximately 30 m southwest of the landfill	Dry	Dry	Dry	
SW4	Background Southeast and upstream of the landfill	√	√	Dry	
SW5	Southeast and downstream of landfill area	√	√ + DUP	√	
SW8	Approximately 100 m northeast of the landfill	√	Dry	Dry	
SW9	Approximately 200 m north of the landfill	√	Dry	Dry	

Notes:

1. √ = sampled for the required parameters, field parameters and water level
2. DUP = Duplicate Sample taken
3. NS: Not sampled

### 3.4 Analytical Laboratory Accreditation

Ground and surface water samples were submitted for analysis to the Caduceon Environmental Laboratories (Caduceon), located in Ottawa, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA), for specific environmental testing procedures listed in the scope of accreditation and is assessed biannually by CALA to the ISO/IEC 17025 standard. ISO/IEC 17025 is an international standard for both quality management and technical aspects of operating a testing laboratory. Caduceon is licensed by the Ministry to perform analysis on drinking water in Ontario in accordance with the Safe Drinking Water Act.

### 3.5 Landfill Gas Monitoring

Landfill gas monitoring is not part of the current environmental monitoring program for the site. However, WDS gas measurements were conducted at all monitoring wells in the spring and fall 2025 using a landfill gas monitor (LGM). There was no detection of sulphide, methane or CO<sub>2</sub> in any of the wells monitored in 2025. The waste mound at the Black Donald WDS is covered with porous soil materials, allowing natural gas flux to the atmosphere. The overburden and bedrock characteristics, coupled with the extended distance to the nearest residence, provide a minimal risk of landfill gases impinging off-site receivers.

### 3.6 Operational Monitoring

Operational monitoring at the Black Donald Site is typically completed by Township staff. As there was no waste received in 2025 and no operational records were maintained.

The Township submits annual reports in accordance with the Municipal Data call, inclusive of the Black Donald site, to the Resource Productivity and Recovery Authority (RPPRA).

## 4 ENVIRONMENTAL MONITORING RESULTS

### 4.1 Historical Data

Historical static water level and sampling results are presented in earlier reports completed by Greenview Environmental and are summarized in **Appendix F**.

### 4.2 Groundwater Flow Monitoring

Static water levels were measured in April and October 2025, and are summarized in **Appendix G**. Ground water flow patterns are provided in **Figures 4a** and **4b** for the April and October sampling events respectively. The water levels were referenced to a local datum. While there are minor fluctuations in the water levels, the overall direction of groundwater flow is consistent with historical measurements. In 2025, groundwater flow at the site was interpreted to be generally toward southeast, consistent with the historical results.

### 4.3 Groundwater Quality Assessment

#### 4.3.1 Groundwater Assessment Criteria

Groundwater at landfill sites is generally assessed with regard to the criteria specified in the Ontario Drinking Water Quality Standards (ODWQS). The ODWQS is split into health and non-health related parameters. Non-health related parameters are in turn split into aesthetic objectives and operational guidelines.

#### 4.3.2 Groundwater Quality 2025

The Certificates of Analyses are presented in **Appendix H**, and the results of the 2025 groundwater monitoring program are tabulated in **Appendix I**. Analytical data were compared to the Ontario Drinking Water Standards (ODWS; MECP, 2006) and Ministry Guideline B-7 and the RUC (Ministry, 1994a).



Historically, background groundwater quality was calculated using the median values from the previous ten (10) sampling events from the background monitoring wells (BH2 and MW08-6). In 2025, the median of the previous ten (10) sampling event results from background monitoring well BH2 was used to determine background groundwater quality at the site.

### **Background Monitoring Well BH-2**

In 2025, all parameters met the ODWQS at BH-2. Sporadic elevated hardness values are likely attributable to the underlying marble bedrock present at most locations and from local bedrock exposure in the vicinity of the site. Similarly, high aluminum and DOC concentrations were interpreted to be result of naturally- occurring conditions at and nearby the site.

### **Monitoring Well BH1**

In spring 2025, all parameters met the ODWQS. In fall 2025, all parameters met the ODWQS except for alkalinity, dissolved organic carbo (DOC), manganese, and iron. Groundwater at BH1 is considered the most representative of leachate quality at the Black Donald site as it is close to and downgradient of the fill area. Consistent with historical assessments (Greenview, 2023), groundwater in the vicinity of BH1 is interpreted to be impacted by landfill-related activities, with elevated concentrations expected given the well's location immediately downgradient of the waste mound. Due to its proximity to Hydro Dam Road, groundwater quality at BH1 may also reflect influences from winter road maintenance activities (e.g., salting).

### **Monitoring Well BH3**

No samples were collected from BH3 in 2025. The well was destroyed by site equipment in 2021 (Greenview, 2023). The well was properly decommissioned in accordance with Regulation 903.

### **Monitoring Well BH4**

In 2025, all parameters met the ODWQS except for:

- DOC, alkalinity, and hardness in the spring, and
- alkalinity, hardness, DOC, aluminum, manganese, and iron in the fall.

Based on 2025 results, groundwater at BH4 was interpreted to be impacted by landfill-related activities.

### **Monitoring Well BH08-5**

MW08-5 was essentially dry in fall 2025, and insufficient groundwater was available for sampling in spring 2025; as a result, no samples could be collected during either event.

### **Monitoring Well BH08-6**

In 2025, all parameters met the ODWQS at BH08-6. The high historical concentrations for aluminum, DOC, and hardness, and to a lesser extent iron and manganese at MW08-6 (and BH2) were interpreted to be due to the natural environment conditions in the area.

### **Monitoring Well BH08-7S (Historically MW08-7)**

In 2025, all parameters met the ODWQS at MW08-7S. When compared with groundwater results from BH1, the results from MW08-7S in suggest that significant attenuation is occurring between BH1 and the eastern CAZ boundary. No significant impacts related to the waste disposal activities were interpreted to be occurring in the vicinity of MW08-7S in 2025.

### **Monitoring Well MW 23-7D**

Monitoring well MW23-7D was installed in November 2023 and is located adjacent to MW08-7S and is approximately 180 m southeast and downgradient of the landfilling area, along the eastern CAZ boundary. In 2025, all parameters met the ODWQS except for DOC and manganese (fall only).



**Monitoring Wells MW23-8S&D**

Monitoring wells MW23-8S&D were installed in November 2023 and located approximately 40 m east of the landfilling area. During spring and fall sampling events in 2025, both wells were dry, and groundwater samples could not be collected.

**VOC Sampling**

As per the ECA, samples were last collected for VOC analysis from BH1 in 2023, and all values were below ODWS limits at that time. Samples are collected at BH1 every five (5) years, and the next sampling event for VOC analysis at monitoring well BH1 is scheduled for the spring of 2028.

The Reasonable Use Concept was developed by the Ministry to address the levels of off-site contaminants that are considered acceptable. The Reasonable Use Criteria allows for the definition of the level of contamination in the groundwater beyond which mitigative action should be undertaken. The acceptability of the landfill in terms of its impact on groundwater has been assessed in terms of the Reasonable Use Criteria (RUC). The RUC established the acceptability of change in groundwater quality ( $C_m$ ) as follows:

**4.3.3 Reasonable Use Concept Assessment**

The Reasonable Use Concept was developed by the Ministry to address the levels of off-site contaminants that are considered acceptable. The Reasonable Use Criteria allows for the definition of the level of contamination in the groundwater beyond which mitigative action should be undertaken. The acceptability of the landfill in terms of its impact on groundwater has been assessed in terms of the Reasonable Use Criteria (RUC). The RUC established the acceptability of change in groundwater quality ( $C_m$ ) as follows:

Degradation of less than 50% of the difference between the background quality and the established objective for the particular health related parameter.

**Aesthetic Parameters**

Degradation of less than 50% of the difference between the background quality and the established objective for the particular health related parameter.

**Health Related Parameters**

Degradation of less than 25% of the difference between the background quality and the established objective for the particular health related parameter. Acceptable concentrations are based on background levels and water quality guidelines (i.e. drinking water objectives).

The chosen background values are utilized to calculate the RUC allowable concentrations for specific parameters, as per the following formulas:

**Health Related:**

$$C_{allow} = P_b + (C_m - P_b) \times 25\%$$

**Non-Health Related:**

$$C_{allow} = P_b + (C_m - P_b) \times 50\%$$

where:

$C_{allow}$  = Maximum allowable concentration of parameter as per the RUC guidelines.

$C_m$  = Maximum acceptable concentration (MAC) of parameter as per the ODWS/OG.

$P_b$  = Chosen background value of parameter

For the purposes of determining the Reasonable Use Concept (RUC) criterion at the property boundary, groundwater quality from monitoring well **BH2** is considered to be a representative of background conditions at the site. Median values from the previous ten (10) sampling events from the background monitoring well BH-2 was used to determine background groundwater quality at the site.

**Table 3** (in the Tables section) outlines the median calculation for background concentrations, and **Table 4** outlines the Reasonable Use Criteria.

**Table 4: Reasonable Use Criteria 2025 (Using BH2 results)**

Parameter (mg/L)	Pb	Cm	F	Callow
Alkalinity	228	500	0.5	<b>364</b>
Chloride	0.8	250	0.5	<b>125</b>
Nitrate	0.11	10	0.25	<b>2.6</b>
Sulphate	15	500	0.5	<b>258</b>
TDS	242	500	0.5	<b>371</b>
DOC	2.2	5	0.5	<b>3.6</b>
Barium	0.02	1	0.25	<b>0.3</b>
Boron	0.01	5	0.25	<b>1.26</b>
Iron	0.005	0.3	0.5	<b>0.15</b>
Manganese	0.001	0.05	0.5	<b>0.03</b>
Sodium	2.8	200	0.5	<b>101</b>

#### 4.3.4 Reasonable Use Conclusions 2025

The reasonable use conclusions and the indicator parameters that exceed the RUC for the April and October 2025 sampling events are presented in **Table 5**. Based on the direction of groundwater flow, the RUC criteria has been compared to the water quality at the southeastern CAZ boundary wells MW08-7S & MW23-7D.

**MW08-7S:**

The results indicate that all parameters met the RUC criteria in 2025 except for DOC during the fall sampling event.

**MW23-7D:**

The results indicate that all parameters met the RUC criteria in 2025 except for alkalinity, TDS, manganese (fall only), and DOC.

**Table 5: Reasonable Use Conclusions 2025**

Parameters	ODWS	C <sub>allow</sub>	MW08-7S		MW23-7D (MW8-7D)	
			Apr-25	Oct-25	Apr-25	Oct-25
<b>Health Related</b>						
<b>Nitrate</b>	<b>10</b>	<b>2.60</b>	0.12	0.06	0.34	0.13
<b>Barium</b>	<b>1</b>	<b>0.30</b>	0.056	0.042	0.087	0.091
<b>Boron</b>	<b>5</b>	<b>1.26</b>	0.01	0.006	0.585	0.668
<b>Aesthetic Parameters</b>						
<b>Alkalinity</b>	<b>500</b>	<b>364</b>	217	190	<b>395</b>	<b>380</b>
<b>Chloride</b>	<b>250</b>	<b>125</b>	71.2	38	13.5	26.1
<b>Sulphate</b>	<b>500</b>	<b>258</b>	5	6	24	27
<b>TDS</b>	<b>500</b>	<b>371</b>	337	256	<b>430</b>	<b>425</b>
<b>DOC</b>	<b>5</b>	<b>3.6</b>	2	<b>4</b>	<b>5.7</b>	<b>9.3</b>
<b>Iron</b>	<b>0.3</b>	<b>0.15</b>	<0.005	0.009	0.019	<0.005
<b>Manganese</b>	<b>0.05</b>	<b>0.03</b>	<0.001	<0.001	0.022	<b>0.119</b>
<b>Sodium</b>	<b>200</b>	<b>101</b>	27.8	30	15.8	22.3

NS : Not Sampled

**Exceeds** Reasonable Use Criteria

The noted RUC non-conformance for DOC in 2025 is interpreted to be attributed to naturally occurring conditions downgradient of the site and/or off-site sources, and not to landfill-related factors.

#### 4.4 Surface Water Quality Assessment

##### 4.4.1 Surface Water Assessment Criteria

Surface water at landfill sites is generally assessed with regard to the criteria specified in the Provincial Water Quality Objectives (PWQO). The PWQOs are a set of ambient surface water quality criteria. In addition to the PWQOs, surface water quality results are, where relevant, compared to select Canadian Water Quality Guidelines (CWQGs).

##### 4.4.2 Surface Water Monitoring 2025

Photos of the monitoring stations are included in **Appendix D**, the Certificates of Analysis are presented in **Appendix H**, and the results of the 2025 surface water monitoring program are tabulated in **Appendix I**. All surface water monitoring stations are presented in **Figure 3**. In 2025, surface water samples were collected during three events (one each in the spring, summer and fall). The surface water sampling is outlined in **Table 2**. Background surface water quality was determined using the 75th percentile of a minimum of the previous ten (10) sampling events from SW4.

##### **Monitoring Location SW2**

This station was dry during all sampling events and 2025 and samples could not be collected.



#### **Monitoring Location SW4**

From the spring and summer sampling, all parameter concentrations were below the PWQOs and other ambient surface water criteria. This station was dry during the fall, and samples could not be collected.

Consistent with historical results, surface water quality at SW4 was interpreted to be representative of background surface water quality at the site. Background surface water quality at this location has been observed to have historically high concentrations of phenols, phosphorus, and zinc, and low DO concentrations, all attributed to naturally occurring conditions and/or off-site sources.

#### **Monitoring Location SW5**

In 2025 samples from SW5 were collected during all three events. All parameter concentrations were below the PWQOs criteria except for phosphorous (fall only). Beaver activity in the vicinity of SW5 has historically been observed; however, no specific beaver activity was noted in the vicinity of SW5 in 2025.

Historically, SW5 has not been interpreted as being impacted by landfill related activities (Greenview, 2023), and in 2025 the noted PWQO non-conformances are interpreted to be consistent with expected results in a low to no-flow wetland environment. Given the significant distances of the surface water sampling locations (SW4 and SW5) from the Black Donald site, impacts as a result of the landfill site are not anticipated.

#### **Monitoring Location SW8**

Samples from SW8 were only collected in the spring. This location was dry during the summer and fall events. The spring sampling revealed all parameter concentrations were below the PWQOs and other ambient surface water criteria.

#### **Monitoring Location SW9**

In spring 2025, all parameter concentrations were below the PWQOs and other ambient surface water criteria. This station was dry during the summer and fall 2025 sampling events and samples could not be collected.

#### **4.4.3 Surface Water Trigger Assessment 2025**

In 2025, no parameter concentrations at SW5 were above 75<sup>th</sup> percentile background surface water quality except as indicated in **Table 6** and as summarized below. They include:

- April: Chemical oxygen demand (COD)
- July: Total kjeldahl nitrogen (TKN).
- October: Phosphorus, sulphate, COD, and TKN.

**Table 6: Surface Water Triggers Assessment 2025**

Parameters	PWQO (CWQG)	SW4 75th Percentile	SW5		
			Apr-25	July 25	Oct 25
<b>Primary Surface Water Trigger Parameter<sup>1</sup></b>					
Chloride	120	NA	7.9	10.9	33.3
Unionized Ammonia	0.02	NA	0.00021	0.00073	0.00066
Nitrate	3	NA	<0.05	<0.05	<0.05
Phosphorus	0.02	NA	<0.01	0.02	<b>0.04</b>
Boron	1.5	NA	0.016	0.017	0.037
Iron	0.3	NA	0.024	0.295	0.19
<b>Secondary Surface Water Trigger Parameter<sup>2</sup></b>					
Barium	NV	0.064	0.026	0.051	0.059
Chromium	NV	0.001	<0.001	<0.001	<0.001
Chemical Oxygen Demand (COD)	NV	21	<b>26</b>	17	<b>27</b>
Sodium	NV	37	4.5	8.6	17
Sulphate	NV	9.50	5	2	<b>21</b>
Total Kjeldahl Nitrogen (TKN)	NV	0.48	0.2	<b>0.5</b>	<b>0.6</b>

NA : Not Applicable      NV: No Value

**Exceeds** PWQO/CWQO Trigger Criteria

<sup>1</sup> Primary Surface Water Trigger uses the Provincial Water Quality Objective (PWQO)

- Since there is no PWQO for Chloride, the Canadian Water Quality Guideline (CWQG) of 120 mg/L is used

- For Boron, the CWQG of 1.5 mg/L is used since it is based on more up to date literature

<sup>2</sup> Secondary Surface Water Trigger parameters do not have a PWQO.

- The running 75th Percentile of the (2016-2023) sampling events of the background (SW4) concentration is used as the trigger

## 4.5 Trigger Mechanism

The ground and surface water Trigger Mechanisms for the Black Donald Waste Disposal Site is summarized below.

Consistent with the Trigger Mechanism (Greenview, 2010) the twelve (12) key trigger parameters include: *un-ionized ammonia, barium, boron, chloride, chromium, chemical oxygen demand (COD), iron, nitrate, sodium, sulphate, total kjeldahl nitrogen (TKN) and total phosphorus.*

The following locations were used:

Background groundwater	Wells BH2 and MW08-6
Groundwater leachate characterizations	Wells BH1 and BH4
Flow path and receptor location groundwater	Well MW08-7S
Surface water	Locations SW-4 and SW-5

Based on the 2025 review, the Trigger Mechanism was not interpreted to be activated.



#### 4.5.1 Parameter Review

The following is a detailed review of each of the key trigger parameters used in the Trigger Mechanism evaluation. Generally, seasonal variations in concentrations are apparent.

##### Un-ionized Ammonia

The highest concentrations of un-ionized ammonia were noted in leachate characterization monitoring well BH1, while concentrations at all other key trigger locations appear to be relatively low and generally stable over time. With the exception of an increasing trend of un-ionized ammonia at well BH1, no increasing trends were noted at any of the other key trigger locations following in 2025. All un-ionized ammonia concentrations in surface water were below the PWQO limit.

##### Barium

The highest concentrations of barium were noted in leachate characterization monitoring wells BH1 and BH4, while low concentrations of barium were noted at the groundwater background locations (BH2 and MW08-6). The highest barium concentrations for the surface water monitoring locations were noted at background monitoring location SW4 in the summer sample. No increasing trends for concentrations of barium were noted at any of the key groundwater trigger locations. All barium concentrations remained below the ODWS and RUC limits. The trend analysis indicated that barium concentrations were generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted as activated with respect to barium in 2025.

##### Boron

The highest concentrations of boron were noted in leachate characterization monitoring wells BH1 and BH4, while low concentrations of boron were noted at the groundwater background locations (BH2 and MW08-6), the groundwater receptor trigger location MW08-7S, and the background surface water location SW4. No increasing trends of boron were noted at any of the key trigger locations following inclusion of the 2025 results. All recent groundwater related boron concentrations have been below RUC and ODWS limits. All recent surface water results have been below the PWQO limits. The trend analysis indicated that boron concentrations were generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to boron in 2025.

##### Chloride

The highest concentrations of chloride in groundwater were noted in results from MW08-7S in the spring of 2025, and in the surface water at background location SW4 in the spring sampling. Low concentrations of chloride were noted at background groundwater locations BH2 and MW08-6. Following inclusion of 2025 results, chloride concentrations were generally stable, downgradient and downstream of the Black Donald site, with the exception of an interpreted decreasing trend for chloride at leachate monitoring wells BH1 and BH4. All recently documented chloride concentrations have been below ODWS and RUC limits for both groundwater and surface water. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to chloride in 2025.

##### Chromium

All chromium concentrations in groundwater and surface water were noted to be below the detection limit. No increasing trends were noted for concentrations of chromium at any of the key trigger locations following inclusion of 2025 results. All concentrations in groundwater monitoring wells were significantly below the ODWS and RUC limits in 2025. Similarly, no concentrations in surface water were above the PWQO limit in 2025. The trend analysis indicated that chromium concentrations were generally stable downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to chromium in 2025.

### Chemical Oxygen Demand (COD)

The highest concentrations of COD were noted at leachate monitoring well BH4, while the lowest concentrations of COD were noted at monitoring well MW08-6. No increasing trends were noted for concentrations of COD at any of the key trigger locations following inclusion of 2025 results. The trend analysis indicated that some seasonal variability of COD concentrations downgradient and downstream of the Black Donald site is occurring. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to COD in 2025.

### Iron

The highest concentrations of iron were noted at leachate characterization monitoring well BH1 and BH4 in the fall of 2025 and in summer surface water sample from SW5. Lower concentrations of iron were noted at all other groundwater and surface water sampling locations in 2025. Historically, iron concentrations in leachate monitoring well BH1 were significantly higher than concentrations documented for all other sampling locations. No increasing trends for concentrations of iron were noted at any of the other key trigger locations following the inclusion of the 2025 results with the exception of BH4. Decreasing trends were interpreted in results from BH1 based on the 2025 results. Historically, only leachate monitoring well BH1 was noted to have concentrations of iron consistently in non-conformance with ODWS and RUC limits, while surface water locations were noted to have higher iron concentrations during summer and fall sampling events. These were attributed to low-water / low-flow environments at the sampling locations. The trend analysis indicated that iron concentrations were generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to iron in 2025.

### Nitrate

The highest concentrations of nitrate were noted at leachate characterization monitoring wells BH1 (fall) and BH4 (spring) in 2025, while low concentrations of nitrate were noted at all other groundwater and surface water sampling locations. With the exception of a minor increasing trend for concentrations of nitrate at leachate well BH-1, no increasing trends for concentrations of nitrate were noted at any of the key trigger locations following inclusion of the 2025 results. All recent concentrations of nitrate from all sampling locations are significantly below the ODWS and RUC limits. The trend analysis indicated that nitrate concentrations were generally stable downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to nitrate in 2025.

### Sodium

The highest concentrations of sodium were noted in leachate characterization monitoring well BH1 and BH4, while low concentrations of sodium were noted at the groundwater background locations (BH2 and MW08-6). The dominant source of sodium in the vicinity of the site is interpreted to be from winter road maintenance activities (e.g., salting) and not landfill-related activities. All recent concentrations of sodium from all sampling locations were below the ODWS and RUC limits. The trend analysis indicated that sodium concentrations were interpreted to be generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to sodium in 2025.

### Sulphate

The highest concentrations of sulphate were noted in the leachate monitoring well (BH4), while low concentrations of sulphate were noted at the background groundwater locations (BH2 and MW08-6), the groundwater receptor location (MW08-7S&D), and background surface water location (SW4). All recent groundwater-related sulphate concentrations, with the exception of BH4 during the spring and fall of 2025, have been below RUC limits, while all concentration at all locations have been below the ODWS limits. The trend analysis indicated that sulphate concentrations were generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to sulphate in 2025.



### Total Kjeldahl Nitrogen

The highest concentrations of TKN were noted in leachate monitoring well (BH4), while low concentrations of TKN were noted at the groundwater background locations (BH2 and MW08-6), and groundwater receptor trigger location (MW08-7S), and all surface water locations. A decreasing trend was interpreted in the results from leachate monitoring well BH1. The trend analysis indicated that TKN concentrations were generally stable downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to TKN in 2025.

### Total Phosphorus

The highest concentrations of total phosphorus have historically been documented in results from monitoring wells MW08-7S (previously MW08-7) and MW23-7D. The high total phosphorus concentrations in 2025 at MW08-7S and MW23-7D did not coincide with high concentrations at any upgradient monitoring wells or surface water locations, and therefore it was interpreted that phosphorus concentrations at these monitoring wells were not attributed to landfill-related factors.

High concentrations of phosphorus were noted in results from background surface water location SW4 and at SW5. No increasing trends for concentrations of total phosphorus were noted at any of the key trigger locations following inclusion of 2025 results. The trend analysis indicated that total phosphorus concentrations were generally stable, downgradient and downstream of the Black Donald site. Accordingly, the Trigger Mechanism was not interpreted to be activated with respect to total phosphorus in 2025.

#### 4.5.2 Trigger Mechanism Review Summary

Based on a review of a five (5) year trend analysis for the selected parameters, the Trigger Mechanism was not interpreted to be activated in 2025. Routine monitoring of groundwater and surface water should continue in 2026 at the Black Donald site.

## 4.6 Operations Summary

### 4.6.1 Site Operations

The site is operated as a municipal solid waste landfill, accepting C&D and bulky waste for disposal, in accordance with ECA A411902 and the most recent amendment dated January 27, 2026, (**Appendix A**). The Black Donald site was closed to the public on April 5, 2010; Operational monitoring at the Black Donald Site is typically completed by Township staff. As there was no waste received in 2025, no operational records were maintained.

The amended ECA dated January 27, 2026, approved the proposed expansion of the landfilling area to 1.48 hectares. This expansion provides an additional capacity of 38,935 m<sup>3</sup>, increasing the site's total maximum volumetric capacity to 73,185 m<sup>3</sup> (excluding final cover).

Access to the site is provided by Hydro Dam Road, located off Calabogie Road County Road 508, approximately 15 km southwest of the Village of Calabogie. Site access is restricted by a lockable gate at the site entrance, and the site is surrounded by forested lands, which provide adequate screening and restricted access for vehicular traffic.

#### 4.6.2 Waste Disposal Summary

In 2025, the Black Donald site was used only to stockpile C&D and bulky waste generated from within the Township for processing (size-reduction) and disposal. No waste was received at the site in 2023 through 2025, the C&D and bulky waste was sent to the Mount St. Patrick site. The 2022 C&D and bulky waste stockpile was grounded and applied at the site in fall 2023.

#### 4.6.3 Monitoring and Screening Checklist

**Appendix J** contains the groundwater and surface water Monitoring and Screening Checklist. Based on the results of 2025 monitoring program, no contingency measures are required to be implemented.

## 5 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 2025 environmental monitoring program completed for the Black Donald Waste Disposal Site, the following conclusions are provided:

- The groundwater flow direction at the site in 2025 was interpreted to be similar to historical interpretations with the direction of groundwater flow to the southeast towards the CAZ boundary.
- Groundwater immediately downgradient from the site at monitoring wells BH1 was interpreted to be impacted from landfill-related activities in 2025. At monitoring well BH1, all parameters met the ODWQS in spring 2025, while in fall, all parameters met the ODWQS except for alkalinity, dissolved organic carbon (DOC), manganese, and iron. Results from monitoring well BH1 were interpreted to be most representative of leachate quality at the Black Donald site at this time.
- Per the ECA, samples were last collected for VOC analysis from BH1 in 2023, and all values were below ODWS limits. Samples are collected at BH1 every five (5) years, and the next sampling event for VOC analysis at monitoring well BH1 is scheduled for spring 2028.
- No RUC exceedances were documented in results from downgradient monitoring well MW08-7S and MW23-7D in 2025 that were attributed to landfill-related factors. Based on the above, the Black Donald site was interpreted to meet the intent of Guideline B-7 at the downgradient southeastern CAZ boundary in 2025.
- Based on the surface water quality results in 2025, and the significant distance of each sampling location from the landfilling area of the Black Donald site, the surface water systems around the Black Donald site were not interpreted to be impacted from landfill-related activities.
- Based on a review of five (5) years time trend analysis for key parameters (un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus) confirmed that the Trigger Mechanism was not interpreted to be activated in 2025. Routine monitoring of groundwater and surface water should continue in 2026 at the Black Donald site.
- Based on limited capacity of the landfill, the Township filed an expansion application in 2025. An amended ECA dated January 27, 2026, approved the proposed expansion of the landfilling area. This expansion provides an additional capacity of 38,935 m<sup>3</sup>, increasing the site's total maximum volumetric capacity to 73,185 m<sup>3</sup> (excluding final cover).



## 5.1 Groundwater Monitoring

Based on the results of the 2025 monitoring and the amended ECA, No changes to the groundwater monitoring program are recommended for 2026. Groundwater monitoring should continue to occur twice per year (May/June and October/November) and consist of the following activities (see **Table 7**):

- Water levels at all locations should be collected.
- Groundwater samples should be collected from all locations in spring (May/June) and fall (October/November) and include appropriate duplicate samples; and
- Samples should be analyzed for the parameters listed in **Table 7**.
- Any wells that are found to be damaged should be repaired or replaced.

## 5.2 Surface Water Monitoring

Based on the amended ECA dated January 27, 2026, three (3) surface water stations were added to the monitoring program including SW2, SW8, and SW9. Surface water monitoring should continue to occur three times per year (May/June, July/August, and October/November) and consist of the following activities (see **Table 7**):

- Collect surface water from 5 monitoring stations.
- Collect samples in May/June, July/August, and October/November.
- Samples should be analyzed for the parameters listed in **Table 7**.
- Un-ionized ammonia should be calculated using field results.



Table 7: Proposed Monitoring Program 2026

Station ID	Task	Spring 2026	Summer 2026	Fall 2026	Analytical Parameters
<b>Groundwater</b>					
BH1	Measure water levels / Sample groundwater	√	--	√	- Major and minor ions (Ca, Na, Cl, SO <sub>4</sub> , B, K, Mg, Ba) - Trace metals (Fe, Mn, Cu, Sr, Al, Cd, Cr, Co, Si, Zn, As, Pb, Hg) - Nitrogen species (NO <sub>3</sub> , NO <sub>2</sub> , NH <sub>3</sub> , TKN) - General parameters (pH, Conductivity, alkalinity, COD, phenols, total dissolved solids, phosphorous, hardness, dissolved organic carbon) - Field measurements of pH, conductivity, Dissolved Oxygen, and water temperature - EPA 624 Volatile Organic Compounds VOC sample collected every Five years from BH1. Next VOCs sampling will be in Spring 2028.
BH2	Measure water levels / Sample groundwater	√	--	√	
BH4	Measure water levels / Sample groundwater	√	--	√	
MW08-5	Measure water levels / Sample groundwater	√	--	√	
MW08-6	Measure water levels / Sample groundwater	√	--	√	
MW08-7S	Measure water levels / Sample groundwater	√	--	√	
MW23-7D	Measure water levels / Sample groundwater	√	--	√	
MW23-8S	Measure water levels / Sample groundwater	√	--	√	
MW23-8D	Measure water levels / Sample groundwater	√	--	√	
<b>Surface Water</b>					
SW2	Sample Surface water	√	√	√	- Major and minor ions (Ca, Na, K, Cl, total phosphorous, Ba, B, Mg, SO <sub>4</sub> ) - Trace metals (Fe, Mn, Cu, Cd, Cr, Co, Sr, Zn, As, Pb, Hg) with detection limits to PWQO - Nitrogen species (NH <sub>3</sub> , TKN) - General parameters (pH, Conductivity, alkalinity, COD, Total suspended solids, phenols, total dissolved solids, hardness, biochemical oxygen demand) - Field measurements of dissolved oxygen, pH, conductivity, water temperature, and Un-ionized ammonia (calculation)
SW4	Sample Surface water	√	√	√	
SW5	Sample Surface water	√	√	√	
SW8	Sample Surface water	√	√	√	
SW9	Sample Surface water	√	√	√	

## Notes:

One Duplicate Sample to be collected during each sampling event.



## REFERENCES

- Jp2g Consultants Inc., 2024 Annual Report, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2025
- Jp2g Consultants Inc., 2023 Annual Report, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2024
- CCREM (Canadian Council of Resource and Environment Ministers). 1987. Canadian Water Quality Guidelines. Prepared by the Task Force on Water Quality Guidelines.
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- Golder Associates Ltd., 2006. 2005 Annual Report, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2006.
- Golder Associates Ltd., 2007. 2006 Annual Report, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2007.
- Google Earth. May 8, 2004. January 3, 2013.
- Greenview Environmental Management Limited, 2007a. Design and Operations Plan, Municipal Solid Waste Transfer Station, Black Donald Waste Disposal Site (A411902). July 23, 2007.
- Greenview Environmental Management Limited, 2007b. Summary Report, Preliminary Landfill Expansion Feasibility Studies. August 31, 2007.
- Greenview Environmental Management Limited, (2008-2023). (2007-2022) Annual Reports, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2008.
- Greenview Environmental Management Limited, 2010b. Design, Operations and Development Plan, Black Donald Waste Disposal Site, Township of Greater Madawaska, Ontario. December 2010.
- Jp2g Consultants Inc., 2001. Township of Greater Madawaska, Black Donald Waste Disposal Site, Site Development and Operations Plan. January 2001.
- Ontario Ministry of the Environment, 1994a. MECP Procedure B-7-1: Determination of Contaminant Limits and Attenuation Zones. 1994.
- Ontario Ministry of the Environment, 1994b. Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy. July 1994.
- Ontario Ministry of the Environment, 2006. Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines. June 2006.
- Ontario Ministry of the Environment, 2010. Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water - Technical Guidance Document. November 2010.
- SGS Lakefield Research Ltd., 2005. 2004 Annual Report, Black Donald Waste Disposal Site. March 28, 2005.
- Snider's Ecological Services, 2007. Initial Environmental Impact Study, Black Donald Waste Disposal Site, Township of Greater Madawaska. April 2007.



## LIMITATIONS AND USE OF THE REPORT

This report was prepared for the exclusive use of Township of Greater Madawaska. Any use which a third party makes of this report, or and reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Jp2g Consultants Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This landfill impact report involves a limited sampling of locations to assess the probability of contamination on site. The test data, chemical analyses, and conclusions given herein are the results of analyzing the groundwater encountered during the sampling programs. Based upon the total number of test holes performed, these are considered to be fairly representative of the groundwater conditions within each area tested. It should be noted, however, that any assessment regarding the presence of contamination on the property is based on interpretation of conditions determined at specific locations and depths. Chemical results are limited to those parameters tested.



## Tables

**Table 1: Ground and Surface Water Locations**

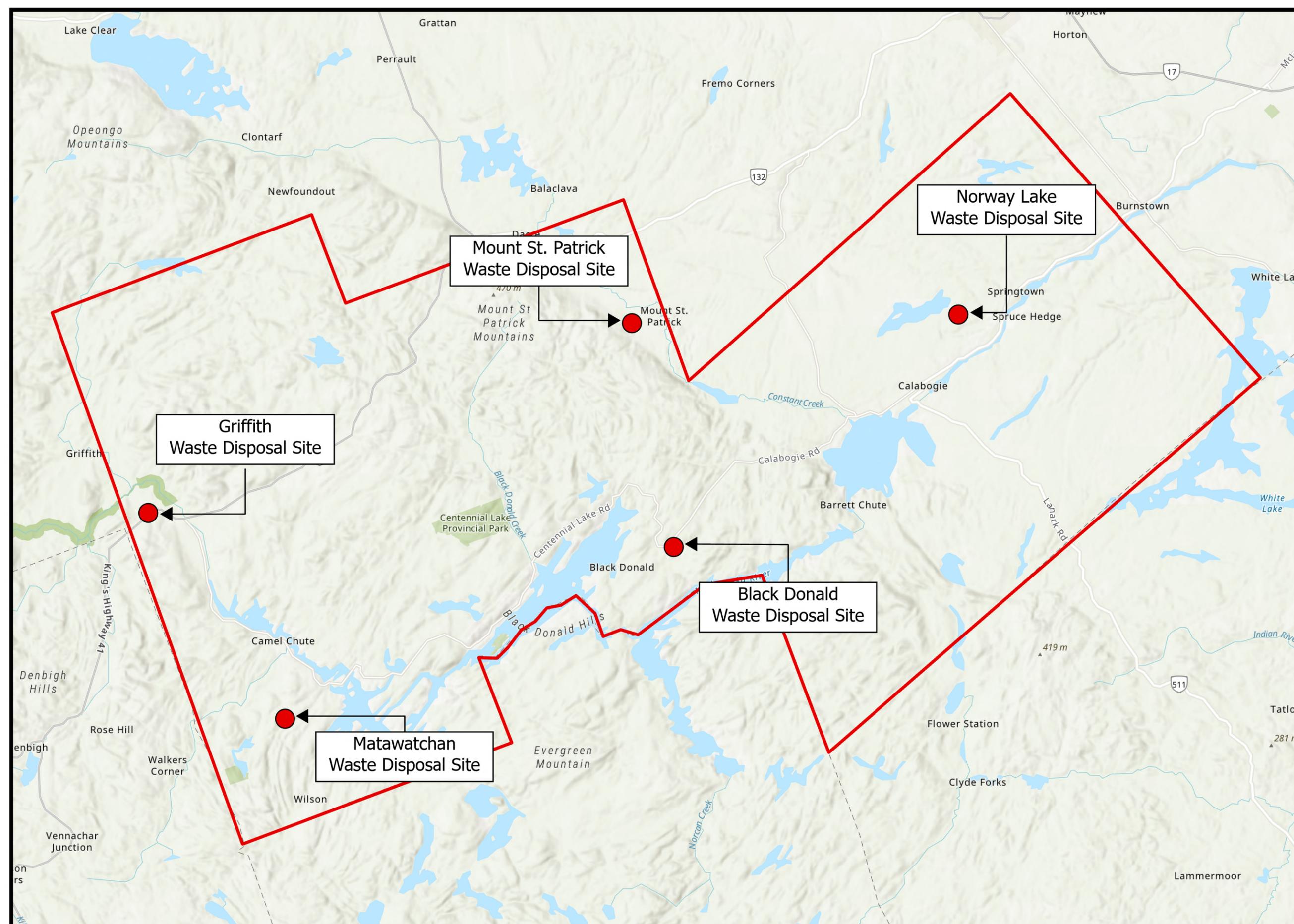
<b>Groundwater Locations</b>			
<b>Monitor</b>	<b>Zone</b>	<b>Northing</b>	<b>Easting</b>
BH1	18T	5010512	353241
BH2	18T	5010578	353185
BH3	18T	5010421	353188
BH4	18T	5010428	353115
MW08-5	18T	5010294	353052
MW08-6	18T	5010427	353017
MW08-7S	18T	5010522	353374
MW23-7D	18T	5010522	353374
MW23-8S	18T	5010478	353265
MW23-8D	18T	5010471	353265
<b>Surface Water Locations</b>			
<b>Monitor</b>	<b>Zone</b>	<b>Northing</b>	<b>Easting</b>
SW-2	18T	5010399	353097
SW-4	18T	5010396	353302
SW-5	18T	5009774	353354
SW-8	18T	5010518	353346
SW-9	18T	5010812	353398

Note: The locations of SW2, SW8, and SW9 will be confirmed during the upcoming fieldwork

**Table 3: Median Background Concentrations (Using BH2 Results)**

Parameters (mg/L)	May-21	Nov-21	May-22	Oct-22	Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25	Median
<b>Alkalinity</b>	221	240	238	224	244	228	228	214	239	224	<b>228</b>
<b>Chloride</b>	0.9	0.7	<0.5	0.7	0.7	0.7	1.8	0.8	1.1	2.3	<b>0.8</b>
<b>Nitrate</b>	0.11	<0.05	0.09	0.16	<0.05	0.11	<0.05	0.14	0.05	0.06	<b>0.11</b>
<b>Sulphate</b>	13	16	15	10	12	16	13	14	17	19	<b>15</b>
<b>TDS</b>	233	242	251	235	253	252	242		255	238	<b>242</b>
<b>DOC</b>	2.1	5.7	2.2	0.8	0.8	2.6	2.8	2.2	1.7	2.8	<b>2.2</b>
<b>Barium</b>	0.019	0.021	0.02	0.02	0.031	0.02	0.015	0.018	0.018	0.017	<b>0.020</b>
<b>Boron</b>	0.01	0.01	0.012	0.005	0.009	0.006	0.007	0.009	0.017	0.012	<b>0.010</b>
<b>Iron</b>	<0.005	0.021	<0.005	0.005	0.015	<0.005	0.007	<0.005	<0.005	<0.005	<b>&lt;0.005</b>
<b>Manganese</b>	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<b>&lt;0.001</b>
<b>Sodium</b>	2.6	3.2	3.3	2.2	2.3	2.8	2.6	2.8	3.4	3	<b>2.8</b>

# Figures



# Township of Greater Madawaska

Waste Disposal Sites

**LEGEND**

- Waste Disposal Site
- Township Boundary

1:250 000



## Regional Location Plan

Project No. 22-6213C Greater Madawaska

Date: 3/12/2024	Drawn By: HV
	Checked By: KM

Notes:  
 Map Layers Obtained from LIO  
 Waste Disposal Site Locations Sourced from Greenview Environmental Management (2023)

DWG NAME: J:\6-ENVIRONMENTAL\ACTIVE\2022\22-6213B - GREATER MADAWASKA WDS 2023\05 DRAWINGS\BLACK DONALD\2024\EXISTING CONDITIONS 2024.DWG LAYOUT: TAB.1\1X17 SAVED ON 2025-03-05



**BM 21-1**  
 EASTING: 353197.573  
 NORTHING: 5010544.812  
 ELEVATION:  
 100.818m (Assumed)  
 277.224m (Geodetic)

**Legend**

- 1.2ha Landfilling Area
- Roadway
- - - Approximate Active Landfilling Area
- 2023 Ground Contours
- MW08-6 Monitoring Wells
- BM Benchmark

**NOTES :**

WELL LOCATIONS AND CONTOURS IN THE LANDFILL AREA ARE FROM DECEMBER 20, 2023 JP2G SURVEY

CONTOURS OUTSIDE OF LANDFILL AREA ARE SOURCED GREENVIEW 2022 AMR AND APRIL 17 2023 JP2G SUVERY FOR REFERENCE ONLY

No.	DATE	2025-12-20
-----	------	------------



JP2g PROJECT No.: 22-6213

PROJECT  
**BLACK DONALD WDS**  
 TOWNSHIP OF GREATER MADAWASKA

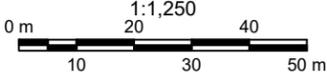
DRAWING  
**2025 - EXISTING CONDITIONS PLAN**

PROJECT No.: 22-6213D
DRAFTED: QS
DESIGNED: QS
REVIEWED: KM
APPROVED: KM

NORTH



SCALE



1:1,250

SHEET# **FIGURE 2**



### Legend

- - - 1.2ha Landfilling Area
- Roadway
- ▨ Vegetation
- - - 30m Buffer
- ⊕ MW08-6 Monitoring Wells
- ⊕ SW-4 Surface Water Locations
- Contamination Attenuation Zone (CAZ)
- ⊕ MW08-6 Destroyed Well



TRUE NORTH

NOTES:  
 WELL LOCATION FROM HANDHELD GPS DURING THE SPRING 2023 SAMPLING  
 SOURCE GREENVIEW 2022 AMR FOR REFERENCE ONLY

## Black Donald Landfill Site - Greater Madawaska

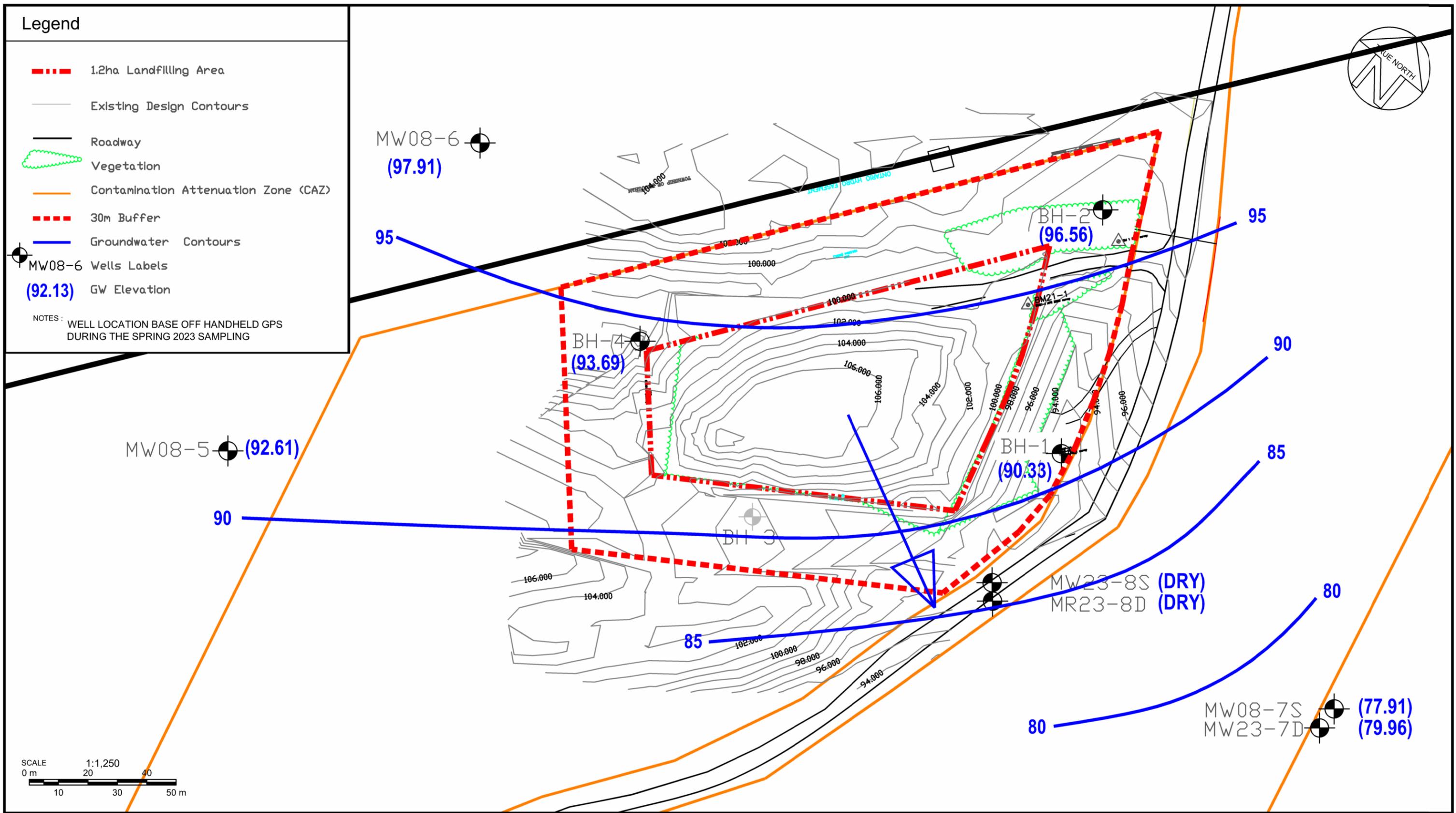
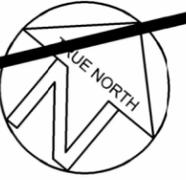
### Site Plan with Monitoring Locations

DRAFTED: QS		PROJECT No.: 22-6213E
CHECKED: KM		REVISION DATE: 02-JAN-2026
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: NTS		Figure : 3

**Legend**

- - - - 1.2ha Landfilling Area
- Existing Design Contours
- Roadway
- ~ ~ ~ ~ Vegetation
- Contamination Attenuation Zone (CAZ)
- - - - 30m Buffer
- Groundwater Contours
- ⊕ MW08-6 Wells Labels
- ( ) GW Elevation

NOTES: WELL LOCATION BASE OFF HANDHELD GPS DURING THE SPRING 2023 SAMPLING



**Jp2g Consultants Inc.**  
ENGINEERS • PLANNERS • PROJECT MANAGERS

12 INTERNATIONAL DRIVE, PEMBROKE, ON Phone: (613)735-2507, Fax: (613)735-4513  
1150 MORRISON DRIVE, SUITE 410, OTTAWA, ON Phone: (613)828-7800, Fax: (613)828-2600

## Black Donald Landfill Site - Greater Madawaska

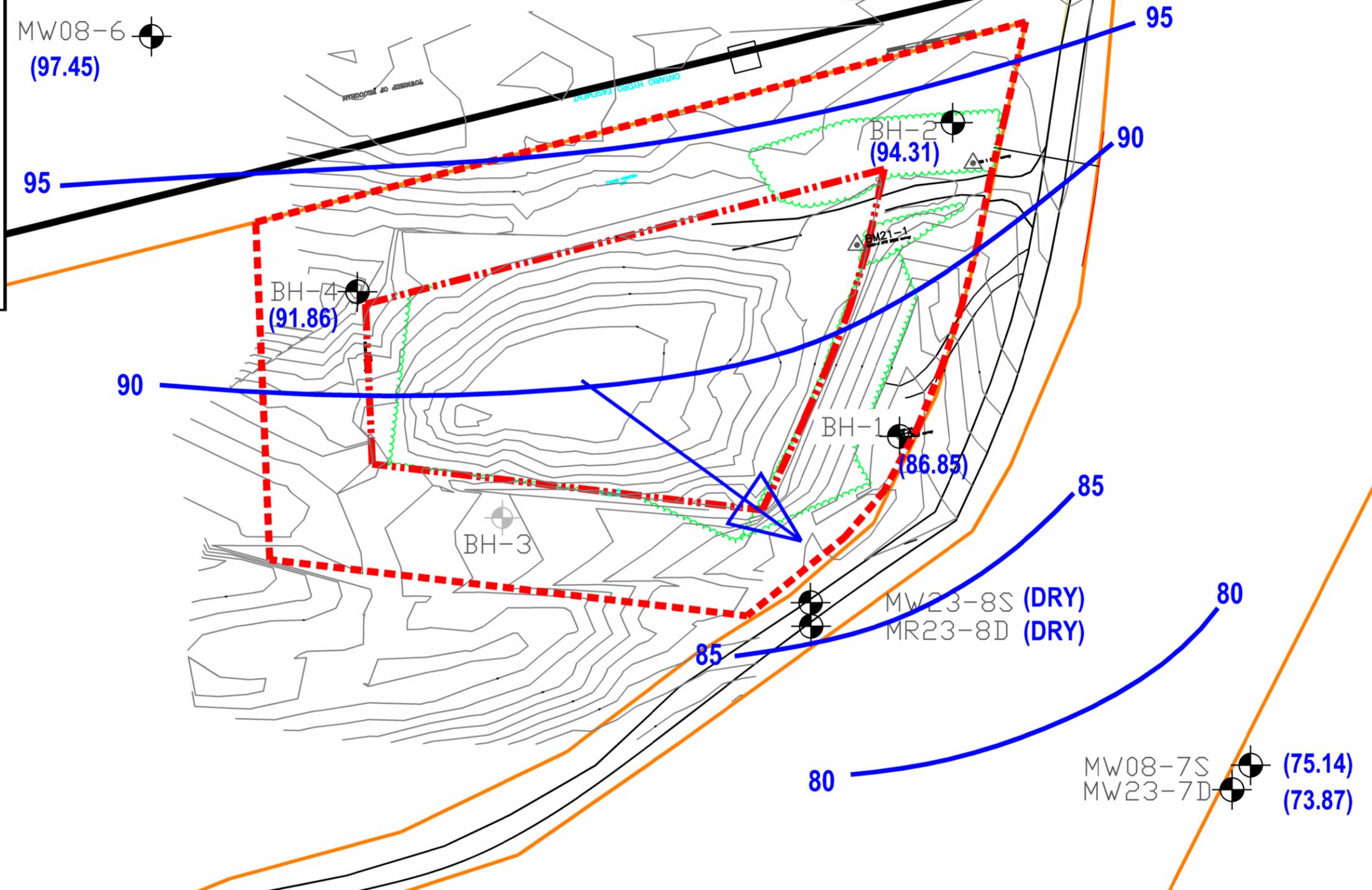
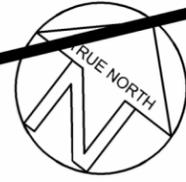
### Groundwater Flow - Spring 2025

DRAFTED: QS		PROJECT No.: 22-6213E
CHECKED: KM		REVISION DATE: 02-JAN-2026
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: 1:1250		Figure: 4A

**Legend**

- - - - 1.2ha Landfilling Area
- Existing Design Contours
- Roadway
- ~ ~ ~ ~ Vegetation
- Contamination Attenuation Zone (CAZ)
- - - - 30m Buffer
- Groundwater Contours
- MW08-6 Wells Labels
- (92.13) GW Elevation

NOTES: WELL LOCATION BASE OFF HANDHELD GPS DURING THE SPRING 2023 SAMPLING



## Black Donald Landfill Site - Greater Madawaska

### Groundwater Flow - Fall 2025

DRAFTED: QS		PROJECT No.: 22-6213E
CHECKED: KM		REVISION DATE: 02-JAN-2026
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: 1:1250		Figure: 4B

**Appendix A**  
**Environmental Compliance Approval**  
**and Certificate of Requirement**

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A411902

Issue Date: January 27, 2026

The Corporation of the Township of Greater Madawaska  
19 Parnell St  
Post Office Box, No. 180  
Calabogie, Ontario  
K0J 1H0

**Site Location:** Black Donald Waste Disposal Site  
34 Hydro Dam Rd  
Greater Madawaska Township, County of Renfrew

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

the use and operation of 1.48 hectare waste disposal/transfer site within a total site area of 21.36 hectares.

*For the purpose of this environmental compliance approval, the following definitions apply:*

1. "Approval" means this Environmental Compliance Approval and any Schedules to it;
2. "Contaminating Life Span" means contaminating life span as defined in Ontario Regulation 232/98;
3. "Director" means any Ministry employee appointed in writing by the Minister pursuant to section 5 of the EPA as a Director for the purposes of Part II.1 of the EPA;
4. "District Manager" means the District Manager of the local district office of the Ministry in which the Site is geographically located;
5. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;
6. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;
7. "NMA" means the *Nutrient Management Act, 2002*, S.O. 2002, c. 4, as amended;
8. "O. Reg. 232/98" means Ontario Regulation 232/98: (Landfilling Sites), made

under the EPA, as amended;

9. "Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards), made under the SDWA, as amended;
10. "Operator" means any person, other than the Owner's employees, authorized by the Owner as having the charge, management or control of any aspect of the Site and includes its successors or assigns;
11. "Owner" means any person that is responsible for the establishment or operation of the Site being approved by this Approval, and includes the Corporation of the Township of Greater Madawaska and its successors and assigns;
12. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;
13. "PA" means the *Pesticides Act*, R.S.O. (1990), c. P.11, as amended;
14. "Provincial Officer" means any person designated in writing by the Minister as a provincial officer pursuant to Section 5 of the OWRA, Section 5 of the EPA, Section 17 of the PA, Section 4 of the NMA, or Section 8 of the SDWA;
15. "Regional Director" means the Regional Director of the local Regional Office of the Ministry in which the Site is located;
16. "Reg. 347" means R.R.O. 1990, Reg. 347: (General - Waste Management), made under the EPA, as amended;
17. "Reg. 903" means R.R.O. 1990, Reg. 903: (Wells), made under the OWRA, as amended;
18. "Resource Recovery and Circular Economy Act" means the *Resource Recovery and Circular Economy Act*, 2016, S.O. 2016, c. 12, Sched. 1, as amended;
19. "SDWA" means the *Safe Drinking Water Act, 2002*, S.O. 2002, c. 32, as amended;
20. "Schedules" means the following schedules attached to this Approval and forming part of this Approval namely:
  - a. Schedule 1 - Supporting Documentation;
  - b. Schedule 2 - Surface Water and Groundwater Monitoring Program; and
  - c. Schedule 3 - Groundwater Monitoring Program;
21. "Site" means the entire waste disposal site, including the buffer lands, and contaminant attenuation zone at Black Donald Waste Disposal Site 34 Hydro Dam Rd, Greater Madawaska Township, County of Renfrew; and
22. "Trained Personnel" means personnel knowledgeable in the following through instruction and/or practice:
  - a. relevant waste management legislation, regulations and guidelines;

- b. major environmental concerns pertaining to the waste to be handled;
- c. occupational health and safety concerns pertaining to the processes and wastes to be handled;
- d. management procedures including the use and operation of equipment for the processes and wastes to be handled;
- e. emergency response procedures;
- f. specific written procedures for the control of nuisance conditions;
- g. specific written procedures for refusal of unacceptable waste loads; and
- h. the requirements of this Approval.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **1. Compliance**

1. The Owner and Operator shall ensure compliance with all the conditions of this Approval and shall ensure that any person authorized to carry out work on or operate any aspect of the Site is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
2. Any person authorized to carry out work on or operate any aspect of the Site shall comply with the conditions of this Approval.

### **2. In Accordance**

1. Except as otherwise provided by this Approval, the Site shall be designed, developed, built, operated and maintained in accordance with the documentation listed in the attached Schedule 1.

### **3. Interpretation**

1. Where there is a conflict between a provision of any document listed in Schedule 1 in this Approval, and the conditions of this Approval, the conditions in this Approval shall take precedence.
2. Where there is a conflict between the application and a provision in any document listed in Schedule 1, the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and

that the Ministry approved the amendment.

3. Where there is a conflict between any two documents listed in Schedule 1, the document bearing the most recent date shall take precedence.
4. The conditions of this Approval are severable. If any condition of this Approval, or the application of any condition of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

#### **4. Other Legal Obligations**

1. The issuance of, and compliance with, this Approval does not:
  - a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or
  - b. limit in any way the authority of the Ministry to require certain steps be taken or to require the Owner and Operator to furnish any further information related to compliance with this Approval.

#### **5. Adverse Effect**

1. The Owner and Operator shall take steps to minimize and ameliorate any adverse effect on the natural environment or impairment of water quality resulting from the Site, including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.
2. Despite the Owner, Operator or any other person fulfilling any obligations imposed by this Approval, the person remains responsible for any contravention of any other condition of this Approval or any applicable statute, regulation, or other legal requirement resulting from any act or omission that caused the adverse effect to the natural environment or impairment of water quality.

#### **6. Change of Ownership**

1. The Owner shall notify the Director, in writing, and forward a copy of the notification to the District Manager, within 30 days of the occurrence of any changes in the following information:
  - a. the ownership of the Site;
  - b. the Operator of the Site;
  - c. the address of the Owner or Operator; and
  - d. the partners, where the Owner or Operator is or at any time becomes a partnership and a copy of the most recent declaration filed under the

Business Names Act, R. S. O. 1990, c. B.17, shall be included in the notification.

2. No portion of this Site shall be transferred or encumbered prior to or after closing of the Site unless the Director is notified in advance and sufficient financial assurance is deposited with the Ministry to ensure that these conditions will be carried out.
3. In the event of any change in ownership of the Site, other than change to a successor municipality, the Owner shall notify the successor of and provide the successor with a copy of this Approval, and the Owner shall provide a copy of the notification to the District Manager and the Director.

## **7. Registration on Title Requirement**

1. Prior to dealing with the property in any way, the Owner shall provide a copy of this Approval and any amendments, to any person who will acquire an interest in the property as a result of the dealing.
2. Within thirty (30) calendar days from the date of issuance of this Approval, the Owner shall submit to the Director a completed Certificate of Requirement which shall include:
  - a. a plan of survey showing the property boundaries prepared, signed and sealed by an Ontario Land Surveyor which shows the area of the Site where waste has been or is to be deposited at the Site. If the survey plan doesn't show the area where the waste is deposited or to be deposited, an engineered drawing marking the boundary and the area for the waste disposal (foot print) stamped by a Professional Engineer is acceptable;
  - b. proof of ownership of the Site;
  - c. a letter signed by a member of the Law Society of Upper Canada or other qualified legal practitioner acceptable to the Director, verifying the legal description provided in the Certificate of Requirement;
  - d. the legal abstract of the property; and
  - e. any supporting documents including a registerable description of the Site.
3. Within fifteen (15) calendar days of receiving a Certificate of Requirement authorized by the Director, the Owner shall:
  - a. register the Certificate of Requirement in the appropriate Land Registry Office on the title to the property; and
  - b. submit to the Director and the District Manager, written verification that the Certificate of Requirement has been registered on title.

## **8. Inspections by the Ministry**

1. No person shall hinder or obstruct a Provincial Officer from carrying out any and all inspections authorized by the OWRA, the EPA, the PA, the SDWA or the NMA, of any place to which this Approval relates, and without limiting the foregoing:
  - a. to enter upon the premises where the approved works are located, or the location where the records required by the conditions of this Approval are kept;
  - b. to have access to, inspect, and copy any records required to be kept by the conditions of this Approval;
  - c. to inspect the Site, related equipment and appurtenances;
  - d. to inspect the practices, procedures, or operations required by the conditions of this Approval; and
  - e. to sample and monitor for the purposes of assessing compliance with the terms and conditions of this Approval or the EPA, the OWRA, the PA, the SDWA or the NMA.

## **9. Information and Record Retention**

1. Except as authorized in writing by the Director, all records required by this Approval shall be retained at the Site for a minimum of two (2) years from their date of creation.
2. The Owner shall retain all documentation listed in Schedule 1 for as long as this Approval is valid.
3. All monthly summary reports of waste records collected are to be kept at the Site until they are included in the Annual Report.
4. The Owner shall retain employee training records as long as the employee is working at the Site.
5. The Owner shall make all of the above documents available for inspection upon request of Ministry staff.
6. The receipt of any information by the Ministry or the failure of the Ministry to prosecute any person or to require any person to take any action under this Approval or under any statute, regulation or other legal requirement, in relation to the information, shall not be construed as:
  - a. an approval, waiver, or justification by the Ministry of any act or omission of any person that contravenes any term or condition of this Approval or any statute, regulation or other legal requirement; or
  - b. acceptance by the Ministry of the information's completeness or

accuracy.

7. The Owner shall ensure that a copy of this Approval, in its entirety and including all its Notices of Amendment, and documentation listed in Schedule 1, are retained at the Site at all times.
8. Any information related to this Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, RSO 1990, CF-31.

#### **10. Operation**

1. The Site shall be operated and maintained at all times including management and disposal of all waste, in accordance with the EPA, Reg. 347, and the conditions of this Approval. At no time shall the discharge of a contaminant that causes or is likely to cause an adverse effect be permitted.

#### **11. Signs**

1. The Owner shall install and maintain a sign at the entrance to the Site. The sign shall be visible and readable from the main road leading to the Site. The following information shall be included on the sign:
  - a. the name of the Site and Owner;
  - b. the number of the Approval;
  - c. the name of the Operator;
  - d. the normal hours of operation;
  - e. the allowable and prohibited waste types;
  - f. the telephone number to which complaints may be directed;
  - g. a warning against unauthorized access;
  - h. a twenty-four (24) hour emergency telephone number (if different from above); and
  - i. a warning against dumping outside the Site.

#### **12. Vermin, Vectors, Dust, Litter, Odour, Noise and Traffic**

1. The Site shall be operated and maintained such that the vermin, vectors, dust, litter, odour, noise and traffic do not create a nuisance.

#### **13. Burning Waste Prohibited**

1. Burning of waste at the Site is prohibited.

#### **14. Site Access**

1. Waste shall only be accepted during the following time periods subject to the following conditions:

- a. The maximum hours of operation shall be seven days a week during daylight hours;
  - b. This Site shall not be open to the public for waste disposal. If during an emergency, the Site needs to be opened to the public, the Owner shall notify the District Manager in advance; and
  - c. No On-site landfilling activities (compaction, placement of daily cover etc.) and waste grinding shall occur between 7 pm and 7 am.
2. With the prior written approval from the District Manager, the time periods may be extended to accommodate seasonal or unusual quantities of waste.

#### **15. Site Security**

1. No waste shall be received, landfilled or removed from the Site unless a site supervisor or an attendant is present and supervises the operations during operating hours. The Site shall be closed when a site attendant is not present to supervise landfilling operations.
2. The Site shall be operated and maintained in a safe and secure manner. During non-operating hours, the Site entrance and exit gates shall be locked and the Site shall be secured against access by unauthorized persons.

#### **16. Employee Training**

1. A training plan for all employees that operate any aspect of the Site shall be developed and implemented by the Owner or the Operator. Only Trained Personnel shall operate any aspect of the Site or carry out any activity required under this Approval.

#### **17. Complaints Response Procedure**

1. If at any time the Owner receives complaints regarding the operation of the Site, the Owner shall respond to these complaints according to the following procedure:
  - a. The Owner shall record and number each complaint, either electronically or in a log book, and shall include the following information: the nature of the complaint, the name, address and the telephone number of the complainant if the complainant will provide this information and the time and date of the complaint;
  - b. The Owner, upon notification of the complaint, shall initiate appropriate steps to determine possible causes of the complaint, proceed to take the necessary actions to eliminate the cause of the complaint and forward a formal reply to the complainant; and
  - c. The Owner shall complete and retain on-site a report written within one (1) week of the complaint date, listing the actions taken to resolve the

complaint and any recommendations for remedial measures, and managerial or operational changes to reasonably avoid the recurrence of similar incidents.

## 18. **Emergency Response**

1. All Spills as defined in the EPA shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.
2. In addition, the Owner shall submit, to the District Manager a written report within three (3) business days of the emergency situation, outlining the nature of the incident, remedial measures taken, handling of waste generated as a result of the emergency situation and the measures taken to prevent future occurrences at the Site.
3. All wastes resulting from an emergency situation shall be managed and disposed of in accordance with Reg. 347.
4. All equipment and materials required to handle the emergency situations shall be:
  - a. kept on hand at all times that waste landfilling and/or handling is undertaken at the Site; and
  - b. adequately maintained and kept in good repair.
5. The Owner shall ensure that the emergency response personnel are familiar with the use of such equipment and its location(s).

## 19. **Daily Log Book**

1. A daily log shall be maintained in written or electronic format and shall include the following information:
  - a. the type, date and time of arrival, hauler, and quantity of all waste and cover material received at the Site;
  - b. the area of the Site in which waste disposal operations are taking place;
  - c. a record of litter collection activities and the application of any dust suppressants;
  - d. a record of the daily inspections; and
  - e. a description of any out-of-service period of any control, treatment, disposal or monitoring facilities, the reasons for the loss of service, and action taken to restore and maintain service.
2. Any information requested by the Director or a Provincial Officer concerning the Site and its operation under this Approval, including but not limited to any

records required to be kept by this Approval shall be provided to the Ministry, upon request.

## **20. Daily Inspections and Log Book**

1. An inspection of the entire Site and all equipment on the Site shall be conducted each day the Site is in operation to ensure that: the Site is secure; that the operation of the Site is not causing any nuisances; that the operation of the Site is not causing any adverse effects on the environment and that the Site is being operated in compliance with this Approval. Any deficiencies discovered as a result of the inspection shall be remedied immediately, including temporarily ceasing operations at the Site if needed.
2. A record of the inspections shall be kept in a daily log book that includes:
  - a. the name and signature of person that conducted the inspection;
  - b. the date and time of the inspection;
  - c. the list of any deficiencies discovered;
  - d. the recommendations for remedial action; and
  - e. the date, time and description of actions taken.
3. A record shall be kept in the daily log book of all refusals of waste shipments, the reason(s) for refusal, and the origin of the waste, if known.

## **21. Annual Report**

1. A written report on the development, operation and monitoring of the Site, shall be completed annually (Annual Report). The Annual Report shall be submitted to the District Manager, by March 31st of the year following the period being reported upon.
2. The Annual Report shall include but not be limited to the following information:
  - a. the results and an interpretive analysis of the results of all leachate, groundwater, surface water and landfill gas monitoring, including an assessment of the need to amend the monitoring programs;
  - b. an assessment of the operation and performance of all engineered facilities, the need to amend the design or operation of the Site, and the adequacy of and need to implement the contingency plans;
  - c. site plans showing the existing contours of the Site; areas of landfilling operation during the reporting period; areas of intended operation during the next reporting period; areas of excavation during the reporting period; the progress of final cover, vegetative cover, and any intermediate cover application; facilities existing, added or removed

- during the reporting period; and site preparations and facilities planned for installation during the next reporting period;
- d. calculations of the volume of waste, daily and intermediate cover, and final cover deposited or placed at the Site during the reporting period and a calculation of the total volume of Site capacity used during the reporting period;
  - e. a calculation of the remaining capacity of the Site and an estimate of the remaining Site life;
  - f. a summary of the monthly and total annual quantity of waste received at the Site and transferred from the Site;
  - g. a summary of any complaints received and the responses made;
  - h. a discussion of any operational problems encountered at the Site and corrective action taken;
  - i. any changes anticipated/required to the Design and Operations Report and the Closure Plan that have been approved by the Director since the last Annual Report;
  - j. a report on the status of all monitoring wells and a statement as to compliance with Reg. 903; and
  - k. any other information with respect to the Site which the District Manager may require from time to time.

## **22. Approved Waste Types**

1. The Site shall only receive only non-hazardous solid Construction and Demolition and Bulky Waste.
2. The Site may receive non-hazardous solid domestic waste from within the Township of Greater Madawaska, on a temporary basis, only with prior written authorization from the District Manager.
3. Prior notification of 48-hours must be provided to the District Manager for receipt of any domestic waste.
4. The Owner shall develop and implement a program to inspect waste to ensure that the waste received at the Site is of a type approved for acceptance under this Approval.
5. The Owner shall ensure that all loads of waste are properly inspected by Trained personnel prior to acceptance at the Site and that the waste vehicles are directed to the appropriate areas for disposal or transfer of the waste. The Owner shall notify the District Manager, in writing, of load rejections at the Site within one (1) business day from their occurrence.

## **23. Capacity**

1. The maximum volumetric capacity of the Site, consisting of the waste, daily cover and intermediate cover, but excluding the final cover is 73,185 cubic metres.
2. Proposed expansion of the landfilling area by 0.58 ha providing an additional capacity of 38,935 cubic meters is hereby approved.

## **24. Service Area**

1. Only waste that is generated within the boundaries of the Township of Greater Madawaska may be accepted at the Site.

## **25. Waste Processing**

1. The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
2. The Owner shall ensure that construction and demolition and bulky waste is stored and processed within the landfill footprint, as shown in Drawing 2 of item 11 of Schedule 1.

## **26. Landfill Cover**

1. Alternative materials to soil may be used as intermediate cover material, based on an application with supporting information and applicable fee for a trial use or permanent use, submitted by the Owner to the Director, copied to the District Manager and as approved by the Director via an amendment to this Approval. The alternative material shall be non-hazardous according to Reg. 347 and will be expected to perform at least as well as soil in relation to the following functions:
  - a. Control of blowing litter, odours, dust, landfill gas, gulls, vectors, vermin and fires;
  - b. Provision for an aesthetic condition of the landfill during the active life of the Site;
  - c. Provision for vehicle access to the active tipping face; and
  - d. Compatibility with the design of the Site for groundwater protection, leachate management and landfill gas management.

## **27. Approved Alternative Daily Cover for the Site**

1. The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 27.2:
  - a. leaf and yard waste mixed with soil cover and/or wood chips;
  - b. composted or partially-composted leaf and yard waste;

- c. asphalt shingles;
- d. clean wood chips;
- e. contaminated soil - non-hazardous; and
- f. processed C&D and bulky waste materials.

2. Cover material shall be applied as follows:

- a. In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, consisting of a minimum of 0.15 m of top soil.
- b. Intermediate Cover - In areas where landfilling has been temporarily discontinued for six (6) months or more after disposal of domestic waste in the area, a minimum thickness of 300 millimetre of soil cover or an approved thickness of alternative cover material shall be placed; and
- c. Final Cover - In areas where landfilling has been completed to final contours, a minimum 600 millimetre thick layer of soil of medium permeability and 150 millimetres of top soil (vegetative cover) shall be placed. Fill areas shall be progressively completed and rehabilitated as landfill development reaches final contours.

## **28. Landfill Gas Monitoring**

- 1. The Owner shall ensure that any buildings or structures at the Site contain adequate ventilation systems to relieve any possible landfill gas accumulation to prevent methane concentration reaching the levels within its explosive range. Routine monitoring for explosive methane gas levels shall be conducted in all buildings or structures at the Site, especially enclosed structures which at times are occupied by people.

## **29. Compliance (Surface Water and Groundwater)**

- 1. The Site shall be operated in such a way as to ensure compliance with the following:
  - a. Reasonable Use Guideline B-7 for the protection of the groundwater at the Site;
  - b. Provincial Water Quality Objectives included in the July 1994 publication entitled Water Management Policies, Guidelines, Provincial Water Quality Objectives, as amended from time to time or limits set by the Regional Director, for the protection of the surface water at and off the Site; and
  - c. Ontario Drinking Water Quality Standards

## **30. Surface Water and Groundwater Monitoring**

1. The Owner shall monitor surface water and ground water in accordance with the monitoring programs outlined in Schedules 2 and 3.
2. A certified Professional Geoscientist or Engineer possessing appropriate hydrogeologic training and experience shall execute or directly supervise the execution of the groundwater monitoring and reporting program.

### **31. Groundwater Wells and Monitors**

1. The Owner shall ensure that all groundwater monitoring wells which form part of the monitoring program are properly capped, locked and protected from damage.
2. Where landfilling is to proceed around monitoring wells, suitable extensions shall be added to the wells and the wells shall be properly re-secured.
3. Any groundwater monitoring well included in the on-going monitoring program that is damaged shall be assessed, repaired, replaced or decommissioned by the Owner, as required.
4. The Owner shall repair or replace any monitoring well which is destroyed or in any way made to be inoperable for sampling such that no more than one regular sampling event is missed.
5. All monitoring wells which are no longer required as part of the groundwater monitoring program, and have been approved by the Director for abandonment, shall be decommissioned by the Owner, as required, in accordance with Reg. 903, to prevent contamination through the abandoned well. A report on the decommissioning of the well shall be included in the Annual Report for the period during which the well was decommissioned.

### **32. Trigger Mechanisms and Contingency Plans**

1. The Owner shall establish the groundwater trigger mechanism and contingency plan, as described in Section 7.2 of the Design and Operations Plan, Item 11 of Schedule 1.
2. Within one (1) year from the date of this Approval, the Owner shall submit to the District Manager, details of a surface water trigger mechanism and a contingency plan to be implemented in the event that the surface water or groundwater quality exceeds any trigger mechanism.
3. In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans.

4. If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:
  - a. The Owner shall notify the District Manager, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;
  - b. Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the Owner to the Director for approval; and
  - c. The contingency measures shall be implemented by the Owner upon approval by the Director.
5. The Owner shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, are approved in advance by the Director via an amendment to this Approval.

### **33. Changes to the Monitoring Programs, Trigger Mechanisms and Contingency Plans**

1. The Owner may request to make changes to the monitoring program(s), trigger mechanisms and/or contingency plan to the District Manager in accordance with the recommendations of the Annual Report. The Owner shall make clear reference to the proposed changes in a separate letter that shall accompany the Annual Report.
2. Within fourteen (14) days of receiving the written correspondence from the District Manager confirming that the District Manager is in agreement with the proposed changes to the environmental monitoring program, trigger mechanisms and/or contingency plans, the Owner shall forward a letter identifying the proposed changes and a copy of the correspondences from the District Manager and all other correspondences and responses related to the changes, to the Director requesting the Approval be amended to approve the proposed changes to the environmental monitoring plan prior to implementation.

### **34. Closure Plan**

1. At least two (2) years prior to closure, the Owner shall submit to the Director for approval, with copies to the District Manager, a detailed Site closure plan pertaining to the termination of landfilling operations at this Site, post-closure inspection, maintenance and monitoring, and end use. The plan shall include the following as a minimum but are not limited to:
  - a. a plan showing Site appearance after closure;
  - b. a description of the proposed end use of the Site, that shall include a

- discussion on the Environmental Assessment commitments (if applicable) to dedicate portion of the lands within the Site that are not required for site post-closure operations and monitoring, to be used for community recreational purpose;
- c. a description of how pollinator friendly plants were considered in the final vegetative cover for the landfill and/or in the landscaping within the Site;
  - d. a description of the procedures for closure of the Site:
    - i. advance notification of the public of the landfill closure;
    - ii. posting a sign at the Site entrance indicating the landfill is closed and identifying any alternative waste disposal arrangements;
    - iii. completion, inspection and maintenance of the final cover and landscaping;
    - iv. site security;
    - v. removal of unnecessary landfill-related structures, buildings and facilities; and
    - vi. final construction of any control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - e. a schedule indicating the time-period for implementing sub-conditions i to vi above.
  - f. descriptions of the procedures for post-closure care of the Site, including:
  - g. operation, inspection and maintenance of the control, treatment, disposal and monitoring facilities for leachate, groundwater, surface water and landfill gas;
  - h. record keeping and reporting; and
  - i. complaint contact and response procedures;
  - j. an assessment of the adequacy of and need to implement the contingency plans for leachate and methane gas; and
  - k. an updated estimate of the Contaminating Life Span of the Site, based on the results of the monitoring programs to date.
2. The Site shall be closed in accordance with the closure plan as approved by the Director.

## **Schedule 1**

## Supporting Documentation

1. The Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 11, 2001 as signed by Cathy Reddy, Clerk Treasurer of the Township of Greater Madawaska.
2. The letter dated January 31, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. providing the purpose and basis for this amendment.
3. The letter dated March 1, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. requesting that the proposed amendment be split into two parts, one for the service area change and another for the site development aspects as well as the reasons for this request.
4. Township of Greater Madawaska, Black Donald Waste Disposal Site, Site Development and Operations Plan, Prepared by Jp2g Consultants Inc. dated January 2001.
5. Letter and accompanying documents dated November 13, 2001, from Brian Whitehead, Jp2g Consultants Inc., addressed to John Kaasalainen, MOE.
6. Letter dated March 13, 2002, from Nafiseh Pourhassani, P. Eng., MOE, addressed to Cathy Reddy, The Corporation of the Township of Greater Madawaska.
7. Report entitled "Design, Operations and Development Plan, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, Ontario", prepared by Greenview Environmental Management Limited, dated December 22, 2010.
8. Letter dated July 30, 2012, from Dan Hagan, Greenview Environmental Management, to Lynda Mulcahy, MOE, RE: Application for Approval of Waste Disposal Sites, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, MOE reference number: 3866-CTJ5V, with responses to waste review comments and questions.
9. e-mail from Dan Hagan, Greenview Environmental Management Limited, to Lynda Mulcahy, MOE, sent August 22, 2012, 9:57am, Subject: RE TGM - Black Donald WDS - Application for Approval of Waste Disposal Sites - MOE Request for Additional Information (MOE Reference Number: 3866-8CTJ5V)
10. Environmental Compliance Approval Application dated May 27, 2025 and signed by Leonard Emon, Facilities and Environment Manager, the Corporation of the Township of Greater Madawaska, including the attached supporting documentation.

11. Report titled "Design and Operations Report, Black Donald Waste Disposal Site, Township of Greater Madawaska" dated May 28, 2025 and prepared by Jp2g Consultants Inc.

**Schedule 2  
Surface Water Monitoring Program**

Station ID	Frequency	Analytical Parameters
SW-2, SW-4, SW-5, SW-8, SW-9 1 QA/QC	Three Times (Spring, Summer, Fall)	<ul style="list-style-type: none"> <li>- Major and minor ions (Ca, Na, K, Cl, total phosphorous, Ba, B, Mg, SO4)</li> <li>- Trace metals (Fe, Mn, Cu, Cd, Cr, Co, Sr, Zn, As, Pb, Hg) with detection limits to PWQO</li> <li>- Nitrogen species (NH3, TKN)</li> <li>- General parameters (pH, Conductivity, alkalinity, COD, Total suspended solids, phenols, total dissolved solids, hardness, biochemical oxygen demand)</li> <li>- Field measurements of dissolved oxygen, pH, conductivity, water temperature, and Un-ionized ammonia (calculation)</li> </ul>

**Schedule 3  
Groundwater Monitoring Program**

Station ID	Frequency	Analytical Parameters
Groundwater BH1, BH2, BH4, MW08-5, MW08-6, MW08-7S, MW23-7D, MW23-8S, MW23-8D, 1 QA/QC	Twice per year (Spring, Fall)	<ul style="list-style-type: none"> <li>measure water levels</li> <li>sample and analyse for the following: <ul style="list-style-type: none"> <li>- Major and minor ions (Ca, Na, Cl, SO4, B, K, Mg, Ba)</li> <li>- Trace metals (Fe, Mn, Cu, Sr, Al, Cd, Cr, Co, Si, Zn, As, Pb, Hg)</li> <li>- Nitrogen species (NO3, NO2, NH3, TKN)</li> <li>- General parameters (pH, Conductivity, alkalinity, COD, phenols, total dissolved solids, phosphorous, hardness, dissolved organic carbon)</li> <li>- Field measurements of pH, conductivity and water temperture</li> <li>- EPA 624 Volatile Organic Compounds VOC sample collected every Five years from BH1. Next VOCs sampling will be in Spring 2028</li> </ul> </li> </ul>

BH1	Once every 5 years (Spring)	VOCs - EPA 624
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*The reasons for the imposition of these terms and conditions are as follows:*

- The reason for conditions 1.1, 1.2, 3.1, 3.2, 3.3, 3.4, 4.1, 5.1, 5.2, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 and 9.7 is to clarify the legal rights and responsibilities of the Owner and Operator under this Approval.
- The reasons for condition 2.1 are to ensure that the Site is designed, operated, monitored and maintained in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider.
- The reasons for condition 6.1 are to ensure that the Site is operated under the corporate name which appears on the application form submitted for this approval and to ensure that the Director is informed of any changes.
- The reasons for condition 6.2 are to restrict potential transfer or encumbrance of the Site without the approval of the Director and to ensure that any transfer of encumbrance can be made only on the basis that it will not endanger compliance with this Approval.
- The reason for condition 6.3 is to ensure that the successor is aware of its legal responsibilities.
- The reasons for conditions 7.1, 7.2 and 7.3 are that the Part II.1 Director is an individual with authority pursuant to Section 197 of the Environmental Protection Act to require registration on title and provide any person with an interest in property before dealing with the property in any way to give a copy of the Approval to any person who will acquire an interest in the property as a result of the dealing.
- The reason for condition 8.1 is to ensure that appropriate Ministry staff has ready access to the Site for inspection of facilities, equipment, practices and operations required by the conditions in this Approval. This condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Act, the OWRA, the PA, the NMA and the SDWA.
- Condition 9.8 has been included in order to clarify what information may be subject to the Freedom of Information Act.
- The reasons for conditions 10.1, 12.1 and 20.1 are to ensure that the Site is operated,

inspected and maintained in an environmentally acceptable manner and does not result in a hazard or nuisance to the natural environment or any person.

- The reason for condition 11.1 is to ensure that users of the Site are fully aware of important information and restrictions related to Site operations and access under this Approval.
- The reasons for condition 13.1 are open burning of municipal waste is unacceptable because of concerns with air emissions, smoke and other nuisance effects and the potential fire hazard.
- The reasons for condition 14.1 and 14.2 are to specify the hours of operation for the landfill site and a mechanism for amendment of the hours of operation, as required.
- The reasons for condition 15.1 and 15.2 are to ensure that the Site is supervised by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person and to ensure the controlled access and integrity of the Site by preventing unauthorized access when the Site is closed and no site attendant is on duty.
- The reason for condition 16.1 is to ensure that the Site is supervised and operated by properly trained staff in a manner which does not result in a hazard or nuisance to the natural environment or any person.
- The reason for condition 17.1 is to ensure that any complaints regarding landfill operations at this Site are responded to in a timely and efficient manner.
- Conditions 18.1 and 18.2 are included to ensure that emergency situations are reported to the Ministry to ensure public health and safety and environmental protection.
- Conditions 18.3, 18.4 and 18.5 are included to ensure that emergency situations are handled in a manner to minimize the likelihood of an adverse effect and to ensure public health and safety and environmental protection.
- The reason for conditions 19.1 and 19.2 is to ensure that accurate waste records are maintained to ensure compliance with the conditions in this Approval (such as fill rate, site capacity, record keeping, annual reporting, and financial assurance requirements), the EPA and its regulations.
- The reason for conditions 20.2 and 20.3 is to ensure that detailed records of Site inspections are recorded and maintained for inspection and information purposes.

- The reasons for conditions 21.1 and 21.2 are to ensure that regular review of site development, operations and monitoring data is documented and any possible improvements to site design, operations or monitoring programs are identified. An Annual Report is an important tool used in reviewing site activities and for determining the effectiveness of site design.
- The reason for conditions 22.1, 22.2, 22.3, 22.4, 22.5, 23.1, 23.2 and 24.1 is to specify the approved areas from which waste may be accepted at the Site and the types and amounts of waste that may be accepted for disposal at the Site, based on the Owner's application and supporting documentation.
- Conditions 25.1 and 25.2 are added to ensure that storage and processing of construction and demolition wastes are carried out as described in the updated Design, Operations and Development plan (item 7, Schedule 1), and are carried out in an environmentally-safe manner.
- Condition 26.1 is to provide the Owner the process for getting the approval for alternative daily and intermediate cover material.
- The reasons for conditions 27.1 and 27.2 are to ensure that daily/weekly and intermediate cover are used to control potential nuisance effects, to facilitate vehicle access on the Site, and to ensure an acceptable site appearance is maintained. The proper closure of a landfill site requires the application of a final cover which is aesthetically pleasing, controls infiltration, and is suitable for the end use planned for the Site.
- Reasons for condition 28.1 are to ensure that landfill gas is monitored and all buildings at the Site are free of any landfill gas accumulation, which due to a methane gas component may be explosive and thus create a danger to any persons at the Site.
- Condition 29.1 is included to provide the groundwater and surface water limits to prevent water pollution at the Site.
- Conditions 30.1 and 30.2 are included to require the Owner to demonstrate that the Site is performing as designed and the impacts on the natural environment are acceptable. Regular monitoring allows for the analysis of trends over time and ensures that there is an early warning of potential problems so that any necessary remedial/contingency action can be taken.
- Conditions 31.1, 31.2, 31.3, 31.4 and 31.5 are included to ensure the integrity of the groundwater monitoring network so that accurate monitoring results are achieved, and the natural environment is protected.

- Conditions 32.1, 32.2, 32.3, 32.4 and 32.5 are added to ensure the Owner has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination at the Site's compliance point.
- Conditions 33.1 and 33.2 are included to streamline the approval of the changes to the monitoring plans and trigger mechanisms and contingency plans.

## **CLOSURE PLAN**

- The reasons for conditions 34.1 and 34.2 are to ensure that final closure of the Site is completed in an aesthetically pleasing manner, in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.

### **Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). A411902 issued on March 27, 1980**

In accordance with Section 139 of the *Environmental Protection Act*, you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act*, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar\*  
Ontario Land Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5  
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1  
of the *Environmental Protection Act*  
Ministry of the Environment, Conservation and  
Parks  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5

**\* Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or [www.oltt.gov.on.ca](http://www.oltt.gov.on.ca)**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act*.

DATED AT TORONTO this 27th day of January,  
2026

Mohsen Keyvani, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

RM/  
c: District Manager, MECP Ottawa  
Kevin Mooder P. Eng. and Andrew Buzza P. Geo., Jp2g Consultants Inc.

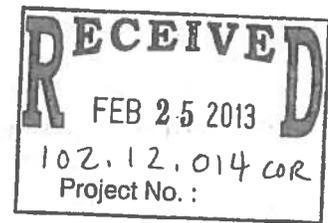
**AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A411902

Notice No. 3

Issue Date: January 24, 2013

The Corporation of the Township of Greater Madawaska  
1101 Francis St  
Post Office Box, No. 180  
Greater Madawaska, Ontario  
K0J 1H0



Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Rd  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Approval No. A411902 issued on March 27, 1980, and amended on October 12, 2001 and July 12, 2002 for the use and operation of a 1.2 hectare waste disposal site, as follows:*

This Notice of Amendment updates the Approval to reflect current site operations, approves alternative daily cover and the Site Trigger and Contingency Plan.

**The following definitions are added:**

"Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A".

"Construction and Demolition and Bulky Waste" or "C&D waste" means wastes resulting from construction, and includes the following: asphalt shingles, mattresses, furniture, carpet, tree stumps, drywall, wallboard, wood (painted and unpainted).

**The following Conditions are revoked and replaced:**

- (15) (a) The Owner shall develop the Site in accordance with the Site Design, Operations and Development Plan, dated December 22, 2010, item 7 of Schedule "A".
- (b) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site

personnel, and the natural environment.

- (16) (a) The Site shall only receive only non-hazardous solid Construction and Demolition and Bulky Waste, and leaf and yard waste, generated from within the Township of Greater Madawaska.
- (b) The Site may receive non-hazardous solid domestic waste from within the Township of Greater Madawaska, on a temporary basis, only with prior written authorization from the District Manager.
- (c) Prior notification of 48-hours must be provided to the District Manager for receipt of any domestic waste.
- (23) The Owner shall conduct weekly inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, which are detected during these inspections shall be recorded in a log, and promptly corrected.
- (26) The Owner shall implement the Site surfacewater and groundwater monitoring program as described in Schedule "B" of this Approval.

#### **Site Trigger and Contingency Plan**

- (29) The Owner shall establish the surfacewater and groundwater trigger and contingency plan, as described in Section 6.2 of the Design, Development and Operations Plan, item 7 of Schedule "A".

#### **The following Conditions are added:**

##### **Waste Processing**

- (35) (a) The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
- (b) The Owner shall ensure that Construction and Demolition and Bulky Waste is stored and processed within the landfill footprint, as shown in Figure 6, Proposed Site Design, of item 7 of Schedule "A".

##### **Leaf and Yard**

- (36) (a) The Owner shall ensure that leaf and yard storage and composting is conducted as described in the Site Design, Operations and Development Plan, item 7 of Schedule "A".
- (b) A maximum of 1000 cubic metres of leaf and yard waste may be temporarily stored within the staging area.
- (c) Leaf and yard wastes shall be moved to the established composting area within three months of arrival

at the Site.

- (d) A maximum of 500 cubic metres of leaf and yard waste may be processed within the composting area at any time.
- (d) Composted leaf and yard waste may only be used as alternative daily cover at the Site, it may not be re-used by the public.

### **Cover**

(37)(a) The Owner shall ensure that cover material is applied at the Site as follows:

- Intermediate - Once every six (6) months, across the entire working face, and/or in areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 0.3 metre of soil or an approved thickness of alternative cover material shall be placed; and
  - Final -In areas where landfilling has been completed to final contours, a minimum of 0.6 metre thick layer of final cover soil shall be placed, followed by 0.15 metre of topsoil.
- (b) In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, consisting of a minimum of 0.15 m of soil.

### **Alternative Daily Cover**

- (c) The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 37 (a):
- leaf and yard waste mixed with soil cover and/or wood chips;
  - composted or partially-composted leaf and yard waste;
  - asphalt shingles;
  - clean wood chips;
  - contaminated soil - non-hazardous;
  - processed C&D and bulky waste materials.

## Schedule "A"

The following items are added to Schedule "A".

7. Report entitled "Design, Operations and Development Plan, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, Ontario", prepared by Greenview Environmental Management Limited, dated December 22, 2010.
8. Letter dated July 30, 2012, from Dan Hagan, Greenview Environmental Management, to Lynda Mulcahy, MOE, RE: Application for Approval of Waste Disposal Sites, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, MOE reference number: 3866-CTJ5V, with responses to waste review comments and questions.
9. e-mail from Dan Hagan, Greenview Environmental Management Limited, to Lynda Mulcahy, MOE, sent August 22, 2012, 9:57am, Subject: RE TGM - Black Donald WDS - Application for Approval of Waste Disposal Sites - MOE Request for Additional Information (MOE Reference Number: 3866-8CTJ5V)

Schedule "B" is added to the Approval

Site Groundwater and Surfacewater Monitoring Program

Location	Frequency	Parameters
<p><u>Groundwater</u> BH1, BH2, BH3, BH4, MW08-5, MW08-6, MW08-7</p> <p>1 QA/QC</p>	<p>Twice per year (Spring, Fall)</p>	<p>Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc</p> <p>field measurements (pH, conductivity, temperature), water levels</p>
<p>BH1</p>	<p>Once every 5 years (Spring)</p>	<p>VOCs - EPA 624</p>
<p><u>Surface Water</u> SW-3, SW-4, SW-5, SW-6</p> <p>1 QA/QC</p>	<p>Three Times (Spring, Summer, Fall)</p>	<p>Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, nitrite, phenols, potassium, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc, TSS</p> <p>Field Measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation))</p>

The reasons for this amendment to the Approval are as follows:

Condition 15 was revised to reflect the updated Design, Operations and Development plan for the Site, and to ensure the Site does not cause nuisance or impacts.

Condition 16 was revised to clarify the currently-approved wastes that may be received at the Site.

Condition 23 was revised to update the Site inspection requirement.

Condition 26 was revised to reflect the updated Site monitoring programs.

Condition 29 was added to approve the Site trigger and contingency plan.

Condition 35 is added to ensure that storage and processing of construction and demolition wastes are carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 36 is added to ensure that leaf and yard waste storage and composting is carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 37 is included to specify cover requirements for the Site, to ensure operations to not cause impacts or nuisance.

Schedule B was added to the Approval to include the updated Site monitoring program.

**This Notice shall constitute part of the approval issued under Approval No. A411902 dated March 27, 1980**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;

7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

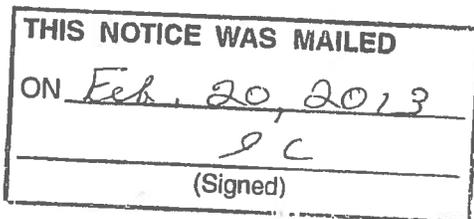
AND

The Director appointed for the purposes of  
Part II.1 of the Environmental Protection Act  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 24th day of January, 2013



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Tesfaye Gebrezghi, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

LM/

c: District Manager, MOE Ottawa  
Tyler H. Peters, Greenview Environmental Management Limited ✓

K. H. H. H.  
SIRE BM C 03 250 ✓



Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A411902  
Notice No. 2

The Corporation of the Township of Greater Madawaska  
1101 Francis Street  
Bagot, Blythfield And Brougham, Ontario  
K0J 1H0



Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Road  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A411902 issued on March 27, 1980, and amended on October 22, 2001 for submission of development and operations report as per Condition No. (14) of October 22, 2001 amendment, as follows:*

**Condition No. (14) is hereby revoked.**

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**SITE OPERATIONS:**

- (15) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site personnel, and the natural environment, all in accordance to the Development and Operations Plan, Items 4, 5 and 6 of Schedule "A".
- (16) The Site shall only receive non-hazardous municipal waste that is generated from within the Township of Greater Madawaska.
- (17) The normal daily hours of operation for receiving waste at the Site are 7 am to 9 pm.
- (18) The total volumetric capacity of the Site, including waste, daily, interim and final cover, is 46,785 cubic meters.
- (19) The Owner shall ensure that there is no burning of waste, trees, brush and or clean wood piles at the Site.
- (20) All incoming waste shall be inspected prior to being received at the Site to ensure that the Site is approved to accept such a waste.

- (21) The Owner shall ensure that all wastes at the Site are managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- (22) The Owner shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g. spills, maintenance work) in a record book located at the Site.
- (23) The Owner shall conduct daily inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition all the times. Any deficiencies, which might negatively impact the environment, detected during these inspections shall be recorded in a log, and promptly corrected.
- (24) (a) A sign shall be posted in a prominent location at the entrance of the Site stating the hours of operation, the Owner's name, staff contact and telephone number to call in the event of an emergency or any complaints;
- (b) Complaints received from the public or adjacent neighbours shall be recorded in a log book created and maintained for this purpose.
- (25) (a) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site;
- (b) All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416-325-3000 or 1-800-268-6060, and the Municipality, and shall be recorded in a log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences; and
- (c) All waste material resulting from a spill or process upset, shall be managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.

#### **MONITORING AND REPORTING REQUIREMENTS**

- (26) Surface and groundwater monitoring shall be conducted in accordance to Section 9.1 and 9.2, Item 4 of Schedule "A" provided that the following conditions are met:
- (a) Prior to the development of the Site, the Owner shall establish that the seasonal high water table is at least one meter below the proposed excavation bottom;
- (b) In addition to the parameters listed in Table 2, Section 9.1, Item 4 of Schedule "A", Nitrate and Ammonia shall be included for groundwater monitoring; and
- (c) The background groundwater monitoring well (BH-1) shall be established further away from the waste pile, and one groundwater monitoring well shall be established at the midway point of the Site's southern boundary.
- (27) By March 31, 2003, and on an annual basis thereafter, the Owner shall submit to the District Manager, an annual report on the development, operation and monitoring of the Site, including any

recommendations or changes to the annual monitoring program, in accordance to Section 10.1, Item 4 of Schedule "A".

- (28) A written approval from the District Manager shall be obtained for any changes to the annual monitoring program prior to these changes being implemented.
- (29) (a) In accordance to the Phased Plan outlined in Section 9.1, Item 4 of the Schedule "A", and by March 31, 2003, included in the annual monitoring report, the Owner shall submit to the District Manager for written approval, trigger levels for initiating investigative activities into the cause of an increase in contaminant concentrations as established by the surface and ground water monitoring programs along with appropriate investigative activities and contingency measures;
- (b) Within six (6) months from exceedance of the established trigger levels, the Owner shall submit to the Director for approval, the design of appropriate contingency measures and provide detailed plans, specifications and description for the design, operation and maintenance for the appropriate remedial actions; and
- (c) The remedial actions shall be implemented within nine months from the approval by the Director.

#### **BUFFER AREA AND CONTAMINANT ATTENUATION ZONE**

- (30) Within 60 days of issuance of this Amendment, the Owner shall arrange for a legal survey of the Site and required buffer area, as specified in Items 4 and 5 of Schedule A, to be conducted by an Ontario Land Surveyor registered under the Surveyors Act.
- (31) (a) By June 30, 2003, the Owner shall acquire the lands required for the contaminant attenuation zone in accordance to Figure 2 and Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other methods for bringing the Site into compliance with respect to Guideline B-7, Reasonable Use Criteria and other applicable Ministry Regulations, Guidelines and Policies.
- (b) (i) By June 30, 2003, the Owner shall acquire lands required for the 30 meter southern and western buffer areas in accordance to Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other Site development methods to allow for a 30 meter southern and western buffer within the current Site boundary.
- (ii) The Owner shall not commence waste disposal activities on the southern and western Site boundary until Condition (31)(b)(i) has been met.
- (c) Within 30 days of purchase of lands noted in Condition (31)(a) and (31)(b), the Owner shall submit to the Director an updated legal survey of these lands for addition of these lands to the Certificate of Approval.

- (32) The Owner shall ensure that no wastes are deposited within the designated 15 meter northern buffer area and the 30 meter eastern buffer area after the date of issuance of this Certificate of Approval.

#### **PROHIBITION AND REGISTRATION ON TITLE**

- (33) Pursuant to Section 197 of the EPA neither the Owner nor any person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Certificate to each person acquiring an interest in the Site as a result of the dealing.

(a) The Owner shall:

(i) Within sixty (60) calendar days of the date of this Certificate, submit to the Director for the Director's signature two (2) copies of a completed Certificate of Prohibition containing a registerable description of the Site, in accordance with Form 1 of O. Reg. 14/92 (Document General- Form 4- Land Registration Reform Act); and

(ii) Within ten (10) calendar days of receiving the Certificate of Prohibition signed by the Director, register the Certificate of Prohibition in the appropriate Land Registry Office on title to the Site and submit to the Director immediately following registration the duplicate registered copy.

#### **SITE CLOSURE**

- (34) Within 2 years prior to the Site reaching its final capacity specified in this Amendment, the Owner shall submit to the Director, for approval, a plan for closure, post closure monitoring and maintenance of the Site. The plan shall include but not be limited to the final contours of the Site, completion, inspection and maintenance of the final cover, an assessment of the adequacy of the monitoring and contingency plans and any other post closure monitoring and care.

**The following items are added to SCHEDULE "A":**

4. Township of Greater Madawaska, Black Donald Waste Disposal Site, Site Development and Operations Plan, Prepared by Jp2g Consultants Inc. dated January 2001.

5. Letter and accompanying documents dated November 13, 2001, from Brian Whitehead, Jp2g Consultants Inc., addressed to John Kaasalainen, MOE.

6. Letter dated March 13, 2002, from Nafiseh Pourhassani, P. Eng., MOE, addressed to Cathy Reddy, The Corporation of the Township of Greater Madawaska.

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A411902 dated March 27, 1980 and amended on October 22, 2001.**

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

- 1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
- 2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

- 3. The name of the appellant;
- 4. The address of the appellant;
- 5. The Certificate of Approval number;
- 6. The date of the Certificate of Approval;
- 7. The name of the Director;
- 8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*  
Environmental Review Tribunal  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

The above noted waste disposal site is approved under Section 39 of the *Environmental Protection Act*.

DATED AT TORONTO this 12th day of July, 2002

THIS NOTICE WAS MAILED  
ON July 15 / 2002  
J.C.  
(Signed)



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

NP/

- c: District Manager, MOE Ottawa District Office
- Andrew Polley, MOE, Ottawa District Office ✓
- Bruce Harman, Lakefield Research Ltd.

A. P... / F...  
Pls. establish trading of  
compliance dates. *EP*



Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A 411902  
Notice No. 1

Corporation of the Township of Greater Madawaska  
P.O. Box 180  
1101 Francis Street,  
Calabogie, Ontario  
K0J 1H0

OCT 25 2001  
OTTAWA

Site Location: Black Donald Waste Disposal Site  
Pt. Lot 9, Conc. 3, 34 Hydro Dam Road  
Geographical Township of Brougham  
Township of Greater Madawaska, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A 411902 issued on March 27, 1980 for an increase in the site service area to include the Township of Greater Madawaska, as follows:*

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**DEFINITIONS**

- (2) For the purpose of this Certificate of Approval, unless the contrary intention appears, the following words and phrases shall have the following meaning attributed to them:
  - 2.1 "Adverse Effect" is as defined in the Environmental Protection Act, R.S.O. 1990.
  - 2.2 "Applicant" and/or "Owner" means the Township of Greater Madawaska.
  - 2.3 "Certificate" means the Provisional Certificate of Approval No. A 411902, as amended from time to time, including all schedules attached to and forming part of the Certificate.
  - 2.4 "Crown" means Her Majesty the Queen in Right of Ontario.
  - 2.5 "Director" means the one or more persons who from time to time are so designated for the purpose of Part V of the Environmental Protection Act.
  - 2.6 "District Manager" means the District Manager of the Ministry's Ottawa District Office.
  - 2.7 "EPA" means the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended.
  - 2.8 "Ministry" and/or "MOE" means the Ontario Ministry of the Environment.
  - 2.9 "ODWS" means the Ontario Drinking Water Standards, as amended.
  - 2.10 "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, as amended.

- 2.11 "PWQO" means the Provincial Water Quality Objectives, as amended.
- 2.12 "Site" means the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule "A" of the Certificate and consisting of approximately a 1.2 hectare landfill site.
- 2.13 "Supporting Documentation" refers to the reports listed in Schedule "A" of the Certificate.

#### **GENERAL**

- (3) The requirements specified in this Provisional Certificate of Approval are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Provisional Certificate of Approval in no way abrogates the Applicant's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
- (4) The requirements of this Provisional Certificate of Approval are severable. If any requirement of this Provisional Certificate of Approval, or the application of any requirement of this Provisional Certificate of Approval to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Provisional Certificate of Approval shall not be affected in any way.
- (5) The Applicant shall ensure compliance with all the terms and conditions of this Provisional Certificate of Approval. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and is grounds for enforcement.
- (6) (a) The Applicant shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Provisional Certificate of Approval, including but not limited to, any records required to be kept under this Provisional Certificate of Approval; and
- (b) In the event the Applicant provides the Ministry with information, records, documentation or notification in accordance with this Provisional Certificate of Approval (for the purposes of this condition referred to as "Information"),
- (i) the receipt of Information by the Ministry;
  - (ii) the acceptance by the Ministry of the information's completeness or accuracy; or
  - (iii) the failure of the Ministry to prosecute the Applicant, or to require the Applicant to take any action, under this Provisional Certificate of Approval or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Applicant relating to the Information, amounting to

non-compliance with this Provisional Certificate of Approval or any statute or regulation.

- (7) The Applicant shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:
- (a) carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this Provisional Certificate of Approval relates; and,  
  
without restricting the generality of the foregoing, to:
    - (b) (i) enter upon the premises where the records required by the conditions of this Provisional Certificate of Approval are kept;
    - (ii) have access to and copy, at reasonable times, any records required by the conditions of this Provisional Certificate of Approval;
    - (iii) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this Provisional Certificate of Approval; and
    - (iv) sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this Provisional Certificate of Approval.
- (8) (a) Where there is a conflict between a provision of any document referred to in Schedule "A", and the conditions of this Provisional Certificate of Approval, the conditions in this Provisional Certificate of Approval shall take precedence; and
- (b) Where there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall prevail.
- (9) The Applicant shall ensure that all communications/correspondence made pursuant to this Provisional Certificate of Approval includes reference to the Provisional Certificate of Approval number A411902.
- (10) The Applicant shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
- (a) change of Applicant or operator of the Site or both;
  - (b) change of address or address of the new Applicant;

- (c) change of partners where the Applicant or operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, 1991 shall be included in the notification to the Director;
- (d) any change of name of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (form 1 or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
- (e) change in directors or officers of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 9(d), supra.
- (11) In the event of any change in ownership of the Site, the Applicant shall notify, in writing, the succeeding owner of the existence of this Provisional Certificate of Approval, and a copy of such notice shall be forwarded to the Director.
- (12) Any information relating to this Provisional Certificate of Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
- (13) All records and monitoring data required by the conditions of this Provisional Certificate of Approval must be kept on the Owner's premises for a minimum period of two (2) years from the date of their creation.

#### **DEVELOPMENT AND OPERATIONS**

- (14) Within 3 months of the date of this Notice, the Applicant shall submit to the Director for approval an updated development and operations report and supporting hydrogeological study outlining how the remaining capacity of the Site is to be utilized. These reports shall include the following information
- site plans showing the waste disposal footprint, buffer zones, and contaminant attenuation zones, if required, including the ownership of such lands;
  - site operation and development plans;
  - daily/intermediate/final cover requirements;
  - security, fencing, signage, site supervision, housekeeping and screening requirements;
  - surface drainage plans, leachate and gas control plans;
  - a proposed monitoring program for landfill gas, leachate, groundwater, and surface water including trigger mechanisms and contingency plans;
  - reporting requirements; and
  - closure plans.

All in accordance with the following plans and specifications which are added to Schedule "A" of the Certificate:

1. The Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 11, 2001 as signed by Cathy Reddy, Clerk Treasurer of the Township of Greater Madawaska.
2. The letter dated January 31, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. providing the purpose and basis for this amendment.
3. The letter dated March 1, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. requesting that the proposed amendment be split into two parts, one for the service area change and another for the site development aspects as well as the reasons for this request.

*The reasons for this amendment to the Certificate of Approval are as follows:*

*The reasons for this amendment are to allow for an increase in service area for the waste disposal site and to update the Certificate to meet the Ministry's current requirements.*

*The reasons for each of the conditions of approval are as follows:*

- 1) *The reason for Condition (2) is to define the specific meaning of terms used to simplify the conditions in this Certificate.*
- 2) *The reason for Conditions (3), (4), (5), (8), (9), (10), (11), (12) and (13) is to clarify the legal rights and responsibilities of the Owner.*
- 3) *The reason for Condition (6) and (7) is to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site which are approved under this Provisional Certificate of Approval. Condition (7) is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Environmental Protection Act, the Ontario Water Resources Act, and the Pesticides Act, as amended.*
- 4) *The reason for Condition (14) is to ensure that the continued use and operation of the Site is done in an environmentally acceptable manner.*

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No.A 411902 dated March 27, 1980, as amended.**

*In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:*

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and; The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Appeal Board  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

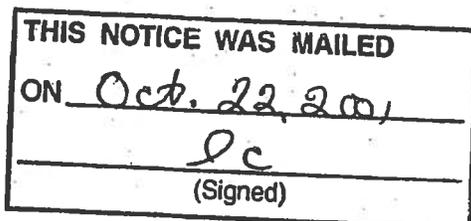
AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.*

DATED AT TORONTO this 12th day of October, 2001



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

JK/

c: District Manager, MOE Ottawa ✓  
Brian Whitehead, Planner, Jp2g Consultants Inc.



Ontario

Ministry  
of the  
Environment

133 Dalton St., Box 820  
Kingston, Ontario  
K7L 4X6

March 27, 1980

Township of Brougham  
Dacre, Ontario  
NOJ 1NO

RE: Dump Site  
Lot 9, Concession III  
Township of Brougham  
County of Renfrew

The enclosed revised Provisional Certificate of Approval contains a condition requiring it be registered on title. The reason for this condition is attached to the Certificate.

Two copies of the Certificate and reasons are on long paper to facilitate registration. Both of these should be taken to the Land Registry Office and one returned to the Director with registration particulars.

If your Certificate does not contain sufficient legal description for registration because you have not given one to the Director, you will have to provide one under Section 23(1) (e) of The Registry Act or in your application under The Land Titles Act.

In the event that the site including its buffer, is part of a larger parcel of land and you do not wish to prepare a new survey at this time, you may register the Certificate against the larger parcel of land. If you do so, the Director is prepared, if requested in the future.

1. In the case of land recorded under The Land Titles Act, to consent to an application to delete the registration from the title of lands not within the site including its buffer zone, and
2. In the case of land recorded under The Registry Act, to issue a Certificate that lands not used for the actual disposal of waste or buffer zone have not been so used.

Such documents would be issued after suitable draft documents including legal description were submitted by you or your successor. The purpose of such documents would be to assure subsequent purchasers that the lands in question were not affected by section 46 of the Environmental Protection Act.

Yours very truly

  
Director



Ministry  
of the  
Environment

Provisional Certificate No. A 411902

### PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Brougham  
Dacre, Ontario  
NOJ 1NO

for the use and operation of a 1.2 hectare dump site

all in accordance with the following plans and specifications:

Located: Lot 9, Concession III  
Township of Brougham  
County of Renfrew

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and 5% other wastes, limited to scrap metal, brush, lumber and construction debris.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

THIS IS A TRUE COPY OF THE  
ORIGINAL CERTIFICATE MAILED  
ON Apr 9/80

(Signed)

Dated this 27th day of March, 19 80.

  
Director, Section 39,  
The Environmental Protection Act 1971



Ontario

Ministry of the  
Environment

## NOTICE

TO: Township of Brougham  
Dacre, Ontario  
NOJ 1NO

You are hereby notified that Provisional Certificate of Approval No. A 411902 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

The reason for the condition requiring registration of the Certificate is that Section 46 of The Environmental Protection Act, 1971 prohibits any use being made of the lands after they cease to be used for waste disposal purposes in order to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

The Secretary,  
Environmental Appeal Board, AND  
1 St. Clair Ave. West,  
5th Floor,  
Toronto, Ontario.  
M4V 1K7

The Director,  
Section 39  
Ministry of the Environment,

DATED this 27th day of March , 1980 .

*AA M 1111.*

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# Document General

Form 4 -- Land Registration Reform Act, 1984

DVC 4 OUPHAM CO. LIMITED  
Form No. 883

D

AB5 V

FOR OFFICE USE ONLY	R 0429800	CERTIFICATE OF REGISTRATION CERTIFICAT DE REGISTREMENT RENTREY (C) PL 1984	Feb 28 AM 9 41	Medawaska	PART 2	(1) Registry <input checked="" type="checkbox"/> Land Titles <input type="checkbox"/>	(2) Page 1 of 2 pages <i>1/1</i>	
	New Property Identifiers		Additional: See Schedule <input type="checkbox"/>		(3) Property Identifier(s)	Block 57375 Property 0029 (R) 57375 0030 (R)	Additional: See Schedule <input type="checkbox"/>	
	Executions		Additional: See Schedule <input type="checkbox"/>		(4) Nature of Document: CERTIFICATE OF PROHIBITION FOR WASTE DISPOSAL SITE, CERTIFICATE OF APPROVAL NO. A411902 SECTION 197(2), ENVIRONMENTAL PROTECTION ACT			
					(5) Consideration Dollars \$			
					(6) Description Part of Lot 9, Con 2 Concession 3 Geographic Township of Brougham, Township of Greater Madawaska SW			
					(7) This Document Contains: (a) Redescription New Easement Plan/Sketch <input type="checkbox"/> (b) Schedule for: Description <input type="checkbox"/> Additional Parties <input type="checkbox"/> Other <input checked="" type="checkbox"/>			
					(8) This Document provides as follows: See Schedule			
				(9) This Document relates to instrument number(s) Continued on Schedule <input type="checkbox"/>				
				(10) Party(ies) (Set out Status or Interest) Name(s) MINISTRY OF THE ENVIRONMENT By one of its Directors Appointed under s.5 Environmental Protection Act			Signature(s) <i>G.A.E. WASHMUTA</i> G.A.E. WASHMUTA	Date of Signature Y M D 2006 2 24
				(11) Address for Service 2 St. Clair Avenue West, Floor 12A, Toronto, Ontario, M4V 1L5				
				(12) Party(ies) (Set out Status or Interest) Name(s)			Signature(s)	
				(13) Address for Service			Date of Signature Y M D	
				(14) Municipal Address of Property not assigned			(15) Document Prepared by: HOWARD A. LITWICK Barrister & Solicitor 300-39 Eberston Road Ottawa (Nepean), ON K2H 8R2	
						Fees and Tax		
						Registration Fee	60.00	
						Total		



# Schedule

Form 5 — Land Registration Reform Act

DYE & DUMAS CO. INC.—Form No. 900  
Amended NOV. 1992

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S

Page 2

Additional Property Identifier(s) and/or Other Information

## CERTIFICATE OF PROHIBITION

s. 197(2) Environmental Protection Act

This is to certify that pursuant to an Amendment to Provisional Certificate of Waste Disposal Site Number A411902, dated July 12, 2002, relating to the landfill site more particularly described in Box (6) on page one of this instrument, the following person, namely The Corporation of the Township of Greater Madawaska is prohibited from dealing with the property described in the aforesaid Box (6) on page one without first giving a copy of the Amended Provisional Certificate of Approval to each person acquiring an interest in the property as a result of the dealing.

Under subsection 197(3) of the Environmental Protection Act, the prohibition applies to each person who, subsequent to the registration of this certificate, acquires an interest in the property.

FOR OFFICE  
USE ONLY

# Appendix B

## MOE Correspondence



BLACK DONALD WASTE DISPOSAL SITE  
,  
**Inspection Report**

System Number: A411902  
Entity: THE CORPORATION OF THE  
TOWNSHIP OF GREATER  
MADAWASKA  
Inspection Start Date: 10/07/2022  
Inspection End Date: 11/21/2022  
Inspected By: Thandeka Ponalo  
Badge #: 1718

*Thandeka Ponalo*

---

(signature)

**NON-COMPLIANCE/NON-CONFORMANCE ITEMS**

The following item(s) have been identified as non-compliance/non-conformance, based on a "No" response captured for a legislative or best management practice (BMP) question (s), respectively.

**Question Group:** Other Inspection Findings

<b>Question ID</b>	949100	<b>Question Type</b>	Legislative
<b>Question:</b> Were the inspection questions sufficient to address other identified non-compliance items?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation/Corrective Action(s)</b>			
<p>The following instances of non-compliance were also noted during the inspection:</p> <p>At time of the inspection, Township staff stated that the site likely has an operational capacity of only two (2) years instead of five (5) years as stated in the 2021 Annual Report. This would require the submission of a Closure Plan as outlined in Condition 34 of the ECA. Furthermore, staff stated that some areas of the landfill have exceeded their contours by an estimated 2.4 metres which may further reduce the operational capacity of the landfill. Township staff stated that the Township is exploring submitting an expansion request to extend the life of the site that would also increase the final contours of the landfill to accommodate areas where final contours have been exceeded.</p> <p><b>ACTION</b></p> <ol style="list-style-type: none"> <li>1. The Township shall conduct an assessment of the approved waste disposal area to determine the accurate remaining capacity of the site.</li> <li>2. The Township shall submit to the Ministry a drawing of the landfilling area that shows the areas that have been overfilled in relation to the approved final contours.</li> <li>3. The Township shall submit to the Ministry an action plan to address how the site will be brought back into compliance in relations to the approved landfill design and capacity limits.</li> </ol>			

### INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

**Ministry Program:** WASTE | **Regulated Activity:** Landfills

<b>Question ID</b>	NOL 1	<b>Question Type</b>	Legislative
<b>Question:</b> Does the Open landfill site have an Environmental Compliance Approval (ECA)?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes ECA Number A411902 was issued on March 27, 1980 and amended, October 12, 2001, July 12, 2002 and January 24, 2013.			

<b>Question ID</b>	NOL 3	<b>Question Type</b>	Legislative
<b>Question:</b> Does the holder of the landfill ECA own the entire site?			
<b>Legislative Requirement</b>	EPA   27   (1); EPA   O. Reg. 232/98   3;		
<b>Observation</b>			
Yes The site is approved for a 1.2 ha landfill site within a total licensed property area of 21.36 ha, inclusive of lands used for operational buffer and contaminant attenuation zone (CAZ) purposes.			

<b>Question ID</b>	NOL 4	<b>Question Type</b>	Information
<b>Question:</b> Does the landfill have a Contaminant Attenuation Zone (CAZ)?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
Yes			

<b>Question ID</b>	NOL 13	<b>Question Type</b>	Information
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<b>Question:</b>	
Are access roads and on-site roads provided so that vehicles hauling waste to and on the site may travel readily on any day under all normal weather conditions?	
<b>Legislative Requirement</b>	EPA   27   (1);
<b>Observation</b>	
Yes Access to the site is provided by Hydro Dam, located off County Road 508 near Black Donald Lake approximately 15 km southwest of the Village of Calabogie. The 2021 Annual Report states that the site access road extending from Hydro Dam has sufficient width at the entrance and within the site to allow for unimpeded winter travel and access for emergency and snow removal equipment. At time of the inspection, the access road was well maintained and in good condition.	

<b>Question ID</b>	NOL 14	<b>Question Type</b>	Legislative
<b>Question:</b>			
Is site access limited to times when an attendant is on duty?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes The site was closed to the public on April 5, 2010, however, disposal operations at the site are currently available for municipal vehicles and Township-approved haulers only under supervision of Township operations staff. The 2021 Annual Report states that the site is restricted by a lockable gate at the entrance, and the site is surrounded by forested lands which provides adequate screening and restricts access for vehicular traffic. At time of the inspection, Township staff confirmed that the site gate is kept locked and only Township approved commercial vehicles are allowed on site when the site attendant is present.			

<b>Question ID</b>	NOL 15	<b>Question Type</b>	Legislative
<b>Question:</b>			
Does the site only receive waste from within its approved service area?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes In accordance with Condition 16 of the ECA, the site only receives waste from the Township of Greater Madawaska.			

<b>Question ID</b>	NOL 16	<b>Question Type</b>	Information
<b>Question:</b> Is the site required to have a ground water monitoring program by the ECA?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
<p>Yes</p> <p>Groundwater requirements are outlined in Conditions 26 to 29 and in Schedule "B" of the ECA. It is the responsibility of the Township to ensure the site's groundwater parameters at the property boundary meet those as calculated by Guideline B-7: Reasonable Use Guideline (RUG).</p> <p>The 2021 Annual Report states that groundwater configuration at the site was consistent with historical interpretations with the east-west oriented groundwater divide evident in the vicinity of the waste mound, and predominant flow directions to the east, west and southeast. The report states that based on 2021 results, it is interpreted that the site meets the intent of Guideline B-7 and is interpreted to be in compliance with RUC in 2021 at the southwestern CAZ boundary.</p> <p>At the time of the inspection, no leachate seeps or odours were observed at the site. The 2021 Annual Report has not been reviewed by the Technical Support Section.</p>			

<b>Question ID</b>	NOL 20	<b>Question Type</b>	Information
<b>Question:</b> Is there ongoing abatement to address any concerns the ministry has with the ground water monitoring?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
No			

<b>Question ID</b>	NOL 21	<b>Question Type</b>	Information
<b>Question:</b> Is the site required to manage leachate by the ECA?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			

No  
There is no leachate control system at this landfill site. The site is a natural attenuating landfill.

Question ID	NOL 26	Question Type	Information
<b>Question:</b> Is the site required to manage landfill gas by the ECA?			
Legislative Requirement	Not Applicable		
<b>Observation</b>			
No There is no methane gas control system at the site.			

Question ID	NOL 31	Question Type	Information
<b>Question:</b> Is the site required to have a surface water monitoring program by the ECA?			
Legislative Requirement	Not Applicable		
<b>Observation</b>			
Yes Surface water requirements are outlined in Conditions 26 to 29 and in Schedule "B" of the ECA. It is the responsibility of the Township to ensure the site's surface water parameters on and off-site meet those as stated in the Provincial Water Quality Objectives (PWQO).  The 2021 Annual Report states that based on the surface water quality results in 2021, and the significant distance of each sampling location from the approved waste disposal area of the site, the surface water systems south and southeast of the site is not interpreted to be impacted from landfill-related activities. Non-conformances of PWQO for concentrations of DO (low), phosphorus, iron and zinc noted in 2021 at select sampling locations for select sampling dates were attributed to be naturally occurring in the background (SW-4), as well as to low-flow surface water conditions. The high pH value in the summer of 2021 at location SW-6 was interpreted to be anomalous.  The 2021 Annual Report was no reviewed by the Technical Support Section.			

Question ID	NOL 36	Question Type	Legislative
<b>Question:</b> Is proper equipment available for the compaction of waste and applying cover material?			

<b>Legislative Requirement</b>	EPA   27   (1);
<b>Observation</b>	
Yes	

<b>Question ID</b>	NOL 37	<b>Question Type</b>	Legislative
<b>Question:</b> Is the landfill able to accurately determine the amount of waste received?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes A specialized survey and design technique referred to as digital terrain modelling (DTM) is used to determine waste landfilled at the site. The DTM method is a computer-based process that compares two (2) topographic surfaces or digital terrain models and calculates the prismatic volumetric difference. The 2021 Annual Report states that the topographical survey was completed on December 14, 2021 and it was estimated that the remaining site capacity is 4,400 cubic meters.			

<b>Question ID</b>	NOL 38	<b>Question Type</b>	Legislative
<b>Question:</b> Are all disposal operations at the site adequately and continually supervised?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes Disposal operations at the site are currently available for municipal vehicles and Township-approved haulers only under supervision of the site attendant. To address previous dumping concerns, cameras were installed at the site.			

<b>Question ID</b>	NOL 39	<b>Question Type</b>	Information
<b>Question:</b> Does the landfill operator have a site inspection program as required by the ECA?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
Yes			

As per Condition 23 of the ECA, weekly inspections of the equipment and facilities shall be conducted to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, which are detected during these inspections shall be recorded in a log and promptly corrected.

At time of the inspection, weekly inspection reports were requested and provided.

<b>Question ID</b>	NOL 40	<b>Question Type</b>	Legislative
<b>Question:</b> Does the landfill operator have a procedure in place to address issues identified by staff during the site inspection?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes Staff record any deficiencies and corrective actions identified during weekly inspections in the weekly inspection form.			

<b>Question ID</b>	NOL 41	<b>Question Type</b>	Legislative
<b>Question:</b> Is the waste being compacted adequately?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes			

<b>Question ID</b>	NOL 42	<b>Question Type</b>	Legislative
<b>Question:</b> Is Daily cover applied to the waste at the end of each working day or as otherwise specified in the ECA?			
<b>Legislative Requirement</b>	EPA   27   (1); EPA   O. Reg. 232/98   7;		
<b>Observation</b>			
Yes Condition 37(c) of the ECA states that processed C&D waste and bulky waste materials can be used as alternative cover. At time of the inspection, staff stated they used C&D waste as alternative cover.			

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<b>Question ID</b>	NOL 43	<b>Question Type</b>	Legislative
<b>Question:</b> Are procedures implemented to control rodents or other animals and insects at the site?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>Condition 15 of the ECA requires the site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, site personnel, and the natural environment, all in accordance to the Development and Operations Plan, Items 4, 5 and 6 of Schedule "A".</p> <p>At time of the inspection, staff stated that as they only accept C&amp;D waste, leaf and yard waste, and non-hazardous domestic waste only during emergencies, they have not had problems with rodents and other animals.</p>			

<b>Question ID</b>	NOL 44	<b>Question Type</b>	Legislative
<b>Question:</b> Is site access restricted by use of a gate, fence, or physical barrier when the site is not operating?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>The site is surrounded by forested lands, and they have a gate they keep locked when Township staff are not on site.</p>			

<b>Question ID</b>	NOL 45	<b>Question Type</b>	Legislative
<b>Question:</b> Is the waste disposal area adequately screened from public view?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>The site is surrounded by forested lands that screen the site from public view.</p>			

<b>Question ID</b>	NOL 47	<b>Question Type</b>	Legislative
<b>Question:</b> Has the annual operations report been submitted to MECP or available on site as required by the ECA?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes In accordance with Condition 27 of the ECA, the Annual Report was provided to the District Manager by March 31st.			

<b>Question ID</b>	NOL 48	<b>Question Type</b>	Legislative
<b>Question:</b> Is scavenging being prevented?			
<b>Legislative Requirement</b>	EPA   27   (1); EPA   O. Reg. 232/98   23;		
<b>Observation</b>			
Yes In accordance with section 11(19) of the EPA, scavenging is not permitted at the site.			

<b>Question ID</b>	NOL 49	<b>Question Type</b>	Information
<b>Question:</b> Has a closure plan been submitted to the MECP?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
No Condition 34 of the ECA requires that two (2) years prior to the site reaching its final capacity, the Township shall submit to the Director, for approval, a plan for closure, post closure monitoring and maintenance of the site. The plan shall include but not be limited to the final contours of the site, completion, inspection and maintenance of the final cover, an assessment of the adequacy of the monitoring and contingency plans and any other post closure monitoring and care.  The 2021 Annual Report states that the remaining operating life of the site is 4,400 cubic meters or five (5) years. At time of the inspection, Township staff stated that the site only has two (2) years of operating capacity left not five (5) years.			

Compliance actions are addressed in different section of this inspection report.

<b>Question ID</b>	NOL 51	<b>Question Type</b>	Legislative
<b>Question:</b>			
Is the landfill only accepting the types of waste that they are approved to receive?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>In accordance Condition 16(a) of the ECA, the site only accepts C&amp;D waste, bulky waste, and leaf and yard waste.</p> <p>Condition 16(b) of the ECA states that the site may receive non-hazardous solid domestic waste from within the Township of Greater Madawaska, on a temporary basis, only with prior written authorization from the District Manager. Condition 16(c) of the ECA requires that prior notification of 48-hours must be provided to the District Manager for receipt of any domestic waste.</p> <p>A file review did not show any notifications to the District Manager were received at the Ottawa District Office in the last two years. The 2021 Annual Report states that in 2021, the site was only used to stockpile C&amp;D and bulky waste for processing and disposal. No recycling operations were conducted at the site. It noted that a significant quantity of bentonite clay material from a nearby construction project was received at the site and it was emplaced at the site as final cover and as regular cover in areas of the approved waste disposal area</p> <p>The Township shall ensure that before accepting non-hazardous waste at the site, notification is provided to the District Manager as outlined in the ECA.</p>			

<b>Question ID</b>	NOL 55	<b>Question Type</b>	Legislative
<b>Question:</b>			
Does the landfill have emergency contingency plan as required by the ECA?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>Condition 25 of the ECA requires the Township shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this site. All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416-325-3000 or 1-800-268-6060, and the</p>			

Municipality, and shall be recorded in a log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.

At time of the inspection, Township staff stated that there had been no spills, fires or emergencies in the last two years.

<b>Question ID</b>	NOL 56	<b>Question Type</b>	Information
<b>Question:</b> Is there an ECA condition requiring financial assurance?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
No Financial assurance is not required for municipally operated waste disposal/transfer sites.			

<b>Question ID</b>	NOL 59	<b>Question Type</b>	Legislative
<b>Question:</b> Does the landfill have a procedure in place to address complaints?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes As per Condition 24(b) of the ECA, any complaints received from the public or adjacent neighbours shall be recorded in a logbook created and maintained for this purpose. The 2021 Annual Report states that there were no complaints received at the site in 2021. At time of the inspection, Township staff stated that there were no complaints received in 2022.			

<b>Question ID</b>	NOL 61	<b>Question Type</b>	Information
<b>Question:</b> Has the landfill operator developed a Design and Operations Manual?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
Yes			

<b>Question ID</b>	NOL 63	<b>Question Type</b>	Legislative
<b>Question:</b> Does the landfill operator have training procedures for site personnel?			
<b>Legislative Requirement</b>	EPA   27   (1);		
<b>Observation</b>			
<p>Yes</p> <p>There are no requirements for training outlined in ECA. The 2021 Annual Report states that waste operations training was conducted by Greenview on June 12, 2017. No training was conducted in 2021.</p> <p>At time of the inspection, Township staff stated that training was planned for before the end of the year, and the training would be documented in the 2022 Annual Report.</p>			

<b>Question ID</b>	949100	<b>Question Type</b>	Legislative
<b>Question:</b> Were the inspection questions sufficient to address other identified non-compliance items?			
<b>Legislative Requirement</b>	Not Applicable		
<b>Observation</b>			
<p>The following instances of non-compliance were also noted during the inspection:</p> <p>At time of the inspection, Township staff stated that the site likely has an operational capacity of only two (2) years instead of five (5) years as stated in the 2021 Annual Report. This would require the submission of a Closure Plan as outlined in Condition 34 of the ECA. Furthermore, staff stated that some areas of the landfill have exceeded their contours by an estimated 2.4 metres which may further reduce the operational capacity of the landfill. Township staff stated that the Township is exploring submitting an expansion request to extend the life of the site that would also increase the final contours of the landfill to accommodate areas where final contours have been exceeded.</p> <p><b>ACTION</b></p> <ol style="list-style-type: none"> <li>1. The Township shall conduct an assessment of the approved waste disposal area to determine the accurate remaining capacity of the site.</li> <li>2. The Township shall submit to the Ministry a drawing of the landfilling area that shows the areas that have been overfilled in relation to the approved final contours.</li> <li>3. The Township shall submit to the Ministry an action plan to address how the site will be brought back into compliance in relations to the approved landfill design and capacity limits.</li> </ol>			

Jp2g No. 22-6213A

October 25, 2022

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponalo  
Sr. Environmental Officer

**Re: Black Donald Landfill Site  
Township of Greater Madawaska  
ECA No. A411902  
Expansion Feasibility Study**

Dear Thandeka:

On behalf of the Township of Greater Madawaska, we are pleased to provide this feasibility assessment regarding the potential for an expansion at the Black Donald Landfill Site. This report provides the preliminary steps to obtain approval for an expansion and is intended to provide the Township with a foundation for waste management decision making pending Ministry comments.

## 1.0 INTRODUCTION

The Black Donald Landfill Site located on part of Lot 9, Concession 2 and 3, geographic Township of Brougham in the Township of Greater Madawaska, Ontario, currently operates under ECA No. A411902 issued March 27, 1980, as amended which is included in **Attachment 1**. The following provides the additional Notices issued under the ECA:

Notice No. 1 October 22, 2001	Amended to reflect the increase in site service area to include the Township of Greater Madawaska.
Notice No. 2 July 12, 2002	Amendment to include the submission of the development and operations report as per Condition 14.
Notice No. 3 January 24, 2013	Amended to reflect site operations, approval of alternate daily cover and Site Trigger and Contingency Plan.

The environmental monitoring compliance program is based on the ECA Schedule "B" dated January 24, 2013. Operations compliance is based on a Design, Operations and Development Plan by Greenview Environmental Management, dated December 22, 2010 (Greenview, 2010).



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## 2.0 LANDFILLING CAPACITY

The following has been compiled from various sources to estimate the total approved waste disposal volume and the remaining landfilling capacity. Recent Greenview documents have stated the current volume in place is unknown.

### 2.1 Total Design Capacity

Under ECA Notice No. 2 dated July 12, 2002 the Site Development And Operations Plan by Jp2g Consultants Inc. dated January 2001 (Jp2g, 2001) as item 4 in Schedule "A" provided the following site capacity figures:

- theoretical maximum capacity of a 1.2 ha site to a pyramidal peak 54,200m<sup>3</sup>
- preliminary design capacity of a 0.9 ha landfilling area with a 30m buffer along the Township road 25,550m<sup>3</sup>
- detailed design capacity of 34,250m<sup>3</sup> (excluding final cover) with a remaining capacity of 29,350m<sup>3</sup> as of January 1, 2001
- the total landfilled in place volume was approximately 4900m<sup>3</sup> as of January 1, 2001

The ECA Condition (18) dated July 12, 2002 stated the total capacity including final cover is 46,785m<sup>3</sup>

### 2.2 Remaining Capacity

The Preliminary Landfill Expansion Feasibility Studies prepared by Greenview dated August 31, 2007 (Greenview, 2007) cited two (2) remaining capacities.

- As of October 27, 2006 (Golder, 2007) there was an estimated 22,300m<sup>3</sup>, excluding final cover, remaining capacity.
- Using the revised final contours to accommodate the proposed waste transfer station as presented in the proposed 2007 application to amend the ECA, the remaining capacity was approximately 8,400m<sup>3</sup>.

The latter was not implemented, as the Black Donald Site was not selected as one of the waste transfer sites.

Under ECA Notice No. 3 dated January 13, 2013 the Design, Operations And Development Plan (Greenview, 2010) as item 7 in Schedule "A" provided the following remaining capacity figures:

- remaining capacity as of October 20, 2009 is 14,926m<sup>3</sup>
- remaining capacity as of November 2, 2010 is 12,442m<sup>3</sup>

As of December 14, 2021 the remaining capacity was 4400m<sup>3</sup> (Greenview, 2022). The life expectancy could be 2 to 5 years depending on the annual landfilling rate. Based on the annual surveys completed to determine the annual landfilling rate and remaining capacity, the following summarizes the results based on available reports in the Township records.



Year	Annual Landfilled (m3)	Remaining Capacity (m3)	Estimated Years	Waste Summary
<b>2009</b>	4909	14,926	3	2393 cars 2494 trucks 1145 trailers 27 single axle 11 tandem 16 tri-axle
<b>2010</b>	2484	12,442	5	690 cars 505 trucks 67 trailers 4 single axle 3 tandem 4 tri-axle
<b>2011</b>	11,341			
<b>2012</b>	1087 with cover	10,337	9	33 tri-axes 1 trailer
<b>2013</b>	1197	9140	7.6	28 tri-axes 4 trailers
<b>2014</b>				
<b>2015</b>	256	9320	9	12 tri-axes 1 bin
<b>2016</b>	382	8937	10	3 bins 510m <sup>3</sup>
<b>2017</b>				
<b>2018</b>				
<b>2019</b>				
<b>2020</b>	759	6478	12	25 tri-axes 2 bins 410m <sup>3</sup>
<b>2021</b>	2078	4400	5	52 tri-axes 786m <sup>3</sup>

### 3.0 LEGISLATIVE REQUIREMENTS

Under Ontario Regulation 101/07, made under the EA Act, a proponent may increase the capacity by 40,000m<sup>3</sup> or more but not more than 100,000m<sup>3</sup> subject to fulfilling the Environmental Screening Process (ESP). A change of less than 40,000m<sup>3</sup> is exempt from the EA Act.

Approvals for changes to waste disposal sites is obtained under Part V of the Environmental Protection Act (EPA) and reviewed under the Environmental Compliance Approval (ECA) process. Under the Ministry's Requirement for Fees with ECA's (formerly O.Reg 363/98 Section 27 EPA) the province applies fees to review applications.

The July 2020 amendments to the EA Act are proposing changes to O.Reg 101/07 under a new regulation, but not to the above approvals process.



To include the approved total waste disposal volume of 46,785m<sup>3</sup> which includes final cover (Note O.Reg 232/98 defines total waste disposal volume without final cover) by <100,000m<sup>3</sup> the ESP is intended to identify potential environmental effects, concerns and/or issues to be addressed through a phased investigation and consultation process.

Greenview (2007) completed a preliminary landfill expansion feasibility study which included a review of natural heritage features, cultural heritage features and physical environmental features. The report included an Initial Environmental Impact Study by Snider's Ecological Services to assess significant natural features including threatened and endangered species habitat. Additional studies were recommended. The report also included a Stage 1 Archaeological and Cultural Heritage Assessment by The Central Archaeological Group for C.R. Murphy Archaeology. It was determined the potential for significant archaeological sites was low. The scope of work to support an ESP would be much more extensive and requires agency review and comment. In our experience an ESP would cost in the order of \$100,000 to \$200,000 and take approximately 5 years to complete. This cost range depends on the requirements to enhance the current landfill site monitoring program. The Greenview report identified topographical constraints which will limit the expansion of the current landfilling area south and east while maintaining the existing buffers from the Hydro Transmission line and Hydro Dam Road. An expansion to increase the total waste disposal volume by <40,000m<sup>3</sup> maybe acceptable as shown on **Drawing No 1**.

To determine the feasibility of expansion <40,000m<sup>3</sup>, pre-submission consultation with the MECP Ottawa District Office and MECP Technical Support Section (TSS) Regional Office is required prior to the application. This letter combined with the recent Annual Report is anticipated to facilitate this review.

#### **4.0 BLACK DONALD LANDFILL SITE ASSESSMENT**

In order to assess the feasibility of a successful expansion application three (3) main issues need to be considered in consultation with the Ministry.

Legal – the status of the ECA, the adequacy of the landholdings and the municipality's compliance with the conditions.

- correct description of the site defining the landfilling area and total site
- correct legal survey or description of the site
- adequate contaminant attenuation zone (CAZ)
- outstanding ECA conditions to be satisfied
- submissions to satisfy a condition requiring Ministry review and approval

Environmental – the status of the water quality and landfill gas monitoring program and any measured or potential impacts on the surface and groundwater, and the potential impact to other natural environmental features.

- groundwater quality impacts
- surface water quality impacts
- adequacy of surface water flow control/stormwater management
- adequacy of the landfill gas monitoring program
- proximity to environmentally sensitive areas (ESA)
- potential impact on rare or endangered species and habitat (SAR)
- outstanding actions to address any Ministry Technical Support Section (TSS) review comments



Operations – the status of site operations and the potential impact on adjacent land uses and the local community.

- any record of negative effects on-site or on adjacent land uses, i.e. litter, dust, noise, odour, landfill gas
- any record of operational concerns
- outstanding actions to address Ministry inspection reports
- outstanding ECA Conditions to be satisfied

#### 4.1 Legal

The ECA No. A411902 last amended January 24, 2013 describes the Site as a 1.2 hectare waste disposal site. ECA Section (2) 2.12 defines the Site as ‘the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule “A” of the Certificate and consisting of approximately 1.2 hectare landfill site’. Upon review of the documents in Schedule “A” the Site comprises a 0.9m landfilling area within a total site area of 27.2 ha.

ECA Condition (33) required that a Certificate of Prohibition be registered on title. Based on available records it was registered on lands located in Part of Lot 9, Concession 2 and 3, Brougham, being Parts 1 to 4 Plan 49R-15646. As detailed in Section 4.2 the current operation has an adequate CAZ which should be satisfactory for a modest sized expansion. In Section 4.2 and 4.3 it is noted there are no ECA Conditions outstanding regarding environmental monitoring or site operations respectively.

#### 4.2 Environmental

The monitoring program approved under the current ECA is to satisfy Condition 27. The monitoring program as detailed in ECA Schedule “B” consists of the bi-annual collection of static water levels and groundwater samples from seven (7) monitoring wells, and surface water samples collected three times per year from four (4) locations. The following provides an overview of the Environmental Monitoring program based on the work activities and laboratory data from the 2021 Monitoring period.

##### Overview

For the purpose of this submission, we have included the figures from the 2021 Annual Report by Greenview (2022) in **Attachment 2** and Borehole Logs in **Attachment 3**. The groundwater configuration at the site in 2021 was consistent with historical interpretations with an east-west oriented groundwater divide evident in the vicinity of the waste mound, and predominant groundwater flow directions to the east, west, and southeast as shown on Figures 4 and 5 in **Attachment 2**. Additionally, groundwater in the vicinity of the monitoring well MW08-6 was interpreted to flow to the east.

Groundwater immediately downgradient from the site at monitoring wells BH1, BH3, and BH4 was interpreted to be impacted from landfill-related activities in 2021. Most parameter concentrations were above median background groundwater quality results, with non-conformances of ODWS for concentrations of alkalinity, DOC, hardness, iron, manganese, and TDS noted at select monitors. The generally lower parameter concentrations at monitoring well BH3 compared to those at monitoring wells BH1 and BH4 were attributed to its location partially cross-gradient to the waste mound and along the groundwater divide at the site. Results from monitoring well BH1 were interpreted to be most representative of leachate quality at the Black Donald site at this time.



No RUC non-conformances were documented in results from downgradient monitoring well MW08-7 in 2021 that were attributed to landfill-related factors. The noted RUC non-conformance in fall 2021 at MW08-7 for DOC was consistent with DOC concentrations observed in background wells BH2 and MW08-6. Based on the above, the Black Donald site was interpreted to meet the intent of MECP Guideline B-7 at the downgradient eastern CAZ boundary in 2021. Based on 2021 results, it was extrapolated that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally-occurring concentrations of alkalinity, aluminum, DOC, hardness, manganese, and TDS in the background (BH2 and MW08-6), the Black Donald site was interpreted to meet the intent of MECP Guideline B-7 and was interpreted to be in compliance with RUC in 2021 at the southwestern CAZ boundary.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-related activities. Non-conformances of PWQO for concentrations of DO (low), phosphorus, iron and zinc noted in 2021 at select sampling locations for select sampling dates were attributed to naturally occurring conditions in the background (SW-4), as well as to low-flow surface water conditions.

In 2021, PWQO non-conformances at key trigger locations SW-3 and SW-6 for concentrations of iron were attributed to low water/ low-flow conditions, and not to landfill-related activities. Similarly, PWQO non-conformances for concentrations of phosphorus at key trigger location SW-3 were generally consistent with concentrations observed at background location SW-4 and were therefore not attributed to landfill-related factors. No RUC non-conformances were noted for any of the key trigger parameters at key trigger location MW08-7 following inclusion of 2021 results. Based on a review of five (5) year time trend analysis for parameters un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus, the Trigger Mechanism was not interpreted to be activated in 2021.

Part of the feasibility study for the landfill expansion has included a critical review of the monitoring program including:

- enhancement of the groundwater quality sampling with the potential for further delineation of the leachate plume in the overburden and bedrock aquifers
- modify the surface water program by enhancing the sampling and review locations at a significant distance from the fill area

It is anticipated that a proposed expansion will not impact Environmentally Sensitive Areas (ESA) or Species At Risk (SAR), or their habitat as the expansion of the landfilling area is immediately adjacent to the operating fill area.

#### Revised Groundwater Monitoring Program

The existing monitoring program was reviewed to assess groundwater and quality and locations, and where feasible bolster the program to accurately address necessary impacts from the landfill. **Attachment 4** indicates the existing, and proposed revision of the monitoring program. As shown, monitoring wells are to be sampled on an annual basis for the full set of parameters as per Schedule 5 Column 1 of the Landfill Standards (1998). This increase in parameters will help establish a more comprehensive data set for the boundary compliance wells, to compare with the background and leachate wells.



The updated program will continue to sample the monitoring wells as per ECA Schedule “B”, with the proposed addition of the following as shown on **Drawing No 2** (a Greenview base plan)

- one (1) bi-level monitoring well within the overburden (if available) and bedrock aquifers east of the landfilling area to further delineate the plume within the groundwater towards MW08-7;
- compliance well MW08-7 is installed in the overburden (sand material), see borehole log in **Attachment 3**, therefore it is recommended to also install a bedrock monitoring well in this location to delineate leachate in the bedrock aquifer in this direction; and
- monitoring well BH3 was destroyed in 2021 due to landfilling activities; this well should be reinstated to aid in assessing leachate migration south of the fill area.

The water quality analysis to be expanded to Schedule 5 Column 1 of the Landfill Standards (1988). Upon installation and sampling it is further recommended to update the trigger mechanism and contingency plan to reflect a proposed expansion.

#### Revised Surface Water Monitoring Program

The original program included surface water monitoring locations SW-1, SW-2, SW-4, SW-4, SW-5 and SW-7. SW-4 was relocated and represents background surface water quality at the site. In 2009 the Ministry agreed to remove SW-1, SW-2 and SW-7 from the monitoring program as they were typically observed to be dry. In the 2015 Annual Report the Township requested that surface water sampling be deleted from the monitoring program. The MECP letter dated July 7, 2016 reiterated that it should continue. Locations SW-3 and SW-6 are located a significant distance from the landfilling area as shown on **Figure 3** in **Attachment 2** and could be removed from the program.

Upon completion of a more detailed topographic survey and review of surface water drainage from the expanded landfilling area, additional sampling locations may be considered. The proposed analysis is to be expanded to Schedule 5 Column 3 of the Landfill Standards (1998).

To establish a more comprehensive water quality data base, in accordance with ECA Condition 28 we request District Manager approval to alter the groundwater and surface water monitoring program as shown in **Attachment 4**.

### **4.3 Operational**

Landfilling at the Black Donald WDS initially involved a trench, burn and cover operation in the 1970s. Based on a test pit program conducted in 1998 a landfilling area of approximately 0.4ha was identified within the 1.2 ha site and an estimated in place waste volume of 4400m<sup>3</sup>. A copy of the plan is included in **Attachment 5**. The base elevations were developed from an assumed elevation.

At the time of the 2001 application to amend the Certificate an estimated in place volume of 4900m<sup>3</sup> was stated. The Site Development and Operations Plan, January 2001 presented a design with final contours providing a remaining capacity of 34,250 m<sup>3</sup> excluding final cover. A copy of the 2001 design drawings are included in **Attachment 5**.



Landfilling operations included an area method of landfilling over the former waste disposal area and towards Hydro Dam Road within the limits of a 0.9 ha landfilling area which applied a 30m buffer from Hydro Dam Road and a 15m buffer from the Hydro One easement limit.

On April 5, 2010 the Black Donald site was closed to the public for waste and recycling operations. The Greenview Design, Operations and Development Plan, December 2010 design utilized the Jp2g concept and detailed a five (5) staged approach for landfilling. A copy of the 2010 Stage 5 drawing up to final contours without final cover is included in **Attachment 5**.

### Landfilling Operations

The Greenview 2010 report details the current landfilling procedures. The site is approved to receive leaf and yard waste, bulky and construction & demolition (C&D) waste from municipal vehicles and Township approved haulers only, under the supervision of Township staff. The bulky and C&D waste is stockpiled on the active landfilling area and is ground by a licensed contractor for use as an alternative cover material source as per ECA Conditions 16(a) and 35(a) and (b). ECA Conditions 16(b) and (c) permit the Site to receive non-hazardous solid domestic waste on a temporary basis, i.e. in the event waste from the transfer stations cannot be received elsewhere.

### Waste Diversion

There is no curb side collection of household waste and recyclables in the Township unless contracted directly by a homeowner or business. Currently waste received at the three (3) waste transfer sites are hauled to Moose Creek for disposal. Blue box recyclables are transferred to Emterra in Renfrew, cardboard is hauled to OVWRC near Pembroke. Other recyclable materials are picked up by licensed haulers. Household hazardous waste is accepted at the Renfrew Landfill Site facility.

### ECA Operations Review

All waste deliveries to the Site are inspected by trained municipal employees and records maintained of the waste disposal operations. The following ECA conditions are being satisfied.

- 15 (a) The Owner shall develop the Site in accordance with the Site Design, Operations and Development Plan, dated December 22, 2010, item 7 of Schedule "A".
- (b) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site personnel, and the natural environment.
- 20 All incoming waste shall be inspected prior to being received at the Site to ensure that the Site is approved to accept such a waste.
- 21 The Owner shall ensure that all wastes at the Site are managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- 22 The Owner shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g., spills, maintenance work) in a record book located at the Site.



- 23 The Owner shall conduct weekly inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, detected during these inspections shall be recorded in a log, and promptly corrected.
- 24 (a) A sign shall be posted in a prominent location at the entrance at the Site stating the hours of operation, the Owner's name, staff contact and telephone to all in the event of an emergency or any complaints.
- (b) Complaints received from the public or adjacent neighbours shall be recorded in a logbook created and maintained for this purpose.
- 25 (a) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site.
- (b) All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416.325.300 or 1.800.268.6060, and the Municipality, and shall be recorded in a logbook as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.
- (c) All waste material from a spill or process upset, shall be managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- 35 (a) The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
- (b) The Owner shall ensure that Construction and Demolition and Bulky Waste is stored and processing within the landfill footprint, as shown in Figure 6, Proposed Site Design, of item 7 of Schedule "A".
- 36 (a) The Owner shall ensure that leaf and yard storage and composting is conducted as described in the Site Design, Operations and Development Plan, item 7 of Schedule "A".
- (b) A maximum of 1000 cubic meters of leaf and yard waste may be temporarily stored within the staging area.
- (c) Leaf and yard wastes shall be moved to the established composting area within the three months of arrival at the Site.
- (d) A maximum of 500 cubic meters of leaf and yard may be processed within the composting area at any time.
- 37 (a) The Owner shall ensure that cover material is applied at the Site as follows:
- Intermediate – Once every six (6) months, across the entire working face, and/or in areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 0.3 meters of soil or an approved thickness of alternative cover material shall be placed.
  - Final – In areas where landfilling has been completed to final contours, a minimum of 0.6 meters thick layer of final cover soil shall be placed, followed by a 0.15 meter of topsoil.



- (b) In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, followed by 0.15 meters of soil.
- (c) The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 37(a):
  - leaf and yard waste mixed with soil cover and/or wood chips
  - composted or partially-composted leaf and yard waste
  - asphalt shingles
  - clean wood chips
  - contaminated soil, non-hazardous
  - processed C&D and bulky waste materials

### Ministry Site Inspections

According to Township records a site inspection was completed May 26, 2015. A site inspection report dated July 6, 2015 requested the following:

1. Weekly inspections as per Condition 23 of the ECA.
2. Records of inspections as per Condition 22 of the ECA
3. Signage to be improved as per Condition 24(a) of the ECA
4. Access by unauthorized person is prevented by better fencing as per Section 11(6) of the O.Reg 347 of the EPA.

In reference to the 2021 Annual Report (Greenview, 2022) the Township received a site inspection report dated October 9, 2019. The report includes the following action items:

1. Township shall begin keeping weekly record of the equipment and facilities at the Site as per Condition 23 of the ECA
2. Recommend posting a No Dumping sign at the entrance and take further steps to prevent dumping as required by Section 11(16) of O.Reg 347

An Action Plan was filed by Greenview dated November 25, 2019. The Township submitted photos of the signage on February 14, 2020.

### Jp2g Site Review

Jp2g conducted a site inspection on September 16 and 29, 2022 to review current operations and assess the feasibility of an expansion to the landfilling area. All signage was in good condition and the gate was locked. The access road to the fill area was in satisfactory condition. A large stockpile of unprocessed bulky and C&D waste was deposited on the waste mound, the ground waste has been spread and there was little wind-blown litter. Areas of the waste mound had received earth/granular material final cover and some slopes were fairly steep. Overall, the waste mound needed re-grading to achieve the 4:1 side slopes and final contours where landfilling was completed.



## 5.0 EXPANSION PROPOSAL

The existing landfilling area is located on a topographic bedrock high with slopes southeast and east. Overburden is characterized by a fine to medium sand of approximately 0.3 to 1.5m in thickness with local bedrock outcropping near the fill area. MW08-7 located to the east on the opposite side of Hydro Dam Road has over 8m of overburden thickness.

Based on groundwater elevation measurements over the past 20 years there is a shallow groundwater flow to the east, west and southwest which is generally consistent with the slope of the ground topography.

MW08-6 is considered the background well installed on Crown Land on the opposite side of the Hydro transmission line. BH1 is located approximately 25m east and downgradient of the fill area and the water quality is characterized by elevated concentrations of landfill leachate parameters. Given the proximity to Hydro Dam Road, road salting may also be a factor.

A RUC assessment was completed at MW08-7 which is located to the southeast of the fill area and 180m southeast of BH1 at the easterly limit of the CAZ. No RUC exceedances were documented, as the elevated DOC concentration was also detected in the background well.

In support of the proposed expansion, we propose the installation of additional overburden and bedrock monitoring wells. Water quality analysis to be expanded to Schedule 5 Column 1 of the Landfill Standards. We propose to maintain the current surface water sampling locations SW-4 (background) and SW-5 and expand the analysis to include the parameters in Schedule 5 Column 3 of the Landfill Standards. Upon further detailed topographic survey of the expansion area additional locations may be identified.

Due to the Hydro transmission line and Hydro Dam Road the expansion of the fill area is limited to the south and southeast. **Drawing No. 1** illustrates a conceptual expansion which could add another 30,000 to <40,000m<sup>3</sup> of waste disposal capacity. The final design requirements for the proposed expansion will require additional field elevation survey.



We trust this summary is satisfactory and will be considered by the Ottawa District Office and TSS in their review of the latest Annual Report. Should you have any questions please do not hesitate to contact the undersigned.

Yours very truly,  
**Jp2g Consultants Inc.**  
Engineers • Planners • Project Managers

A handwritten signature in black ink, appearing to read 'K Mooder', written in a cursive style.

Kevin Mooder, MCIP, RPP  
Principal | Environmental Services

A handwritten signature in black ink, appearing to read 'Andrea Sare', written in a cursive style.

Andrea Sare, C.Tech, EP.  
Environmental Consultant

A handwritten signature in black ink, appearing to read 'Andrew Buzza', written in a cursive style.

Andrew Buzza, P.Geo  
Sr. Hydrogeologist

KM/AS/AB/jlp

cc Leonard Emon Facilities Manager

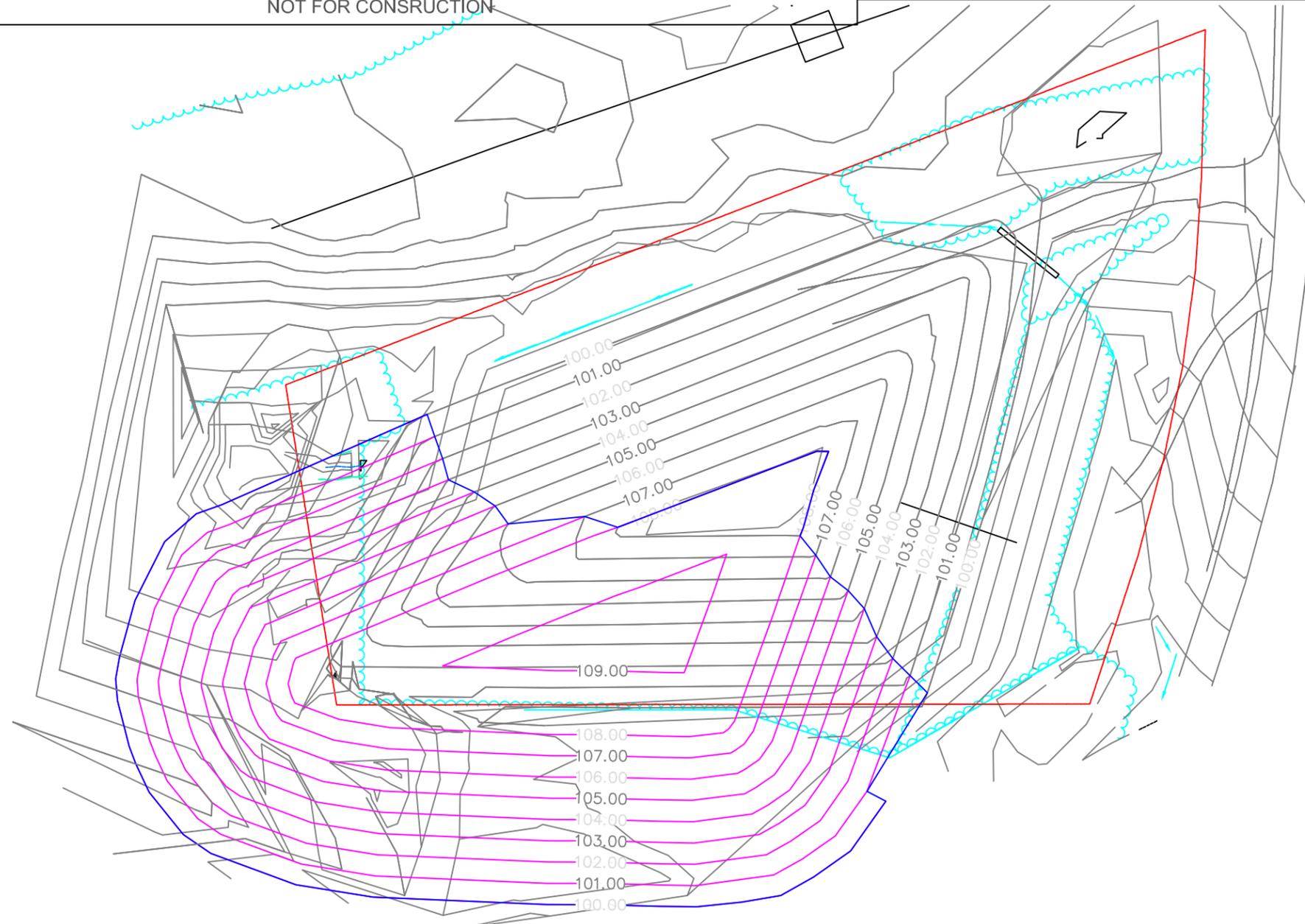
# Drawings

**NOTES**

1. EXPANSION DESIGN CONTOURS START AT 96.5M A 4:1 SLOPE TO ELEVATION 109M
  2. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 109m TO TIE IN. PEAK ELEVATION= 110.00m.
  3. EXPANSION DESIGN ESTIMATED CAPACITY= 36500m<sup>3</sup>. (Base on flat plane of 100m elv.)
  4. ELEVATIONS ARE APPROXIMATE BASE ON JP2G (2001) DRAWINGS AND GREENVIEW DRAWING (2010)
  5. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.
- NOT FOR CONSRUCTION

**Legend**

- 0.9ha Landfilling Area
- Existing Contours
- Proposed Contours
- Roadway

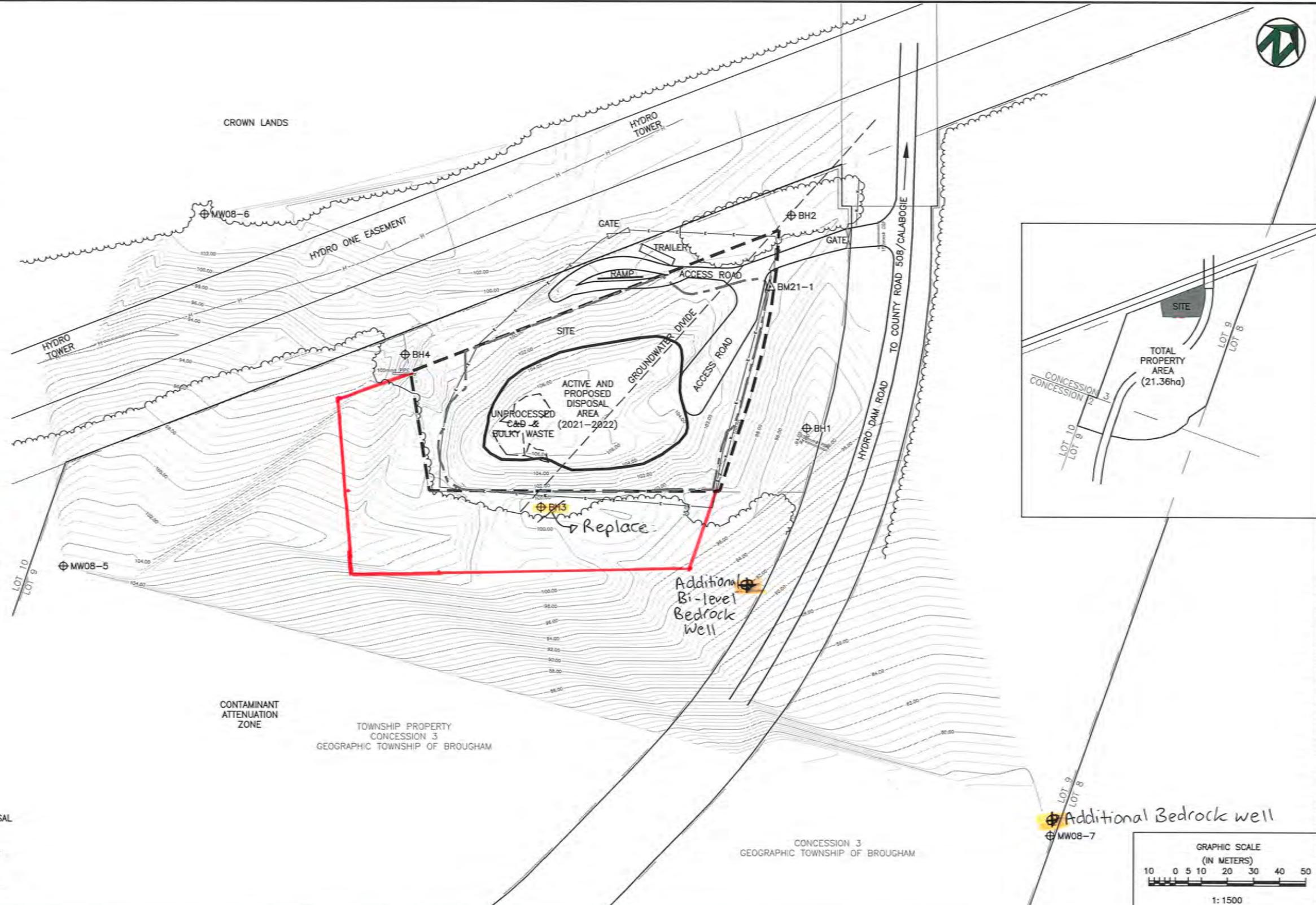


**LEGEND**

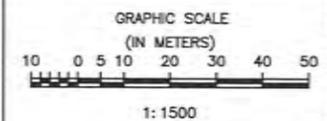
- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- · - · - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- - - - - CONTAMINANT ATTENUATION ZONE
- 100.00 MAJOR TOPOGRAPHIC CONTOUR (2m)
- MINOR TOPOGRAPHIC CONTOUR (0.5m)
- ON-SITE ROAD
- RIGHT-OF-WAY
- - - - - FENCELINE
- - - - - ELECTRIC BEAR FENCE
- ~ ~ ~ ~ ~ APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE

*Proposed limits of Expansion*

*Additional monitoring wells*



- NOTES**
1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
  2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
  3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Bancroft, Ontario  
613.332.0957  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF GREATER MADAWASKA**

PROJECT:  
EXISTING SITE CONDITIONS PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**2**

2 OF 6

# **Attachment 1**

## **ECA**

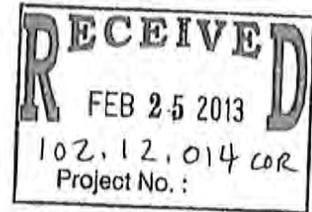
**AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A411902

Notice No. 3

Issue Date: January 24, 2013

The Corporation of the Township of Greater Madawaska  
1101 Francis St  
Post Office Box, No. 180  
Greater Madawaska, Ontario  
K0J 1H0



Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Rd  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Approval No. A411902 issued on March 27, 1980, and amended on October 12, 2001 and July 12, 2002 for the use and operation of a 1.2 hectare waste disposal site, as follows:*

This Notice of Amendment updates the Approval to reflect current site operations, approves alternative daily cover and the Site Trigger and Contingency Plan.

**The following definitions are added:**

"Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A".

"Construction and Demolition and Bulky Waste" or "C&D waste" means wastes resulting from construction, and includes the following: asphalt shingles, mattresses, furniture, carpet, tree stumps, drywall, wallboard, wood (painted and unpainted).

**The following Conditions are revoked and replaced:**

- (15) (a) The Owner shall develop the Site in accordance with the Site Design, Operations and Development Plan, dated December 22, 2010, item 7 of Schedule "A".
- (b) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site

personnel, and the natural environment.

- (16) (a) The Site shall only receive only non-hazardous solid Construction and Demolition and Bulky Waste, and leaf and yard waste, generated from within the Township of Greater Madawaska.
- (b) The Site may receive non-hazardous solid domestic waste from within the Township of Greater Madawaska, on a temporary basis, only with prior written authorization from the District Manager.
- (c) Prior notification of 48-hours must be provided to the District Manager for receipt of any domestic waste.
- (23) The Owner shall conduct weekly inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, which are detected during these inspections shall be recorded in a log, and promptly corrected.
- (26) The Owner shall implement the Site surfacewater and groundwater monitoring program as described in Schedule "B" of this Approval.

#### **Site Trigger and Contingency Plan**

- (29) The Owner shall establish the surfacewater and groundwater trigger and contingency plan, as described in Section 6.2 of the Design, Development and Operations Plan, item 7 of Schedule "A".

#### **The following Conditions are added:**

##### **Waste Processing**

- (35) (a) The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
- (b) The Owner shall ensure that Construction and Demolition and Bulky Waste is stored and processed within the landfill footprint, as shown in Figure 6, Proposed Site Design, of item 7 of Schedule "A".

##### **Leaf and Yard**

- (36) (a) The Owner shall ensure that leaf and yard storage and composting is conducted as described in the Site Design, Operations and Development Plan, item 7 of Schedule "A".
- (b) A maximum of 1000 cubic metres of leaf and yard waste may be temporarily stored within the staging area.
- (c) Leaf and yard wastes shall be moved to the established composting area within three months of arrival

at the Site.

- (d) A maximum of 500 cubic metres of leaf and yard waste may be processed within the composting area at any time.
- (d) Composted leaf and yard waste may only be used as alternative daily cover at the Site; it may not be re-used by the public.

#### **Cover**

(37)(a) The Owner shall ensure that cover material is applied at the Site as follows:

- Intermediate - Once every six (6) months, across the entire working face, and/or in areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 0.3 metre of soil or an approved thickness of alternative cover material shall be placed; and
  - Final -In areas where landfilling has been completed to final contours, a minimum of 0.6 metre thick layer of final cover soil shall be placed, followed by 0.15 metre of topsoil.
- (b) In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, consisting of a minimum of 0.15 m of soil.

#### **Alternative Daily Cover**

- (c) The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 37 (a):
- leaf and yard waste mixed with soil cover and/or wood chips;
  - composted or partially-composted leaf and yard waste;
  - asphalt shingles;
  - clean wood chips;
  - contaminated soil - non-hazardous;
  - processed C&D and bulky waste materials.

## Schedule "A"

The following items are added to Schedule "A".

7. Report entitled "Design, Operations and Development Plan, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, Ontario", prepared by Greenview Environmental Management Limited, dated December 22, 2010.
8. Letter dated July 30, 2012, from Dan Hagan, Greenview Environmental Management, to Lynda Mulcahy, MOE, RE: Application for Approval of Waste Disposal Sites, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, MOE reference number: 3866-CTJ5V, with responses to waste review comments and questions.
9. e-mail from Dan Hagan, Greenview Environmental Management Limited, to Lynda Mulcahy, MOE, sent August 22, 2012, 9:57am, Subject: RE TGM - Black Donald WDS - Application for Approval of Waste Disposal Sites - MOE Request for Additional Information (MOE Reference Number: 3866-8CTJ5V)

Schedule "B" is added to the Approval

Site Groundwater and Surfacewater Monitoring Program

Location	Frequency	Parameters
<u>Groundwater</u> BH1, BH2, BH3, BH4, MW08-5, MW08-6, MW08-7  1 QA/QC	Twice per year (Spring, Fall)	Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc  field measurements (pH, conductivity, temperature), water levels
BH1	Once every 5 years (Spring)	VOCs - EPA 624
<u>Surface Water</u> SW-3, SW-4, SW-5, SW-6  1 QA/QC	Three Times (Spring, Summer, Fall)	Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, nitrite, phenols, potassium, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc, TSS  Field Measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation))

The reasons for this amendment to the Approval are as follows:

Condition 15 was revised to reflect the updated Design, Operations and Development plan for the Site, and to ensure the Site does not cause nuisance or impacts.

Condition 16 was revised to clarify the currently-approved wastes that may be received at the Site.

Condition 23 was revised to update the Site inspection requirement.

Condition 26 was revised to reflect the updated Site monitoring programs.

Condition 29 was added to approve the Site trigger and contingency plan.

Condition 35 is added to ensure that storage and processing of construction and demolition wastes are carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 36 is added to ensure that leaf and yard waste storage and composting is carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 37 is included to specify cover requirements for the Site, to ensure operations to not cause impacts or nuisance.

Schedule B was added to the Approval to include the updated Site monitoring program.

**This Notice shall constitute part of the approval issued under Approval No. A411902 dated March 27, 1980**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;

7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

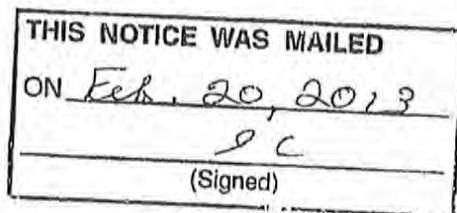
AND

The Director appointed for the purposes of  
Part II.1 of the Environmental Protection Act  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 24th day of January, 2013



Tesfaye Gebrezghi, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

LM/

c: District Manager, MOE Ottawa  
Tyler H. Peters, Greenview Environmental Management Limited ✓

K. Hebert  
SIRE BM C03 250 ✓



Ontario

Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A411902  
Notice No. 2

The Corporation of the Township of Greater Madawaska  
1101 Francis Street  
Bagot, Blythfield And Brougham, Ontario  
K0J 1H0

MINISTRY OF THE ENVIRONMENT  
JUL 18 2002  
OTTAWA

Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Road  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A411902 issued on March 27, 1980, and amended on October 22, 2001 for submission of development and operations report as per Condition No. (14) of October 22, 2001 amendment, as follows:*

**Condition No. (14) is hereby revoked.**

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**SITE OPERATIONS:**

- (15) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site personnel, and the natural environment, all in accordance to the Development and Operations Plan, Items 4, 5 and 6 of Schedule "A".
- (16) The Site shall only receive non-hazardous municipal waste that is generated from within the Township of Greater Madawaska.
- (17) The normal daily hours of operation for receiving waste at the Site are 7 am to 9 pm.
- (18) The total volumetric capacity of the Site, including waste, daily, interim and final cover, is 46,785 cubic meters.
- (19) The Owner shall ensure that there is no burning of waste, trees, brush and or clean wood piles at the Site.
- (20) All incoming waste shall be inspected prior to being received at the Site to ensure that the Site is approved to accept such a waste.

- (21) The Owner shall ensure that all wastes at the Site are managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- (22) The Owner shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g. spills, maintenance work) in a record book located at the Site.
- (23) The Owner shall conduct daily inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition all the times. Any deficiencies, which might negatively impact the environment, detected during these inspections shall be recorded in a log, and promptly corrected.
- (24) (a) A sign shall be posted in a prominent location at the entrance of the Site stating the hours of operation, the Owner's name, staff contact and telephone number to call in the event of an emergency or any complaints;
- (b) Complaints received from the public or adjacent neighbours shall be recorded in a log book created and maintained for this purpose.
- (25) (a) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site;
- (b) All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416-325-3000 or 1-800-268-6060, and the Municipality, and shall be recorded in a log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences; and
- (c) All waste material resulting from a spill or process upset, shall be managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.

#### MONITORING AND REPORTING REQUIREMENTS

- (26) Surface and groundwater monitoring shall be conducted in accordance to Section 9.1 and 9.2, Item 4 of Schedule "A" provided that the following conditions are met:
- (a) Prior to the development of the Site, the Owner shall establish that the seasonal high water table is at least one meter below the proposed excavation bottom;
- (b) In addition to the parameters listed in Table 2, Section 9.1, Item 4 of Schedule "A", Nitrate and Ammonia shall be included for groundwater monitoring; and
- (c) The background groundwater monitoring well (BH-1) shall be established further away from the waste pile, and one groundwater monitoring well shall be established at the midway point of the Site's southern boundary.
- (27) By March 31, 2003, and on an annual basis thereafter, the Owner shall submit to the District Manager, an annual report on the development, operation and monitoring of the Site, including any

recommendations or changes to the annual monitoring program, in accordance to Section 10.1, Item 4 of Schedule "A".

- (28) A written approval from the District Manager shall be obtained for any changes to the annual monitoring program prior to these changes being implemented.
- (29) (a) In accordance to the Phased Plan outlined in Section 9.1, Item 4 of the Schedule "A", and by March 31, 2003, included in the annual monitoring report, the Owner shall submit to the District Manager for written approval, trigger levels for initiating investigative activities into the cause of an increase in contaminant concentrations as established by the surface and ground water monitoring programs along with appropriate investigative activities and contingency measures;
- (b) Within six (6) months from exceedance of the established trigger levels, the Owner shall submit to the Director for approval, the design of appropriate contingency measures and provide detailed plans, specifications and description for the design, operation and maintenance for the appropriate remedial actions; and
- (c) The remedial actions shall be implemented within nine months from the approval by the Director.

#### **BUFFER AREA AND CONTAMINANT ATTENUATION ZONE**

- (30) Within 60 days of issuance of this Amendment, the Owner shall arrange for a legal survey of the Site and required buffer area, as specified in Items 4 and 5 of Schedule A, to be conducted by an Ontario Land Surveyor registered under the Surveyors Act.
- (31) (a) By June 30, 2003, the Owner shall acquire the lands required for the contaminant attenuation zone in accordance to Figure 2 and Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other methods for bringing the Site into compliance with respect to Guideline B-7, Reasonable Use Criteria and other applicable Ministry Regulations, Guidelines and Policies.
- (b) (i) By June 30, 2003, the Owner shall acquire lands required for the 30 meter southern and western buffer areas in accordance to Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other Site development methods to allow for a 30 meter southern and western buffer within the current Site boundary.
- (ii) The Owner shall not commence waste disposal activities on the southern and western Site boundary until Condition (31)(b)(i) has been met.
- (c) Within 30 days of purchase of lands noted in Condition (31)(a) and (31)(b), the Owner shall submit to the Director an updated legal survey of these lands for addition of these lands to the Certificate of Approval.

- (32) The Owner shall ensure that no wastes are deposited within the designated 15 meter northern buffer area and the 30 meter eastern buffer area after the date of issuance of this Certificate of Approval.

#### **PROHIBITION AND REGISTRATION ON TITLE**

- (33) Pursuant to Section 197 of the EPA neither the Owner nor any person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Certificate to each person acquiring an interest in the Site as a result of the dealing.

(a) The Owner shall:

(i) Within sixty (60) calendar days of the date of this Certificate, submit to the Director for the Director's signature two (2) copies of a completed Certificate of Prohibition containing a registerable description of the Site, in accordance with Form 1 of O. Reg. 14/92 (Document General- Form 4- Land Registration Reform Act); and

(ii) Within ten (10) calendar days of receiving the Certificate of Prohibition signed by the Director, register the Certificate of Prohibition in the appropriate Land Registry Office on title to the Site and submit to the Director immediately following registration the duplicate registered copy.

#### **SITE CLOSURE**

- (34) Within 2 years prior to the Site reaching its final capacity specified in this Amendment, the Owner shall submit to the Director, for approval, a plan for closure, post closure monitoring and maintenance of the Site. The plan shall include but not be limited to the final contours of the Site, completion, inspection and maintenance of the final cover, an assessment of the adequacy of the monitoring and contingency plans and any other post closure monitoring and care.

#### **The following items are added to SCHEDULE "A":**

4. Township of Greater Madawaska, Black Donald Waste Disposal Site, Site Development and Operations Plan, Prepared by Jp2g Consultants Inc. dated January 2001.
5. Letter and accompanying documents dated November 13, 2001, from Brian Whitehead, Jp2g Consultants Inc., addressed to John Kaasalainen, MOE.
6. Letter dated March 13, 2002, from Nafiseh Pourhassani, P. Eng., MOE, addressed to Cathy Reddy, The Corporation of the Township of Greater Madawaska.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A411902 dated March 27, 1980 and amended on October 22, 2001.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*  
Environmental Review Tribunal  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

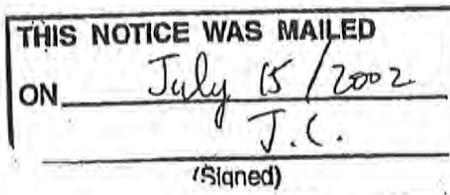
AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

The above noted waste disposal site is approved under Section 39 of the *Environmental Protection Act*.

DATED AT TORONTO this 12th day of July, 2002



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

NP/

c: District Manager, MOE Ottawa District Office  
Andrew Polley, MOE, Ottawa District Office ✓  
Bruce Harman, Lakefield Research Ltd.

A. P. 1/15  
Please establish trading of  
compliance dates.

EB



Ontario

Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A 411902  
Notice No. 1

Corporation of the Township of Greater Madawaska  
P.O. Box 180  
1101 Francis Street,  
Calabogie, Ontario  
K0J 1H0

OCT 25 2001  
OTTAWA

Site Location: Black Donald Waste Disposal Site  
Pt. Lot 9, Conc. 3, 34 Hydro Dam Road  
Geographical Township of Brougham  
Township of Greater Madawaska, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A 411902 issued on March 27, 1980 for an increase in the site service area to include the Township of Greater Madawaska, as follows:*

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**DEFINITIONS**

- (2) For the purpose of this Certificate of Approval, unless the contrary intention appears, the following words and phrases shall have the following meaning attributed to them:
  - 2.1 "Adverse Effect" is as defined in the Environmental Protection Act, R.S.O. 1990.
  - 2.2 "Applicant" and/or "Owner" means the Township of Greater Madawaska.
  - 2.3 "Certificate" means the Provisional Certificate of Approval No. A 411902, as amended from time to time, including all schedules attached to and forming part of the Certificate.
  - 2.4 "Crown" means Her Majesty the Queen in Right of Ontario.
  - 2.5 "Director" means the one or more persons who from time to time are so designated for the purpose of Part V of the Environmental Protection Act.
  - 2.6 "District Manager" means the District Manager of the Ministry's Ottawa District Office.
  - 2.7 "EPA" means the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended.
  - 2.8 "Ministry" and/or "MOE" means the Ontario Ministry of the Environment.
  - 2.9 "ODWS" means the Ontario Drinking Water Standards, as amended.
  - 2.10 "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, as amended.

- 2.11 "PWQO" means the Provincial Water Quality Objectives, as amended.
- 2.12 "Site" means the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule "A" of the Certificate and consisting of approximately a 1.2 hectare landfill site.
- 2.13 "Supporting Documentation" refers to the reports listed in Schedule "A" of the Certificate.

#### GENERAL

- (3) The requirements specified in this Provisional Certificate of Approval are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Provisional Certificate of Approval in no way abrogates the Applicant's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
- (4) The requirements of this Provisional Certificate of Approval are severable. If any requirement of this Provisional Certificate of Approval, or the application of any requirement of this Provisional Certificate of Approval to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Provisional Certificate of Approval shall not be affected in any way.
- (5) The Applicant shall ensure compliance with all the terms and conditions of this Provisional Certificate of Approval. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and is grounds for enforcement.
- (6) (a) The Applicant shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Provisional Certificate of Approval, including but not limited to, any records required to be kept under this Provisional Certificate of Approval; and
- (b) In the event the Applicant provides the Ministry with information, records, documentation or notification in accordance with this Provisional Certificate of Approval (for the purposes of this condition referred to as "Information"),
- (i) the receipt of Information by the Ministry;
  - (ii) the acceptance by the Ministry of the information's completeness or accuracy; or
  - (iii) the failure of the Ministry to prosecute the Applicant, or to require the Applicant to take any action, under this Provisional Certificate of Approval or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Applicant relating to the Information, amounting to

non-compliance with this Provisional Certificate of Approval or any statute or regulation.

- (7) The Applicant shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:
- (a) carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this Provisional Certificate of Approval relates; and,  
  
without restricting the generality of the foregoing, to:
    - (i) enter upon the premises where the records required by the conditions of this Provisional Certificate of Approval are kept;
    - (ii) have access to and copy, at reasonable times, any records required by the conditions of this Provisional Certificate of Approval;
    - (iii) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this Provisional Certificate of Approval; and
    - (iv) sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this Provisional Certificate of Approval.
- (8) (a) Where there is a conflict between a provision of any document referred to in Schedule "A", and the conditions of this Provisional Certificate of Approval, the conditions in this Provisional Certificate of Approval shall take precedence; and
- (b) Where there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall prevail.
- (9) The Applicant shall ensure that all communications/correspondence made pursuant to this Provisional Certificate of Approval includes reference to the Provisional Certificate of Approval number A411902.
- (10) The Applicant shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
- (a) change of Applicant or operator of the Site or both;
  - (b) change of address or address of the new Applicant;

- (c) change of partners where the Applicant or operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, 1991 shall be included in the notification to the Director;
- (d) any change of name of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (form I or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
- (e) change in directors or officers of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 9(d), supra.
- (11) In the event of any change in ownership of the Site, the Applicant shall notify, in writing, the succeeding owner of the existence of this Provisional Certificate of Approval, and a copy of such notice shall be forwarded to the Director.
- (12) Any information relating to this Provisional Certificate of Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
- (13) All records and monitoring data required by the conditions of this Provisional Certificate of Approval must be kept on the Owner's premises for a minimum period of two (2) years from the date of their creation.

#### **DEVELOPMENT AND OPERATIONS**

- (14) Within 3 months of the date of this Notice, the Applicant shall submit to the Director for approval an updated development and operations report and supporting hydrogeological study outlining how the remaining capacity of the Site is to be utilized. These reports shall include the following information
- site plans showing the waste disposal footprint, buffer zones, and contaminant attenuation zones, if required, including the ownership of such lands;
  - site operation and development plans;
  - daily/intermediate/final cover requirements;
  - security, fencing, signage, site supervision, housekeeping and screening requirements;
  - surface drainage plans, leachate and gas control plans;
  - a proposed monitoring program for landfill gas, leachate, groundwater, and surface water including trigger mechanisms and contingency plans;
  - reporting requirements; and
  - closure plans.

All in accordance with the following plans and specifications which are added to Schedule "A" of the Certificate:

1. The Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 11, 2001 as signed by Cathy Reddy, Clerk Treasurer of the Township of Greater Madawaska.
2. The letter dated January 31, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. providing the purpose and basis for this amendment.
3. The letter dated March 1, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. requesting that the proposed amendment be split into two parts, one for the service area change and another for the site development aspects as well as the reasons for this request.

*The reasons for this amendment to the Certificate of Approval are as follows:*

*The reasons for this amendment are to allow for an increase in service area for the waste disposal site and to update the Certificate to meet the Ministry's current requirements.*

*The reasons for each of the conditions of approval are as follows:*

- 1) *The reason for Condition (2) is to define the specific meaning of terms used to simplify the conditions in this Certificate.*
- 2) *The reason for Conditions (3), (4), (5), (8), (9), (10), (11), (12) and (13) is to clarify the legal rights and responsibilities of the Owner.*
- 3) *The reason for Condition (6) and (7) is to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site which are approved under this Provisional Certificate of Approval. Condition (7) is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Environmental Protection Act, the Ontario Water Resources Act, and the Pesticides Act, as amended.*
- 4) *The reason for Condition (14) is to ensure that the continued use and operation of the Site is done in an environmentally acceptable manner.*

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No.A 411902 dated March 27, 1980, as amended.**

*In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and; The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Appeal Board  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

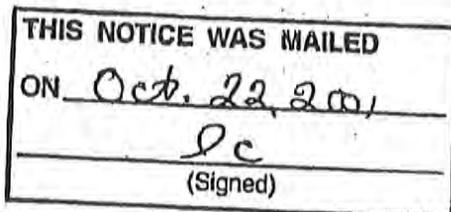
AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.*

DATED AT TORONTO this 12th day of October, 2001



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

JK/

c: District Manager, MOE Ottawa ✓  
Brian Whitehead, Planner, Jp2g Consultants Inc.



Ontario

Ministry  
of the  
Environment

133 Dalton St., Box 820  
Kingston, Ontario  
K7L 4X6

March 27, 1980

Township of Brougham  
Dacre, Ontario  
NOJ 1NO.

RE: Dump Site  
Lot 9, Concession III  
Township of Brougham  
County of Renfrew

The enclosed revised Provisional Certificate of Approval contains a condition requiring it be registered on title. The reason for this condition is attached to the Certificate.

Two copies of the Certificate and reasons are on long paper to facilitate registration. Both of these should be taken to the Land Registry Office and one returned to the Director with registration particulars.

If your Certificate does not contain sufficient legal description for registration because you have not given one to the Director, you will have to provide one under Section 23(1) (e) of The Registry Act or in your application under The Land Titles Act.

In the event that the site including its buffer, is part of a larger parcel of land and you do not wish to prepare a new survey at this time, you may register the Certificate against the larger parcel of land. If you do so, the Director is prepared, if requested in the future.

1. In the case of land recorded under The Land Titles Act, to consent to an application to delete the registration from the title of lands not within the site including its buffer zone, and
2. In the case of land recorded under The Registry Act, to issue a Certificate that lands not used for the actual disposal of waste or buffer zone have not been so used.

Such documents would be issued after suitable draft documents including legal description were submitted by you or your successor. The purpose of such documents would be to assure subsequent purchasers that the lands in question were not affected by section 46 of the Environmental Protection Act.

Yours very truly

  
Director



Ministry  
of the  
Environment

Provisional Certificate No. A 411902

### PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Brougham  
Dacre, Ontario  
NOJ 1NO

for the use and operation of a 1.2 hectare dump site

all in accordance with the following plans and specifications:

Located: **Lot 9, Concession III  
Township of Brougham  
County of Renfrew**

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and 5% other wastes, limited to scrap metal, brush, lumber and construction debris.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

THIS IS A TRUE COPY OF THE  
ORIGINAL CERTIFICATE MAILED  
ON Apr 9/80

(Signed)

Dated this 27th day of March, 19 80.

  
Director, Section 39,  
The Environmental Protection Act 1971



Ministry of the  
Environment

## NOTICE

TO: Township of Brougham  
Dacre, Ontario  
NOJ 1NO

You are hereby notified that Provisional Certificate of Approval No. A 411902 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

The reason for the condition requiring registration of the Certificate is that Section 46 of The Environmental Protection Act, 1971 prohibits any use being made of the lands after they cease to be used for waste disposal purposes in order to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

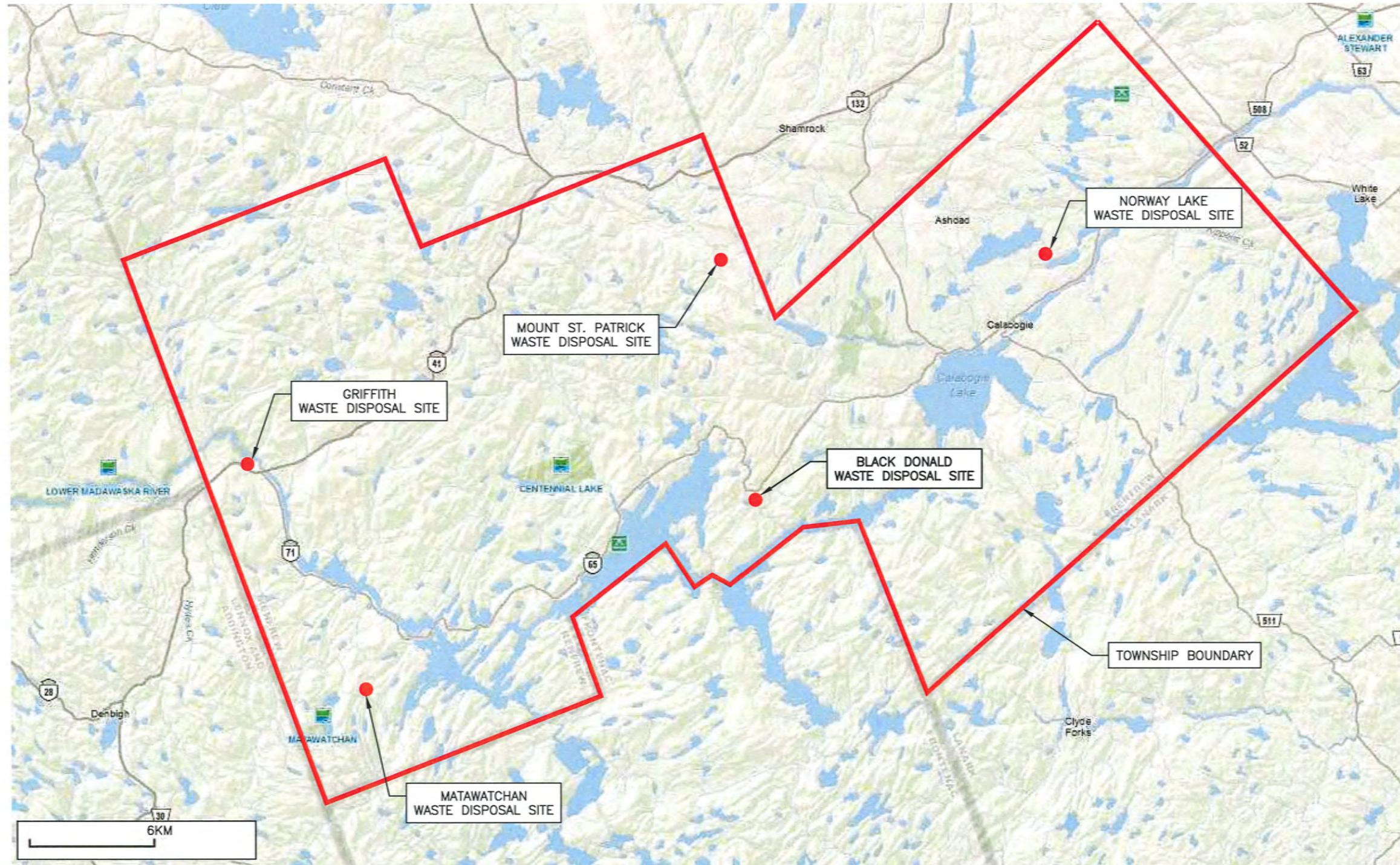
The Secretary,  
Environmental Appeal Board, AND  
1 St. Clair Ave. West,  
5th Floor,  
Toronto, Ontario.  
M4V 1K7

The Director,  
Section 39  
Ministry of the Environment,

DATED this 27th day of March , 1980 .

*Handwritten signature*

**Attachment 2**  
**2021 Annual Report Figures**



SOURCE: ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, 2016.



13 Commerce Court  
Bancroft, Ontario  
613.332.9057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
AS NOTED	MAR 2022



PROJECT:

REGIONAL LOCATION PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

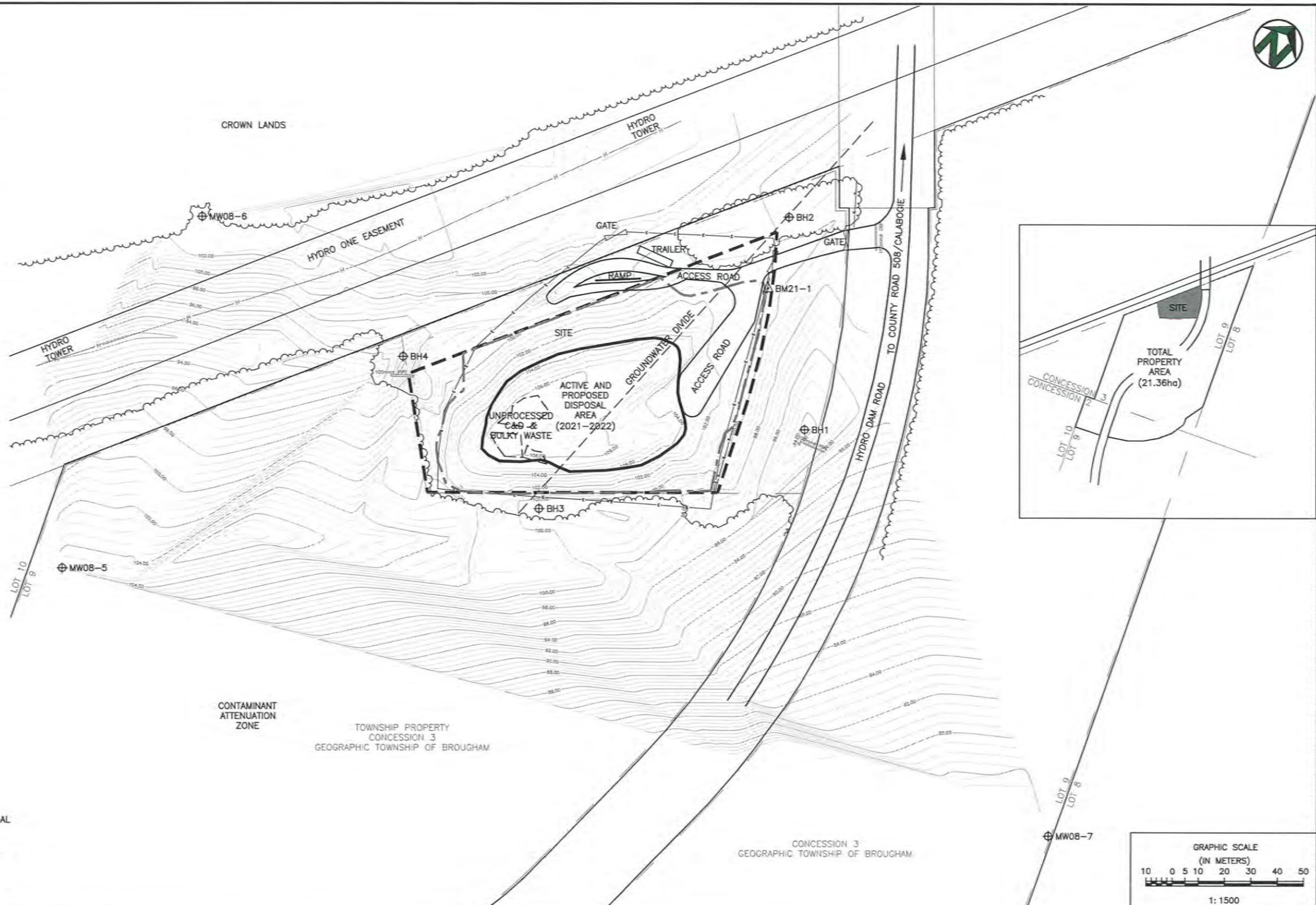
PROJECT No:  
102.21.014

FIGURE:  
**1**  
1 OF 6

C:\AutoCAD\103 Greater Madawaska\102.21.014 - TBL - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg

**LEGEND**

- PROPERTY BOUNDARY
- APPROVED WASTE DISPOSAL AREA
- EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- CONTAMINANT ATTENUATION ZONE
- MAJOR TOPOGRAPHIC CONTOUR (2m)
- MINOR TOPOGRAPHIC CONTOUR (0.5m)
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.

**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.9057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
1:1500	MAR 2022

CLIENT:

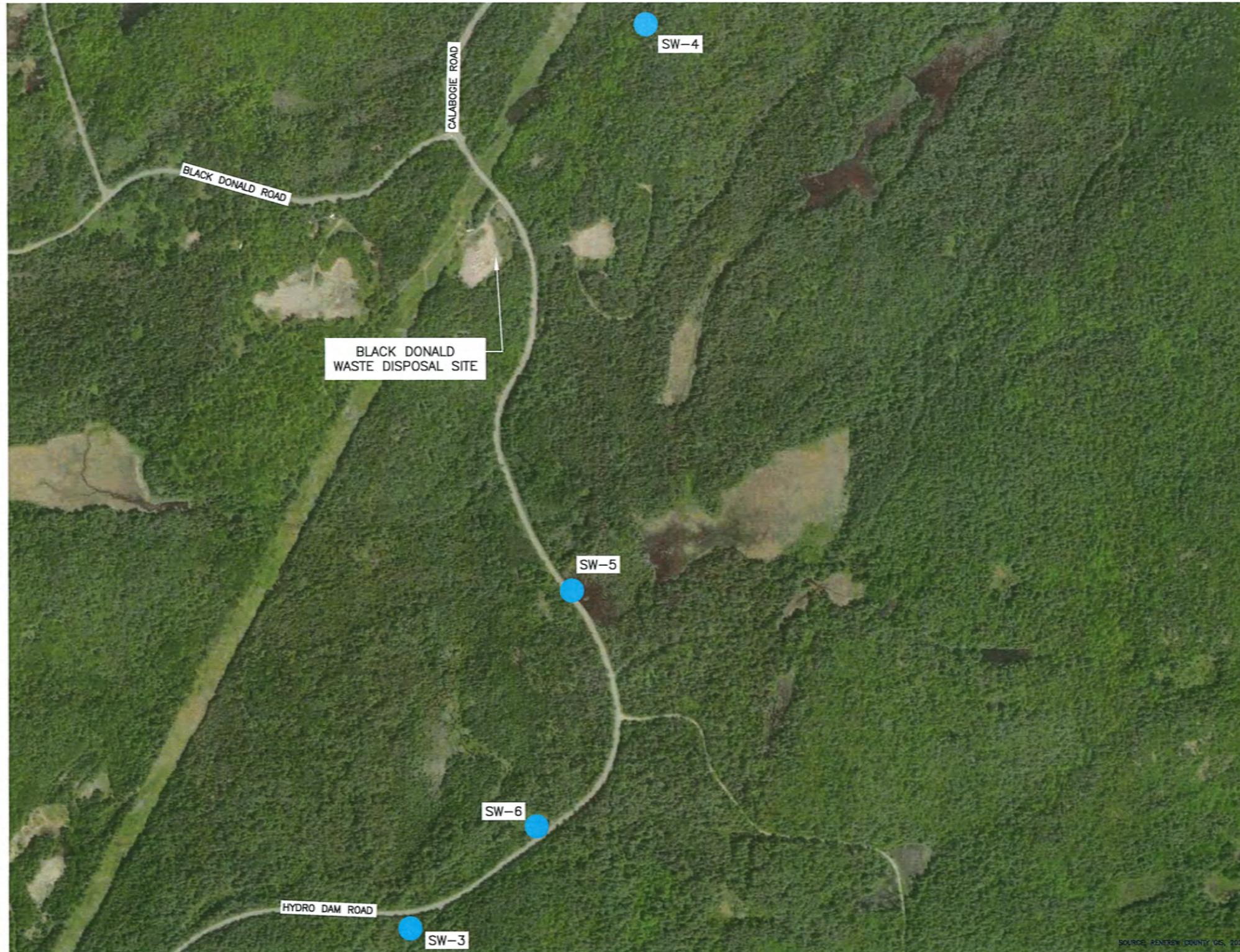
PROJECT:

EXISTING SITE CONDITIONS PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**2**

2 OF 6



NOTE: ALL LOCATIONS APPROXIMATE.

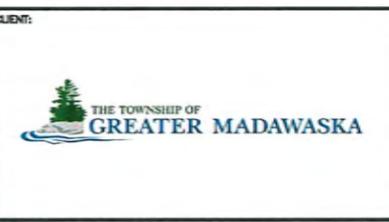
SOURCE: KENTON COUNTY GIS, 2021.



13 Commerce Court  
Bancroft, Ontario  
613.332.0057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: NTS	DATE: MAR 2022



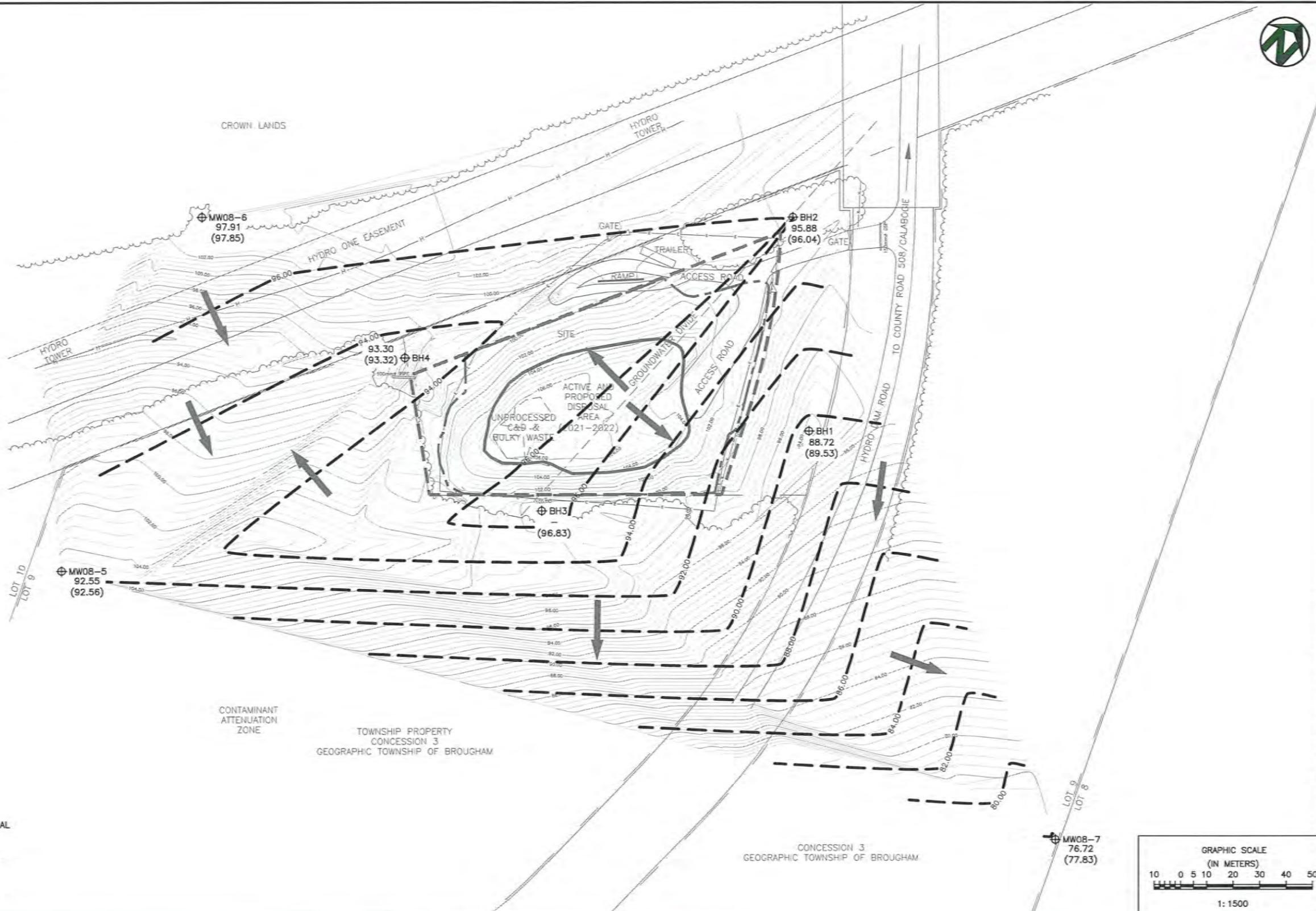
PROJECT:  
  
SURFACE WATER MONITORING LOCATION PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No: 102.21.014
FIGURE: <b>3</b>
3 OF 6

G:\AutoCAD\102.21.014 - TBM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg Black Donald WDS - 2021 AR FIGURES - FINAL.dwg

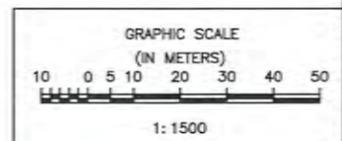
**LEGEND**

- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- - - - - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- - - - - CONTAMINANT ATTENUATION ZONE
- 100.00 — TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- - - - - APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- 96.00 EQUIPOTENTIAL CONTOUR (MAY 18, 2021)
- 88.18 GROUNDWATER ELEVATIONS
- (89.16) NOVEMBER 04, 2021 (MAY 18, 2021)
- ← GROUNDWATER FLOW DIRECTION
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.9157  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF  
GREATER MADAWASKA**

PROJECT:  
ENVIRONMENTAL MONITORING LOCATION PLAN – SPRING  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

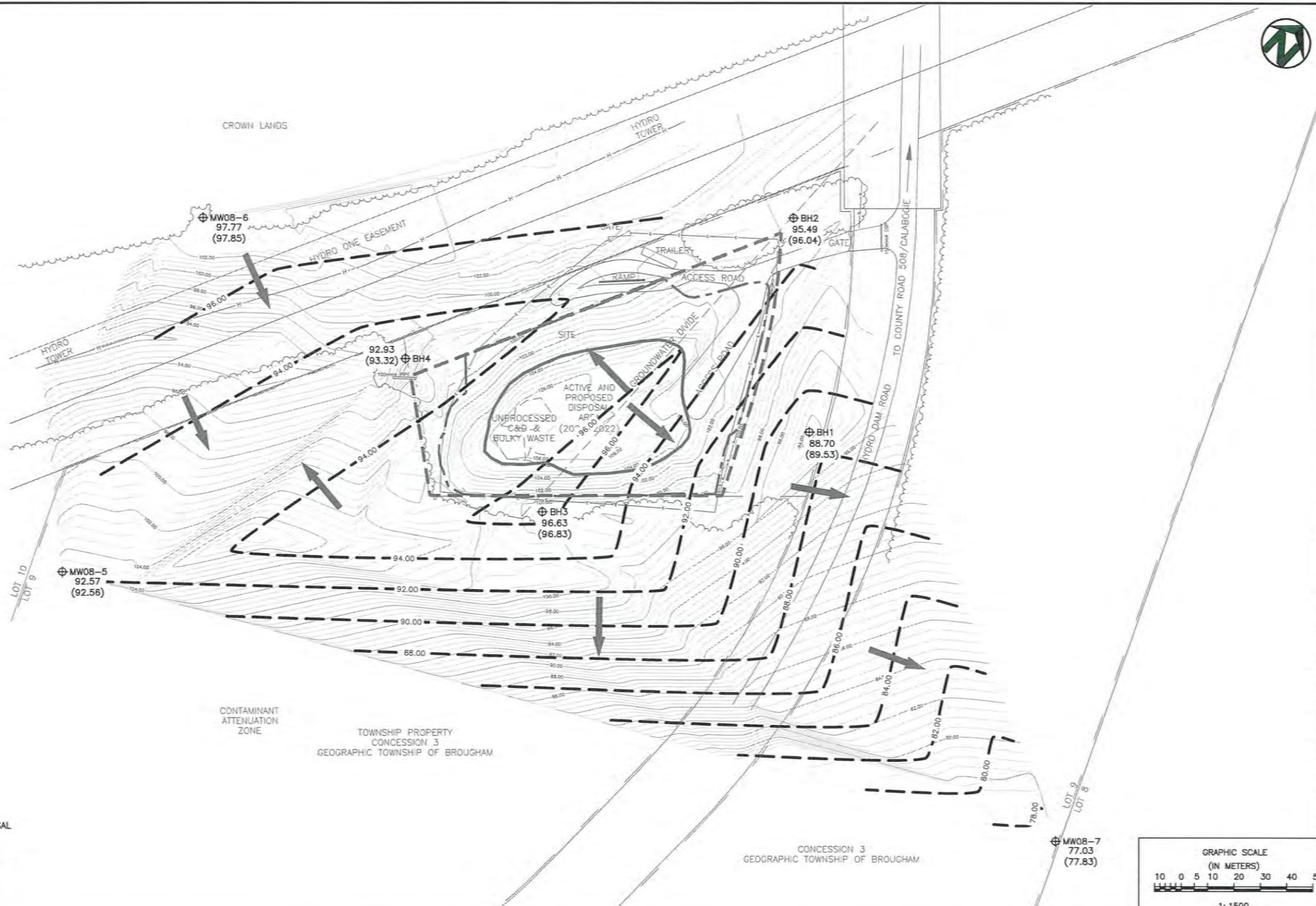
PROJECT No:  
102.21.014

FIGURE:  
**4**

4 OF 6

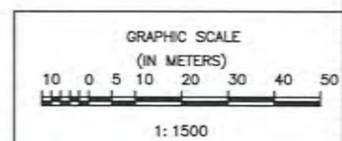
**LEGEND**

- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- - - - - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- CONTAMINANT ATTENUATION ZONE
- 100.00 TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- - - - - APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- 96.00 EQUIPOTENTIAL CONTOUR (AUGUST 19, 2021)
- 88.18 GROUNDWATER ELEVATIONS (AUGUST 19, 2021)
- 89.16 GROUNDWATER ELEVATIONS (MAY 18, 2021)
- ← GROUNDWATER FLOW DIRECTION
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.8057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:	CLIENT:
MAG	DMH	
DESIGNED BY:	APPROVED BY:	
MAG	DMH	
SCALE:	DATE:	
1:1500	MAR 2022	

THE TOWNSHIP OF  
**GREATER MADAWASKA**

PROJECT:  
ENVIRONMENTAL MONITORING LOCATION PLAN – SUMMER  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

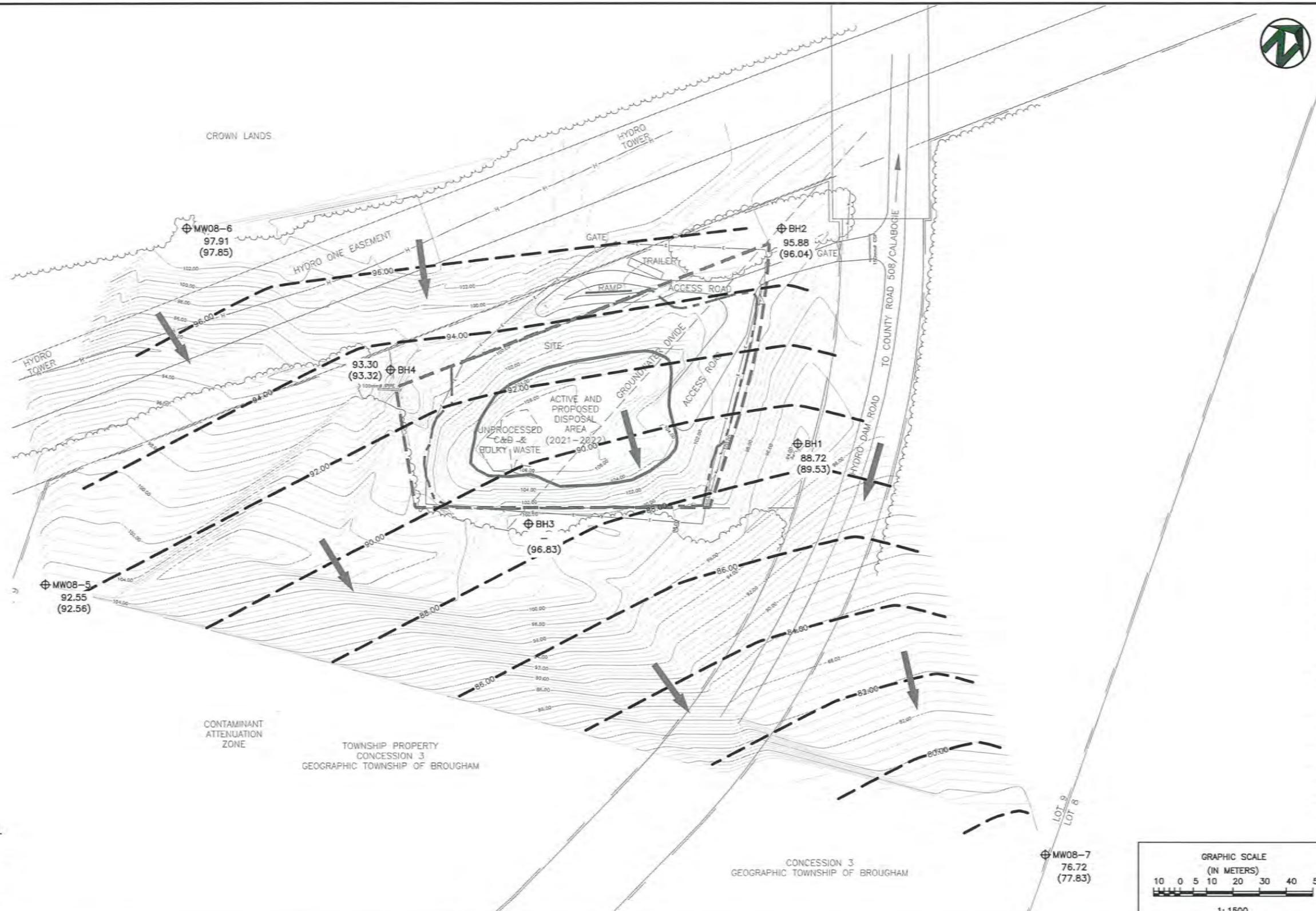
FIGURE:  
**5**

5 OF 6

G:\AutoCAD\102 Greater Madawaska\102.21.014 - TDM - BLACK DONALD WDS.dwg | 102.21.014 - TDM - BLACK DONALD WDS - 2021 AR FIGURES - PHUL.dwg

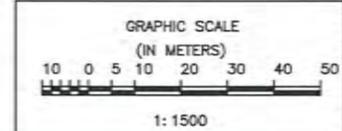
**LEGEND**

- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- - - - - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- CONTAMINANT ATTENUATION ZONE
- 100.00 — TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- 96.00 EQUIPOTENTIAL CONTOUR (NOVEMBER 04, 2021)
- 88.18 GROUNDWATER ELEVATIONS (NOVEMBER 04, 2021)
- 89.16 GROUNDWATER ELEVATIONS (MAY 18, 2021)
- ← GROUNDWATER FLOW DIRECTION
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
BM21-1  
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ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Burlington, Ontario  
N7R 1M7  
613.332.9057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
1:1500	MAR 2022

CLIENT:

PROJECT:

ENVIRONMENTAL MONITORING LOCATION PLAN – FALL  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**6**

6 OF 6

G:\mtdaw\102 Greater Madawaska\104 Black Donald WDS\102.21.014 - TDM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg

# **Attachment 3**

## **Borehole Logs**

<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 21-373	<b>BOREHOLE:</b> 1	1 of 1
<b>HYDROGEOLOGICAL INVESTIGATION</b> Black Donald Landfill FOR: Township of Brougham		<b>DATE:</b> 13 July 2001 <b>GEOLOGIST:</b> BJS <b>ELEVATION:</b> 93.4 m	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE					N VALUE				WATER CONTENT (%)					
				NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	15	30	45	60	10	20	30	40
1		<b>SAND</b> Reddish and medium brown fine sand, trace to some medium and coarse sand, trace fine and coarse gravel, trace silt, subtle laminations, moist, compact. -occasional cobbles observed below 0.6 m.	1		SS	20	2	80										
1.5		-heavy oxidation observed below 1.2 m.	2		SS	25	3	70										
		<b>MARBLE BEDROCK</b> Light grey to whitish marble bedrock, massive, pepper appearance, some oxidation along fractures between about 1.7 m and 3.1 m. Weathered section - broken rock between about 1.7 m and 1.9 m. Open fracture with oxidation at about 2.10 m to 2.12 m. Minor oxidation along fracture at about 2.8 m.	3		SS	37/0.08m	8	50										
2			4		HQ			100	78									
3			5		HQ			96	100									
4			6		HQ			106	96									
5			7		HQ			100	82									
6																		
7																		
7.7		Borehole terminated at 7.69 m in marble bedrock.																

Project No: 10392-001  
 Project: Black Donald Waste Disposal Site  
 Client: Township of Greater Madawaska  
 Location: Black Donald  
 Logged By: D.Bucholtz

**Log of Borehole: BH2**

Depth (m)	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 98.904m						Well Equipped with lockable steel casing and weather proof lock.
0.82		Top Soil Black, organic, dry, with rootlets	-0.15					Stick-up = 0.82
0.82 - 1.0		Sand Fine, loose, dry	-0.61	22		SS		Concrete
1.0 - 1.52		Marble Bedrock Light grey to white with black specks.				HQ		0.05m dia. PVC
1.52 - 2.74		Fractures from 1.52m to 2.74m.				HQ		Bentonite
2.74 - 3.35		Fractures oxidized.				HQ		
3.35 - 4.88		Mostly competent, fractures @ 3.35m, 4.88m, 6.40m.				HQ		
4.88 - 6.40						HQ		WL October 8, 2002 = 4.18m
6.40 - 7.08						HQ		Silica Sand
7.08		End of Borehole	-7.08			HQ		

Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: September 23, 2002  
 Checked by: B.Harman  
 Sheet: 1 of 1

185 Concession Street  
 Lakefield, ON, Canada  
 K0L 2H0

Project No: 10392-001 **Log of Borehole: BH3**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
ft m			1					Well Equipped with lockable steel casing and weather proof lock.
-3								Stick-up = 0.86
-2								Concrete
-1								0.05m dia. PVC
0		Ground Surface - 99.004m						
1		Sand Fine, brown, loose, dry	-0.3	50		SS		
2		Marble Bedrock Light grey to white with black specks.				HQ		
3		Fractures with sand and root from 0.30m to 2.85m.						Bentonite
4		Fractures oxidized.						
5		Mostly competent, fractures @ 4.17m, 5.94m, 7.01m, 7.47m.				HQ		
6								
7						HQ		WL October 8, '02 = 3.53m
8								
9						HQ		
10								
11						HQ		
12								
13						HQ		
14								
15						HQ		
16								
17						HQ		
18								
19						HQ		
20								Silica Sand
21						HQ		
22								
23						HQ		
24								
25						HQ		
26								
27						HQ		
28			-8.53					Screen = 1.52m x 0.052m
29		End of Borehole						

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 25, 2002

Checked by: B.Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
K0L 2H0

Project No: 10392-001 **Log of Borehole: BH4**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 95.962m	-0.1					Well Equipped with lockable steel casing and weather proof lock.
0.84		Sand Medium, brown, dry, with rootlets in top 0.10m	-0.61	50 (0.15m)	SS		Concrete	Stick-up = 0.84
1		Marble Bedrock Light grey to white with black specks.			HQ		0.05m dia. PVC	
2		Heavily fractured from 0.61m to 3.04m.			HQ		Bentonite	
3		Soft, brittle, varicose fracture with sand from 3.66m to 4.27m			HQ			
4		Fractures oxidized.			HQ			
5		Mostly competent, fractures @ 4.72m, 5.64m, 6.25m.			HQ			WL October 8, 02 = 4.08m
6					HQ		Silica Sand	
7		End of Borehole	-7		HQ			

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 23, 2002

Checked by: B. Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
KDL 2H0



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 89 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1757  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-5

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m		Ground Surface						
-4							Stick-up = 0.89 m	
-2							Concrete	
0		Top Soil Dark brown, organic, dry, loosely compacted.	1	AS	40		Bentonite Chips	
2		Fine to Medium Sand Light brown to grey, fine to medium sand, dry, loosely compacted.	2	HQ	80			
4	1	Marble Bedrock Light grey to white with black specks, marble bedrock.	3	HQ	100			
6		Oxidized fractures from 1.83 m to 2.82 m, and from 11.25 m to 12.50 m.	4	HQ	90			
8		Mostly competent, fractures from 6.55 m to 11.12 m.	5	HQ	100			
10	3		6	HQ	100			
12			7	HQ	100			
14			8	HQ	100			
16	5		9	HQ	100			
18			10	HQ	100			
20								
22	7							
24								
26								
28								
30	9							
32								
34							Well screen = 3.05 m x 0.05 m	
36	11							
38								
40							Water level June 5, 2008 = 12.85 m.	
42	13							
44		End of Borehole						

Drilled By: Lantech Drilling Ltd.

Drill Method: CME 75 Diamond Bit Coring

Drill Date: June 2, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1



Greenview Environmental Management Limited  
 89 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1G0  
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 f: (613) 832-1767  
 e: solutions@greenview-environmental.ca

### Log of Monitoring Well: MW08-6

Project No.: 102.08.014  
 Project: Black Donald Waste Disposal Site  
 Client: Township of Greater Madawaska  
 Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m		Ground Surface						Stick-up = 0.87 m
0		Top Soil Dark brown, organic, dry, loosely compacted.	1	AS	25			Concrete
2	1	Fine to Medium Sand Light brown, fine to medium sand, dry, loosely compacted.	2	HQ	100			Bentonite Chips
4		Marble Bedrock Light grey to white with black specks, marble bedrock.						
6		Heavily fractured from 0.05m to 1.45m.	3	HQ	100			
8		Oxidized fractures @ 3.81m, 4.17m, 5.28m, 5.59m, and 7.48m.	4	HQ	100			
10	3							Silica Sand
12			5	HQ	95			
14			6	HQ	100			
16	5							
18			7	HQ	100			
20								
22	7		8	HQ	100			
24								
26			9	HQ	100			
28								
30	9		11	HQ	100			
32								
34								
36	11							

Water level June 5, 2008 = 5.50 m

Drilled By: Lantech Drilling Ltd.  
 Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: June 3, 2008

Logged By: J. Bailey  
 Checked By: T. Peters  
 Sheet: 1 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 532-0057  
 f: (613) 532-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-6

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
38			9	HQ	100			
40	12		10	HQ	100			
42			11	HQ	100			
44			12	HQ	100			
46	14		13	HQ	100			
48			14	HQ	100			
50			15	HQ	100			
52	16		16	SS	100		Well screen = 6.10 m x 0.05 m	
54								
56								
58	18							
60								
62								
64								
66	20							
68								
70								
72	22							
74								
76		End of Borehole						

Drilled By: Lantech Drilling Ltd.  
 Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: June 3, 2008

Logged By: J. Bailey  
 Checked By: T. Peters  
 Sheet: 2 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1757  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-7

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
0		Ground Surface						
0 - 1.5	Medium Sand and Gravel	Brown, medium sand with small to medium gravel, wet, compacted.	1	AS				
1.5 - 3.05	Fine to Medium Sand and Gravel	Light brown, fine to medium sand with small to medium gravel, wet, compacted.	2	SS	10			
			3	SS	5			
			4	SS	15			
3.05 - 26	Fine to Medium Sand	Light brown, fine to medium sand, wet, compacted, small to medium cobble at 3.05 m.	5	SS	50			
			6	SS	10			
			7	SS	75			
26		End of Borehole						

Drilled By: Lantech Drilling Ltd.

Drill Method: Hollow Stem Augers

Drill Date: June 5, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1

**Attachment 4**  
**Current vs Proposed**  
**Monitoring Program**

**ATTACHMENT 4**  
**Current vs. Proposed Monitoring Program**

Current Program: Schedule B, ECA A411902

**Site Groundwater and Surface water Monitoring Program:**

<b>Location</b>	<b>Frequency</b>	<b>Parameters</b>
<u>Groundwater</u> BH1, BH2, BH3, BH4, MW08-5, MW08-6, MW08-7  1 QA/QC	Twice per year (Spring, Fall)	Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc.  Field measurements (pH, conductivity, temperature), water levels
BH1	Once every 5 years (Spring)	VOCS- EPA 624
Surface Water SW-3, SW-4, SW-5, SW-6  1 QA/QC	Three Times (Spring, Summer, Fall)	Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate nitrite phenols, potassium sodium, strontium, sulphate total phosphorus, TKN, TDS, zinc, TSS  Field measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation))

Proposed Program:

Location	Frequency	Parameters
<p><u>Groundwater</u>            BH1, BH2, BH3, BH4, MW08-5,            MW08-6, MW08-7            + 1 bilevel monitoring well            + 1 bedrock monitoring well            (possible replacement of BH3)</p> <p>1 QA/QC</p>	<p>Twice per year (Spring, Fall)</p>	<p>Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc</p> <p><i>Add: conductivity, pH, mercury, arsenic, lead, nitrite, TSS (leachate), BOD5 (leachate)</i></p> <p>Field measurements (pH, conductivity, temperature), water levels. <i>Add: landfill gas measurements</i></p>
<p>BH1 (leachate)</p>	<p>Once every 5 years (Spring)</p>	<p>VOCs- EPA 624</p>
<p>Surface Water            SW-4, SW-5</p> <p>1 QA/QC</p>	<p>Three Times (Spring, Summer, Fall)</p>	<p>Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate nitrite, phenols, potassium sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc, TSS</p> <p><i>Add: conductivity, pH, lead, mercury, arsenic, barium, chromium</i></p> <p>Field measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation)), <i>Add: flow</i></p>

# **Attachment 5**

## **Drawings**



THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.



BM #1 ELEV. 100.000  
ASSUMED ELEVATION  
SPIKE IN TOP OF 300Ø  
POPLAR STUMP, APPROXIMATELY  
5m NORTH EAST OF RIGHT  
GATE POST AT ENTRANCE TO  
WASTE SITE.

BM #2 ELEV. 98.572  
SPIKE IN SOUTH WEST SIDE  
OF 300Ø POPLAR LOCATED  
AT NORTH EAST END OF SITE,  
APPROXIMATELY 22m FROM  
TSP #3.

BM # 1

BM # 2

**LEGEND**

- TREE LINE
- EXISTING CONTOUR NOV. 2001
- CULVERT
- DRAINAGE COURSE
- BENCHMARK
- MANAGEMENT AREA 2001
- RIP RAP
- FOOTPRINT



EXISTING CONDITIONS ARE BASED ON TOPOGRAPHIC SITE SURVEY BY Jp2g CONSULTANTS INC. DATED NOVEMBER 6, 2001.

No.	DATE	BY	REVISIONS

**Jp2g Consultants Inc.**  
 ENGINEERS · PLANNERS · PROJECT MANAGERS  
 PEMBROKE · OTTAWA

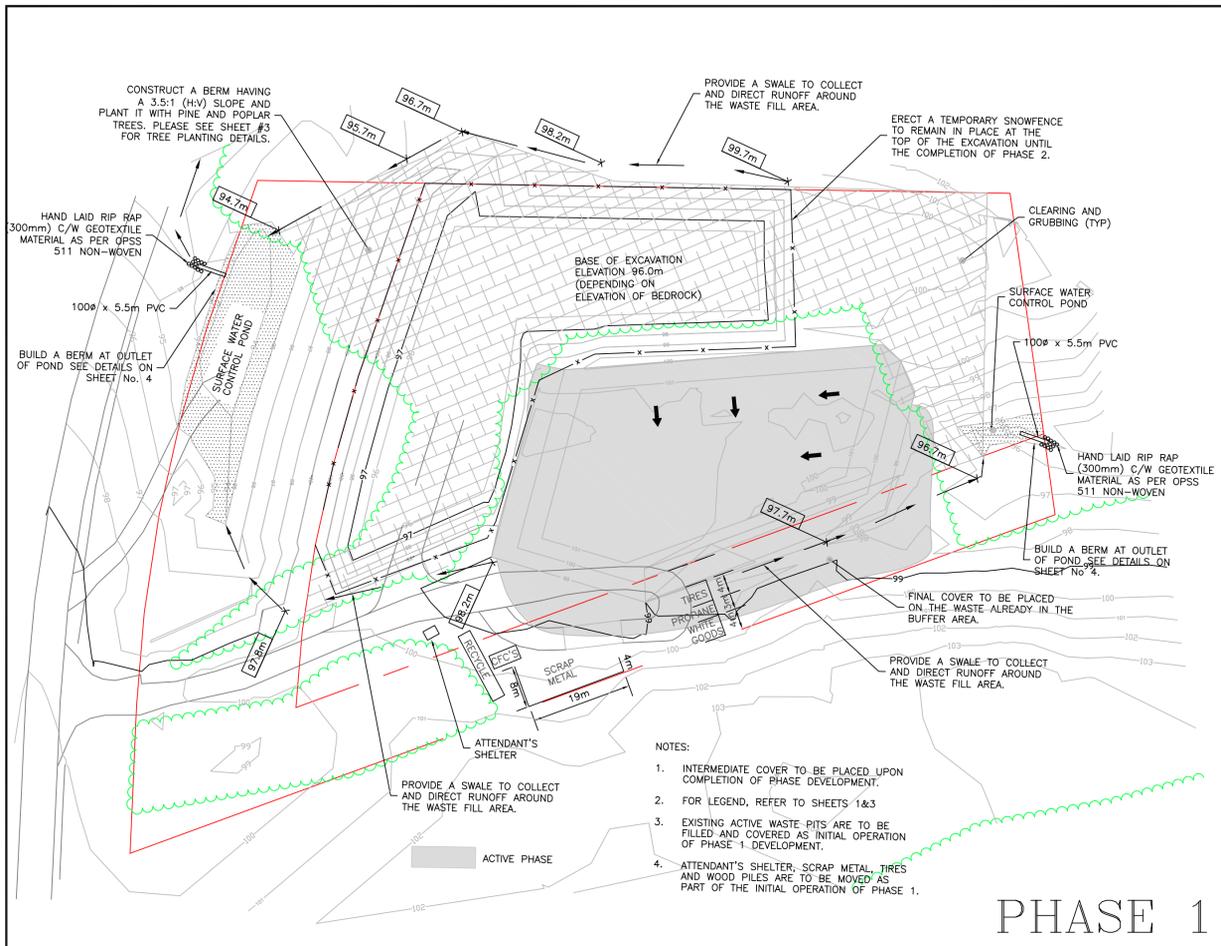
DESIGNED	
DRAWN	MOC
CHECKED	
APPROVED	
SCALE	HORIZ. 1:400

**TOWNSHIP OF GREATER MADAWASKA**  
**BLACK DONALD LANDFILL SITE**  
 EXISTING CONDITIONS PLAN

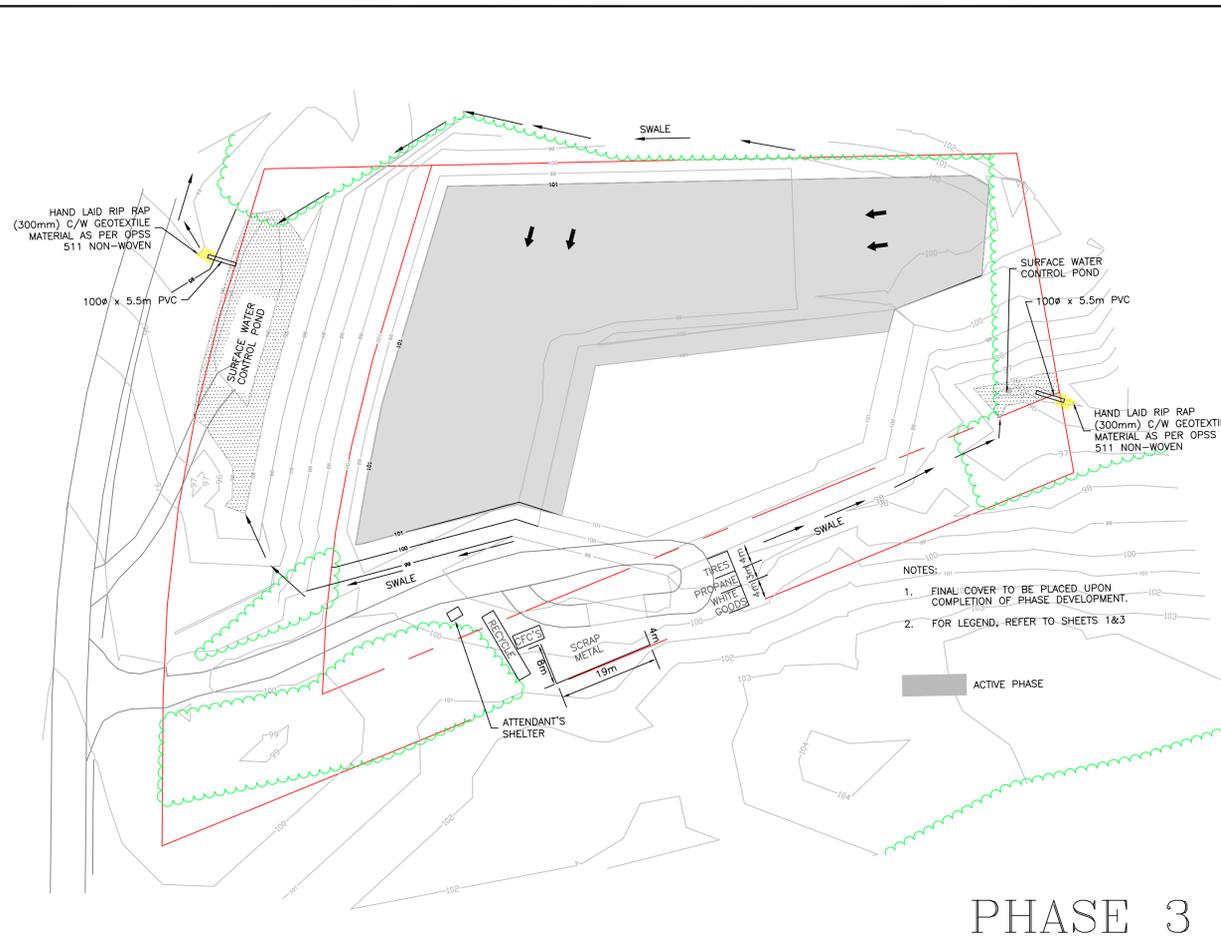
DATE	MAY 2002
PROJECT	2006017
PLOTTED	May 07/2002
DRAWING	<b>1</b>

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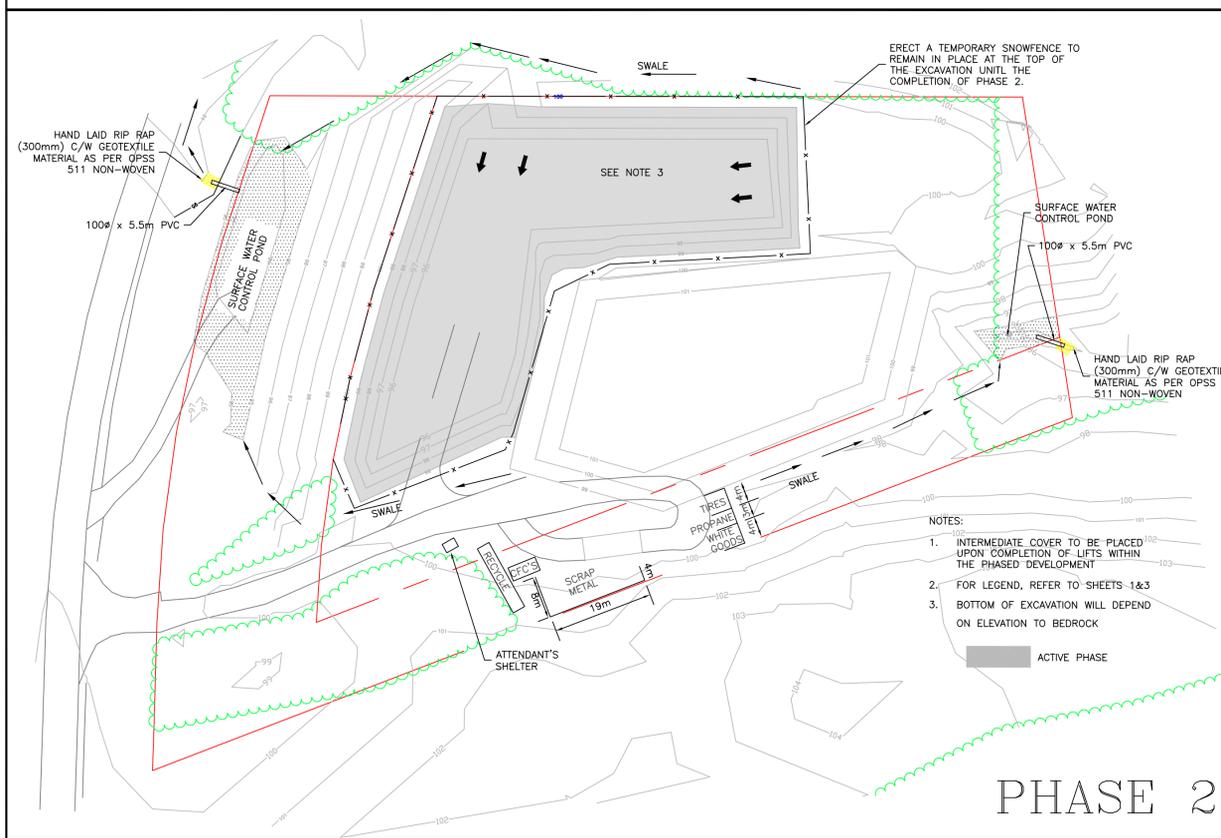
R:\Drawing\2002\2006017\2006017.dwg



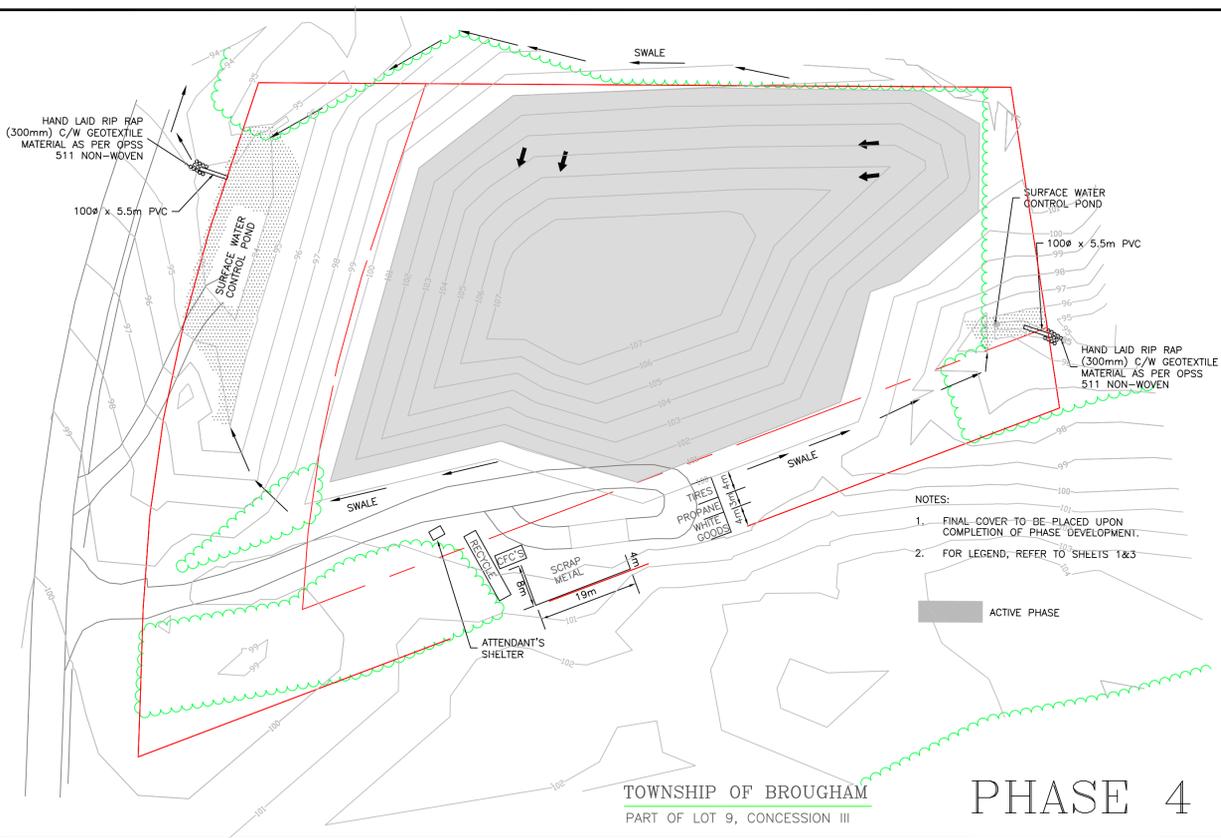
PHASE 1



PHASE 3



PHASE 2



PHASE 4

TOWNSHIP OF BROUGHAM  
PART OF LOT 9, CONCESSION III

No.	DATE	BY	REVISIONS
1	10/31/01	MAB	REVISED FOR EXTRA WASTE VOLUME



**Jp2g Consultants Inc.**  
ENGINEERS · PLANNERS · PROJECT MANAGERS  
PEMBROKE · OTTAWA

DESIGNED	M.A.B
DRAWN	M.A.B./K.J.K
CHECKED	KM
APPROVED	
SCALE	1:500

TOWNSHIP OF  
GREATER MADAWASKA  
Black Donald Waste Disposal Site  
LANDFILL PHASING & SEQUENCING

DATE	JAN. 2001
PROJECT	2006017A
PLOTTED	01/09/01
DRAWING	2





**Ministry of the  
Environment,  
Conservation and Parks**  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone: 613.549.4000  
or 1.800.267.0974

**Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs**  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



MEMORANDUM

January 6, 2023

TO: Thandeka Ponalo  
Senior Environmental Officer  
Ottawa Area Office  
Eastern Region

FROM: Alija Bos  
Hydrogeologist  
Water Resources Unit  
Technical Support Section  
Eastern Region

RE: Black Donald Waste Disposal Site A411902  
2021 Annual Monitoring Report  
ECHO Task #1-134990036

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As requested, I have reviewed the following documents entitled:

- *“2021 Annual Report, Black Donald Waste Disposal Site (A362202), Township of Greater Madawaska, Count of Renfrew, Ontario”* dated March 21, 2022, prepared by Greenview Environmental Management (GEM)
- *“Black Donald Landfill Site Township of Greater Madawaska, ECA No. A411902, Expansion Feasibility Study” Prepared by JP2G Consultants Inc., dated October 25<sup>th</sup>, 2022.*

The Township of Greater Madawaska submitted an assessment on the feasibility to expand the site for continued disposal of bulky and Construction and Demolition (C&D) waste. Based upon the information provided in the document above, I submit the following comments for your consideration. I have provided main conclusions and recommendations in the “Summary” section of this memorandum and more detailed comments in the “Conclusions and Recommendations” section below.

**Summary**

- The migration of leachate is downward into a thin sand layer and into the fractured marble bedrock.
- A north-south trending groundwater divide is thought to exist beneath the waste mound causing landfill leachate to migrate west and east. groundwater level data confirms that a groundwater basin exists in and around BH4 which would limit the northwestward migration of leachate.

- The Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern and southwestern CAZ boundaries in 2021.
- I recommend that the report should be reviewed by the Surface Water Unit.
- I support the proposed expansion area from a groundwater perspective, provided additional multilevel downgradient monitoring wells are installed, monitoring well BH3 is replaced, and the monitoring program and trigger mechanism are updated as discussed below.

### **Site Description and Environmental Compliance Approval**

The Black Donald Waste Disposal Site (WDS) is located on part of Lot 9, Concession 2 and 3, geographic Township of Brougham in the Township of Greater Madawaska, Ontario.

The Black Donald WDS operates under Environmental Compliance Approval No. A411902 last amended January 24, 2013, which describes the Site as a 1.2 hectare waste disposal site. ECA Section (2) 2.12 defines the Site as “the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule “A” of the Certificate and consisting of approximately 1.2 hectare landfill site”. Upon review of the documents in Schedule “A” the Site comprises a 0.9 ha landfilling area within a total site area of 27.2 ha.

The site received waste from the Township’s Griffith, Norway Lake, and Mount St. Patrick Transfer Stations.

It was previously requested (2016) by Greenview and the Township that MECP consider removing the requirement for surface water sampling as part of the monitoring requirements, as surface water quality data did not indicate impacts related to landfill-related activities. Based on the MECP surface water technical support review, it was indicated that monitoring should continue as part of the environmental monitoring program.

### **Proposed Expansion**

It is my understanding that the current site has a design waste capacity of 34,250m<sup>3</sup> (excluding final cover). The theoretical maximum capacity of a 1.2 ha site to a pyramidal peak is 54,200m<sup>3</sup>.

The figure provided by GEM illustrates a conceptual expansion which could add another 30,000 to <40,000m<sup>3</sup>. A change of less than 40,000m<sup>3</sup> is exempt from the EA Act. As such, JP2G has recommended the application be less than 40,000m<sup>3</sup>. This represents a proposed expansion of ~73% from the current approval.

As of December 14, 2021, the remaining capacity was 4400m<sup>3</sup> (Greenview, 2022). The life expectancy could be 2 to 5 years depending on the annual landfilling rate.

The WDS was closed to the public on April 5<sup>th</sup>, 2010, with disposal available for municipal vehicles and Township-approved haulers only. Since 2010 the site has been used for the stockpiling of construction and demolition and bulky wastes prior to processing and disposal within the approved waste disposal area (AWDA). Bentonite clay material was placed at the WDS in 2021, as part of the regular and final cover requirements.

### **Topography and Drainage**

The consultant described the area to be generally hilly and forested. The site is located on a topographic high, and a steep slope leading to a low-lying area is located at the south, west and southeast limit of the waste site. Drainage is through the surficial sand at the site following topography to roadside ditches along Hydro Dam Road.

### **Geological and Hydrogeological Conditions**

Overburden geology is characterized by a thin veneer of sandy overburden, 0.3-1.5 metres thick, overlying the fractured marble bedrock unit. Bedrock outcrops, knolls, and knob hills are noted to be prevalent in the vicinity of the Black Donald site, which confirms the shallow nature of overburden soils and the proximity of the bedrock contact to surface near the site.

The hydrogeological conceptual model for the site is that landfill leachate moves down into the underlying native sand unit, then into groundwater in the fractured marble bedrock where it flows southeast and southwest. Groundwater was encountered in the shallow fractured marble bedrock.

It is interpreted that a groundwater divide exists at the waste mound, and predominant flow is southeast and southwest.

An eastward trending groundwater flow direction was interpreted in the vicinity of monitoring well MW08-6. Based on the upgradient location of MW08-6 relative to the waste mound, groundwater quality at MW08-6 was interpreted to be characteristic of background groundwater quality at the site. A north-south oriented groundwater basin depression was also interpreted to exist in the vicinity of BH4 and MW08-5, based on groundwater elevations and contours measured and calculated from field measurements.

The closest residential well is located approximately 700m northwest and upgradient from the site.

### **Groundwater – Surface Water Interaction**

The groundwater is inferred to eventually discharge to surface water downgradient within the CAZ of the site.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-

related activities by GEM. Detailed review and interpretation of surface water conditions are provided by the ministry's surface water reviewer.

### **Groundwater Monitoring**

The monitoring program approved under the current ECA is to satisfy Condition 27. The monitoring program as detailed in ECA Schedule "B" consists of the bi-annual collection of static water levels and groundwater samples from seven (7) monitoring wells, and surface water samples collected three times per year from four (4) locations.

GEM conducted spring (May 18), and fall (November 4) groundwater monitoring of the site in 2021. This was an approved reduction from the Spring, Summer and Fall sampling previously occurring. The Township with support from their consultant sampled and surveyed the monitoring wells and surface water stations.

#### *Background Water Quality*

MW08-6 is considered the background well installed on Crown Land on the opposite side of the Hydro transmission line. This well has shown DOC ODWS non-conformance and an increasing trend in the past 5 years.

BH2 is also considered a potential background location located approximately 25m east and downgradient of the fill area. Water quality is characterized by elevated concentrations of some landfill leachate parameters however given the proximity to Hydro Dam Road, road salting may also be a factor. There was one ODWS non-conformance for Dissolved Organic Carbon (DOC) at BH2. There appears to be an increasing DOC trend in this well. This well is not an ideal background location and MW08-6 should be used for background water quality assessment moving forward.

#### *Leachate Quality*

BH1 has historically been used for VOC sampling and can be considered the leachate characterization well at this site.

Groundwater at BH-1 was interpreted to be most representative of leachate quality at the Black Donald site. Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location BH-1 were as follows:

Monitoring Well	ODWS Non-Conformance		Five (5) Year Trend Analysis	
	Spring 2021	Fall 2021	Increasing	Decreasing
BH1	<ul style="list-style-type: none"> <li>Alkalinity</li> <li>DOC</li> <li>Hardness</li> <li>Manganese</li> <li>Total Dissolved Solids (TDS)</li> </ul>	<ul style="list-style-type: none"> <li>Alkalinity</li> <li>DOC</li> <li>Hardness</li> <li>Iron</li> <li>Manganese</li> <li>TDS</li> </ul>	<ul style="list-style-type: none"> <li>Ammonia (un-ionized)</li> <li>Nitrate</li> <li>Sodium</li> <li>Sulphate</li> </ul>	<ul style="list-style-type: none"> <li>Aluminum</li> <li>Barium</li> <li>Calcium</li> <li>Chloride</li> <li>Hardness</li> <li>Iron</li> <li>Magnesium</li> <li>Manganese</li> <li>Potassium</li> <li>Strontium</li> <li>Total Kjeldahl Nitrogen (TKN)</li> </ul>

These values are not surprising given the well location immediately downgradient of the waste mound. Older landfills often have nitrogen concerns as a result of the generation of ammonia, and nitrate, dissolved solids and the concentrations of these vary depending on the age of the landfill.

Based on 2021 results, groundwater at BH-4 was interpreted to be impacted by landfill-related activities: however, to a lesser extent than at leachate monitoring well BH-1. The interpretation that groundwater in the western portion of groundwater flow at the site was less impacted than the eastern component of groundwater flow at the site was supported by horizontal gradients calculated in spring, summer, and fall 2021 and documented groundwater quality. Considering the groundwater flow directions calculated following 2021 groundwater monitoring events and based on similar historical calculations, BH4 was interpreted to be the downgradient receiver of groundwater flow from the vicinity of the waste mound and from the northwest in the vicinity of background monitoring well MW08-6.

*Downgradient Water Quality / Trigger Mechanism*

Groundwater immediately downgradient from the site at monitoring wells BH1, BH3, and BH4 was interpreted to be impacted from landfill-related activities in 2021. Most parameter concentrations were above median background groundwater quality results, with non-conformances of ODWS for concentrations of alkalinity, DOC, hardness, iron, manganese, and TDS noted at select monitors. The generally lower parameter concentrations at monitoring well BH3 compared to those at monitoring wells BH1 and BH4 were attributed to its location partially cross-gradient to the waste mound and along the groundwater divide at the site. BH4 is the southwest CAZ boundary well.

It was interpreted that concentrations resultant of landfill-related factors originating in the vicinity of the waste mound would not likely migrate past the western CAZ boundary. Instead, groundwater was interpreted to flow in a southerly direction along the apparent groundwater basin towards MW08-5 and the downgradient southwestern CAZ boundary. Therefore, it is interpreted that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally-occurring high concentrations of alkalinity, aluminum, DOC, hardness, and TDS in the background, the site was interpreted to conform with MECF Guideline B-7 and was in

compliance with RUC in 2021 at the southwestern CAZ boundary. Given historical flow direction maps, I find this assumption to be reasonable. Groundwater flow directions calculated in fall 2021 are different than historical measurements as a result of BH3 being destroyed and therefore a weight bias for the model has shifted to the remaining wells. A replacement well for BH3 should be installed.

### **Guideline B-7**

Guideline B-7 indicates that the groundwater quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Standards for non-health related parameters and in excess of 25% of the difference between background and the Ontario Drinking Water Standards for health-related parameters.

No RUC non-conformances were documented in results from downgradient monitoring well MW08-7 in 2021 that were attributed to landfill-related factors. The noted RUC non-conformance in fall 2021 at MW08-7 for DOC was consistent with DOC concentrations observed in background wells BH2 and MW08-6. Based on the above, the Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern CAZ boundary in 2021. Based on 2021 results, it was extrapolated that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally occurring elevated concentrations of alkalinity, aluminum, DOC, hardness, manganese, and TDS in the background (BH2 and MW08-6), the site was interpreted to conform with MECP Guideline B-7 at the southwestern CAZ boundary.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-related activities by the consultant. Non-conformances of PWQO for concentrations of DO (low), phosphorus, iron and zinc noted in 2021 at select sampling locations for select sampling dates were attributed to naturally occurring conditions in the background (SW-4), as well as to low-flow surface water conditions.

In 2021, PWQO non-conformances at key trigger locations SW-3 and SW-6 for concentrations of iron were attributed to low water/ low-flow conditions, and not to landfill-related activities. Similarly, PWQO non-conformances for concentrations of phosphorus at key trigger location SW-3 were generally consistent with concentrations observed at background location SW-4 and were therefore not attributed to landfill-related factors.

No RUC non-conformances were noted for any of the key trigger parameters at key trigger location MW08-7 following inclusion of 2021 results. Based on a review of five (5) year time trend analysis for parameters un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus, the Trigger Mechanism was not interpreted to be activated in 2021.

## **Conclusions and Recommendations**

The migration of leachate is downward into a thin sand layer and into the fractured marble bedrock.

A north-south trending groundwater divide is thought to exist beneath the waste mound causing landfill leachate to migrate west and east. groundwater level data confirms that a groundwater basin exists in and around BH4 which would limit the northwestward migration of leachate.

The Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern and southwestern CAZ boundaries in 2021.

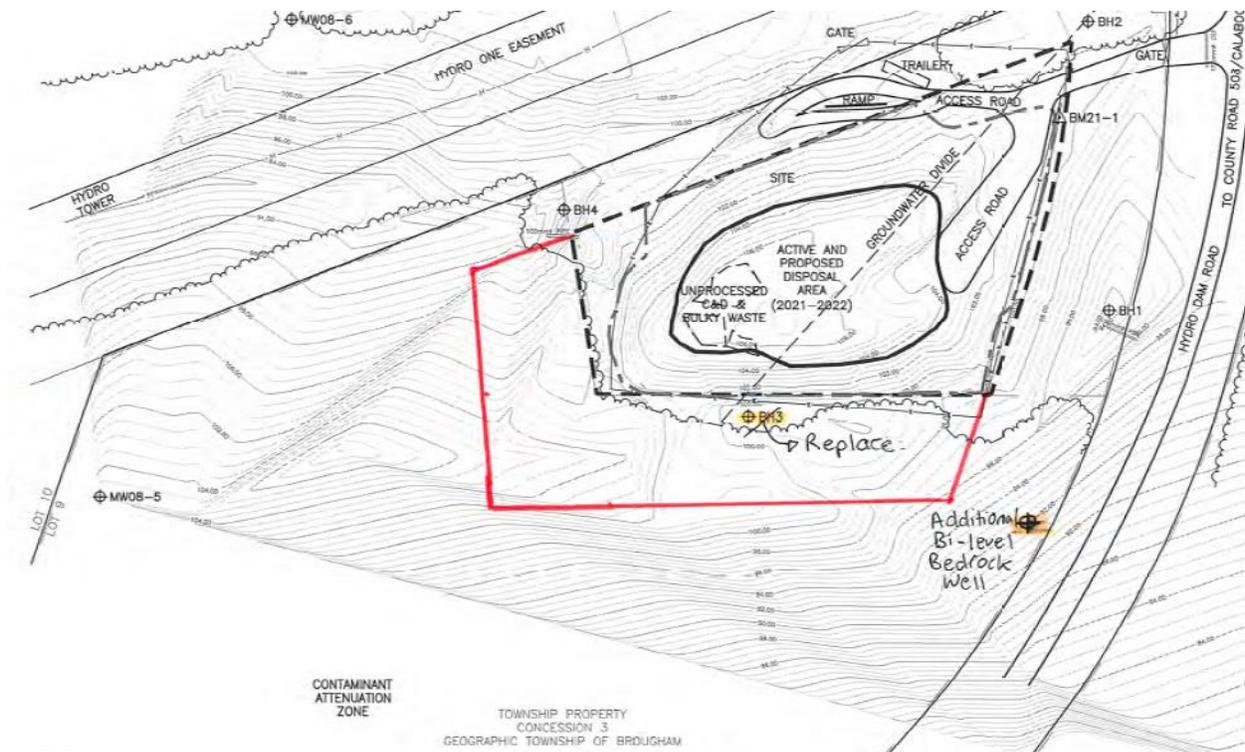
I recommend that the report should be reviewed by the Surface Water Unit.

The consultant has provided the following recommendations in relation to the proposed expansion and my response to each recommendation is provided in bold typeface:

1. The updated monitoring program will continue to sample the monitoring wells as per ECA Schedule "B", with the proposed addition of the following as shown on Drawing No 2 below (Greenview base plan)

- one (1) bi-level monitoring well within the overburden (if available) and bedrock aquifers east of the landfilling area to further delineate the plume within the groundwater towards MW08-7; **I support this recommendation in order to evaluate the potential for offsite migration of leachate impacted groundwater downgradient of the expansion area.**
- compliance well MW08-7 is installed in the overburden (sand material), therefore it is recommended to also install a bedrock monitoring well in this location to delineate leachate in the bedrock aquifer in this direction; **I support this recommendation. This is shown in the figure included below from the GEM report. The red line represents the proposed expansion areas.**

**I would like to request an additional design drawing be submitted with the cross section of the waste areas (historical and proposed) including elevations.**



- monitoring well BH3 was destroyed in 2021 due to landfilling activities; this well should be reinstated to aid in assessing leachate migration south of the fill area. **I support this recommendation.**

2. The water quality analysis will be expanded to Schedule 5 Column 1 of the Landfill Standards (1988).

This includes the following parameters: Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc.

**I support the proposed use of Schedule 5 Column 1 and also recommend that the following parameters are also added to the regular groundwater monitoring program: conductivity, pH, mercury, arsenic, lead, nitrite, TSS (leachate), BOD5 (leachate). I further recommend that the following field measurements are added to the regular groundwater monitoring program: pH, conductivity, temperature, water levels and landfill gas measurements.**

Upon installation and sampling it is further recommended to update the trigger mechanism and contingency plan to reflect the proposed expansion and additional monitoring locations. **I support this recommendation.**

**I support the proposed 73% expansion area from a groundwater perspective, provided additional multilevel downgradient monitoring wells are installed, monitoring well BH3 is replaced, and the monitoring program and trigger mechanism are updated as discussed above.**



---

Alija Bos

P.Geo., Regional Hydrogeologist

ec: Mark Phillips, Surface Water Specialist  
Thandeka Ponalo, Sr. Environmental Officer  
V. Castro, Water Resources Unit Supervisor  
C. Klein, Technical Support Section Manager

c: GW File RE GM 01 02 (Black Donald Waste Disposal Site)  
AB / ECHO 1-134990036

**Ministry of the  
Environment,  
Conservation and Parks**  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone: 613.549.4000  
or 1.800.267.0974

**Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs**  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



MEMORANDUM

January 11, 2023

**TO:** Thandeka Ponalo  
Senior Environmental Officer  
Ottawa District Office  
Eastern Region, MECP

**FROM:** Mark Phillips  
Surface Water Scientist,  
Water Resource Unit,  
Eastern Region, MECP

**RE:** **2021 Annual Monitoring Report and Expansion Feasibility Study  
Black Donald Waste Disposal Site  
Part Lot 9, Concession 3, Geographic Township of Brougham  
34 Hydro Dam Road, Township of Greater Madawaska, County of Renfrew  
Certificate of Approval (ECA) No. A411902  
ECHO #: 1-134948602**

---

I have reviewed the following documents from a surface water impact perspective and provide the recommendations below for your consideration:

1. 2021 Annual Report (Greenview Environmental Management Limited; March 21, 2022);
2. Black Donald Landfill Site Expansion Feasibility Study (Jp2g Consultants Inc.; October 25, 2022);
3. Memorandum from B. Metcalfe on the 2015 Annual Monitoring Report – Black Donald Waste Disposal Site (Metcalf; July 4, 2016); and
4. Memorandum from A. Bos on the 2021 Annual Monitoring Report (Bos; January 6, 2023).

## **Background**

The Black Donald Waste Disposal Site (WDS) operates as an active waste disposal site and in accordance with the Provisional Certificate of Approval A411902. The Black Donald WDS was closed to the public on April 5, 2010. However, disposal operations at the site are currently available to municipal vehicles and Township-approved haulers only. The site is currently operating as a municipal solid waste landfill, accepting domestic, construction and demolition, and bulky waste for disposal. The landfill site currently consists of an approved fill area of 0.9 ha within a total licensed area of 21.36 ha, inclusive of lands used for operational buffer and CAZ purposes. The landfill site functions as a natural attenuating site.

Based on the 2021 fill rate, the remaining capacity at this site was calculated to be approximately 4,400 m<sup>3</sup> which equates to approximately 5 years of remaining capacity.

### **Surface Water Regime**

The landfilling area is located on a topographical high bounded to the north by a bedrock ridge along the hydro transmission corridor. Site/area groundwater and surface water flow direction has been determined to be to the southeast and southwest. The primary pathway for groundwater flow is interpreted to flow downgradient towards discharge within the CAZ lands. Surface water sampling locations are located at the intermittent creek and wetland/bog complex approximately 500 metres downgradient from the site. The WDS is located within the Black Donald Lake watershed, Madawaska River Basin.

### ***2021 Annual Monitoring Report***

In 2021 surface water monitoring was conducted by Greenview on May 18, August 19, and November 4. Surface water samples were collected when water was present at sample stations SW3, SW4, SW5 and SW6. The collected surface water samples were analyzed for routine general chemistry parameters, a limited metals parameters analyses and phenols. Field measurements were taken for pH, conductivity, dissolved oxygen and water temperature for each surface water sampling event.

The 2021 surface water monitoring program measured PWQO exceedances at SW-4 for total phosphorus and zinc; for iron and low dissolved oxygen at SW-5; for total phosphorus and (high) pH at SW-6; and for total phosphorus, iron, manganese, and zinc at SW-3.

None of the exceedances have been attributed to landfill related impacts. The trigger mechanism was not triggered in 2021.

### ***Expansion Feasibility Study***

The proposed expansion at this site would involve the addition of 30,000 to < 40,000 m<sup>3</sup> of waste disposal capacity.

The proposed expansion is to be completed in 5 phases, with final cover applied to completed areas following each phases' completion.

A sewage works consisting of swales for the collection and transmission of stormwater to one of two stormwater control ponds is being proposed. Both ponds will be affixed with outlet control structures.

## Comments/Recommendations

- The consultants indicate that the PWQO exceedances measured in 2021 were minor and not attributed to the landfill related impacts. I agree with this assessment.
- The consultants have recommended a reduction in the surface water monitoring locations to include the background station (SW-4) and SW-5 only. I support this recommendation. Following the completion of the recommended topographic survey it would be preferable to establish a surface water monitoring station(s) down-gradient of the landfill in closer proximity to the waste disposal site. If a surface water monitoring location exists between SW5 and the landfill, then I would support removing SW-5 as well, since it is located a substantial distance from the WDS.
- The consultants have also recommended that the sampled parameters list be increased to match Schedule 5, Column 3 of the Landfill Standards. I support both these recommendations, however I recommend the inclusion of calculated unionized ammonia. I would also suggest that the surface water sampling program be reduced to twice per year (spring, fall) to match the groundwater sampling program.
- The consultants have recommended that a new topographic survey be completed and that additional surface water station locations will be identified as appropriate. I agree with this recommendation and would further add that a monitoring sample location be established at the outlet of the proposed surface water control ponds (sewage works outlets).
- The topographic survey should detail the outlet flow paths from the stormwater works.
- Specific design details for the stormwater works should be provided for review.

The existing waste disposal site has not been found to be causing a risk to surrounding surface water features. In my opinion the risk of surface water impacts to area surface waters from the proposed expansion is low. I support, in principle, the proposed expansion.

Please contact me if you have any questions regarding the above comments.

*Original to be Signed*

Mark Phillips

ec: C. Klein, Tech. Support Manager, MECP  
V. Castro, (A)WRU Supervisor, MECP  
E. Tieu, Ottawa District Supervisor, MECP  
Groundwater Unit Files (A. Bos)  
ECHO

Jp2g No. 22-6213A

January 25, 2023

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive, Unit #103  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponalo  
Sr. Environmental Officer

Re: **Black Donald WDS**  
**ECA No. A362202**  
**Expansion Feasibility Study**

Dear Thandeka:

We acknowledge receipt of the Groundwater review comments dated January 6, 2023 and the Surface Water review comments dated January 11, 2023 on our October 25, 2022 submission.

The following conclusions and recommendations from the memorandums have been reproduced (in part) in **bold** for convenience, and our response provided:

**Alija Bos Hydrogeologist January 6, 2023 review of:**

- 2021 Annual Report March 21, 2022 by Greenview Environmental Management
- Expansion Feasibility Study October 25, 2022 by Jp2g

**1. The updated monitoring program will continue to sample the monitoring wells as per the ECA Schedule “B” with the addition of the following:**

- **A bi-level monitoring well within overburden (if available) and bedrock located east of landfilling area towards MW08-7**
- **A bedrock monitoring well in the MW08-7 location. Request a cross section drawing of the waste area (historical and proposed) including elevations**
- **A replacement well for BH-3**

Jp2g have prepared an estimate of probable costs to complete the new well installations in 2023 for consideration of Council. Regarding the plan and cross section drawing, there is additional survey required of the expansion area scheduled in the spring 2023, these plans will be included in the 2023 Annual Report.



Ottawa  
1150 Morrison Dr., #410  
Ottawa, ON, K2H 8S9  
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Ottawa@jp2g.com

Pembroke  
12 International Dr.  
Pembroke, ON, K8A 6W5  
T: 613-735-2507  
Pembroke@jp2g.com

Arnprior  
16 Edward St. S., #53B  
Arnprior, ON, K7S 3W4  
T: 613-828-7800  
Arnprior@jp2g.com



**2. The water quality analysis will be expanded to Schedule 5 Column 1 of the Landfill Standards (1998). Upon new well installation and sampling an updated trigger mechanism and contingency plan is recommended.** Jp2g will conduct the 2023 monitoring with the more comprehensive set of parameters first with the existing wells and then to include the new wells when installed. The current trigger and contingency plan is detailed in Section 6.2 of the Design, Development and Operations Plan December 2010. An updated trigger mechanism and contingency plan will be provided based on the more recent sampling results and will be presented in the final Expansion Feasibility Study.

**Mark Phillips Surface Water Scientist January 11, 2023 review of:**

- 2021 Annual Report March 21, 2022 by Greenview Environmental Management
- Expansion Feasibility Study October 25, 2022 by Jp2g
- Memo by B. Metcalfe on the 2015 AMR
- Memo by A. Bos on the 2021 AMR

**1. I support the reduction of sampling locations to include SW-4 and SW-5. Following completion of the topographic survey it is preferable to establish a monitoring station(s) closer to the waste disposal site.** Jp2g will conduct the survey in the spring 2023 and observe the spring freshet for potential locations.

**2. I would further add that a monitor sample location be established at the outlet of the proposed surface water control ponds (sewage works outlets).**

The Greenview Design, Development and Operations Plan December 2010 does not include control ponds but drainage ditches along the north-eastern portion of the fill area adjacent to Hydro Dam Road and at the southwest corner of the site. The final Expansion Feasibility Study will include an assessment of the requirement for new surface water controls.

**3. The topographic survey should detail the outlet flow paths from the stormwater works.**  
Agreed.

**4. Specific design details for the stormwater works should be provided for review.**

The final Expansion Feasibility Study will provide adequate detail to confirm surface water flow paths and additional monitoring locations to assess environmental compliance.

Yours truly,

**Jp2g Consultants Inc.**

**ENGINEERS • PLANNERS • PROJECT MANAGERS**

Kevin Mooder, MCIP RPP  
Principal | Environmental Services

cc Leonard Emon

Jp2g No. 22-6213A

December 29, 2023

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponalo  
Sr. Environmental Officer

**Re: Black Donald Landfill Site  
Township of Greater Madawaska  
ECA No. A411902  
Expansion Feasibility Study**

Dear Thandeka:

In order to finalize a 2024 work plan and budget we request further MECP review to support an application to Amend the ECA for an additional <40,000m<sup>3</sup> landfilling capacity proposed for 2024.

Relevant copies of documentation are included in **Appendix 1**:

- October 25, 2022 Jp2g Feasibility Assessment
- January 6, 2023 TSS Groundwater Alija Bos
- January 11, 2023 TSS Surface Water Mark Phillips
- January 25, 2023 Jp2g Response

The purpose of this submission is to provide an update on the tasks completed in 2023 to address the issues identified by TSS. The proposed expansion of the landfilling area is illustrated on **Drawing 1**.

### **Monitoring Well Installations**

On October 30 and 31, 2023 additional monitoring wells were installed as shown on **Figure 1**, copies of the well records are included in **Appendix 2**.

- BR23-85 (shallow) and BR23-8D (deep) installed between landfilling area and MW08-7
- MW23-7D installed near MW08-7S installed in the deep overburden
- BH-3 was located but it had been destroyed, a replacement well wasn't installed as the MW23-8 nest was located close by and out of the landfilling area expansion

### **Expanded Monitoring Program**

The 2023 groundwater monitoring program involved the more comprehensive laboratory analysis of parameters listed in Schedule 5 Column 1 of the Landfilling Standards (1998) as agreed to by MECP.



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**Pembroke**  
12 International Dr.  
Pembroke, ON, K8A 6W5  
T: 613-735-2507  
Pembroke@jp2g.com

**Arnprior**  
16 Edward St. S., #211  
Arnprior, ON, K7S 3W4  
T: 613-626-0780  
Arnprior@jp2g.com



### **Reduced Monitoring Program**

The 2023 surface water monitoring program included SW4 and SW5 as agreed to by MECP. Based on Jp2g site reconnaissance and field survey of the proposed expansion area on April 18, 2023 and other site visits, there are no permanent watercourses where surface water flow may occur from the landfilling area. There is a natural depression feature at the northwestern corner of the existing landfilling area, however no intermittent flow was observed. Similarly, no flowing water was observed in the ditch along Hydro Dam Road.

### **Monitoring Stations at Sewage Works Outlets**

The feasibility of a sewage works outlet at the northwestern corner of the fill area will be confirmed as part of the detailed design.

### **Outlet Flow Paths**

Additional field survey will be conducted to identify any flow paths from any sewage work outlet.

### **Stormwater Design**

Pending results of additional site survey future monitoring of the flow paths from the sewage works will be provided.

Yours truly,

**Jp2g Consultants Inc.**

**ENGINEERS • PLANNERS • PROJECT MANAGERS**

A handwritten signature in black ink, appearing to read 'K. Mooder', is written over a light blue horizontal line.

Kevin Mooder, MCIP RPP

Principal | Environmental Services

Encls.

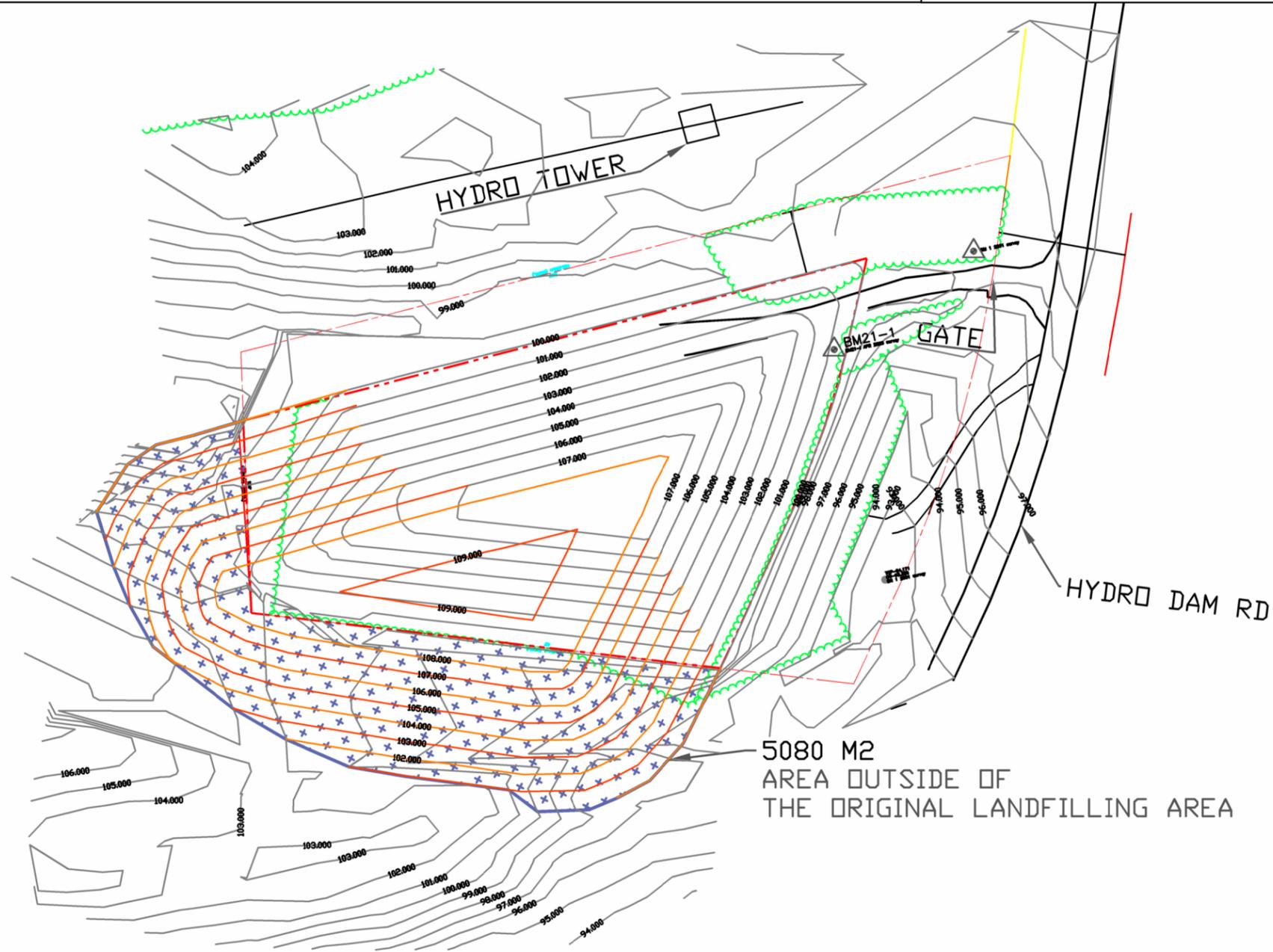
cc. Leonard Emond, Facilities Manager

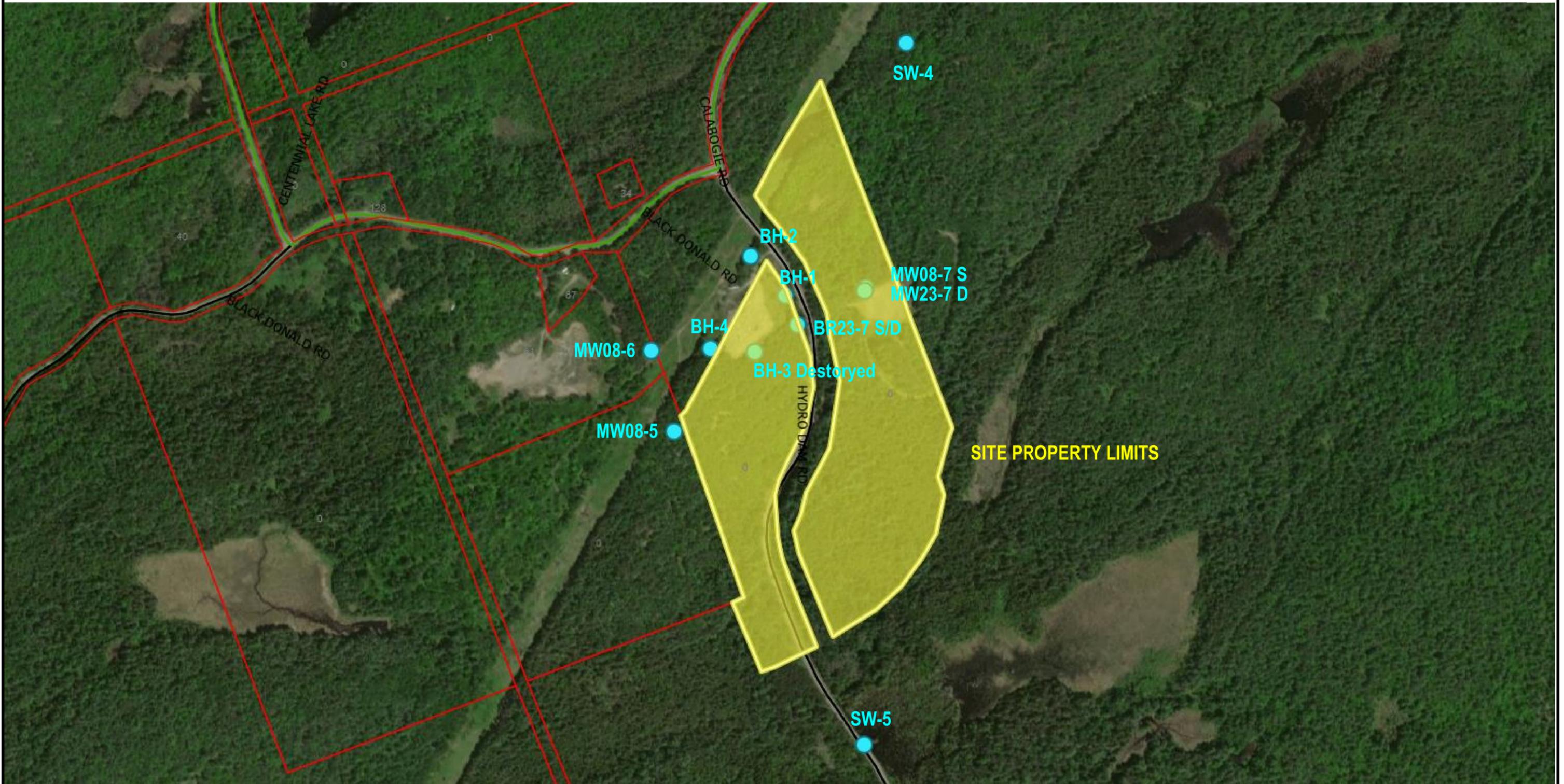
**NOTES**

- |  |   |
|--|---|
| <p>1. BASE CONTOURS IN PROPOSED EXPANSION AREA FROM JP2G SURVEY DATED APRIL 18 2023</p> <p>3. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 109m TO TIE IN. PEAK ELEVATION= 110.00m.</p> <p>4. EXPANSION DESIGN CONTOURS START AT 96.5M A 4:1 SLOPE TO ELEVATION 109M</p> | <p>5. EXPANSION DESIGN CAPACITY= 36500m<sup>3</sup>.</p> <p>6. ELEVATIONS BEYOND LANDFILLING AREAS ARE APPROXIMATE BASED ON JP2G (2001) DRAWINGS AND GREENVIEW DRAWINGS (2010)</p> <p>7. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.</p> |
|--|---|

**Legend**

- |   |                             |   |                |
|---|-----------------------------|---|----------------|
|  | 1.2ha Landfilling Area      |  | Vegetation     |
|  | Existing Design Contours    |  | Property Line  |
|  | Proposed Expansion Contours |  | Expansion area |
|  | Roadway                     |   |                |





## Black Donald Landfill Site - Greater Madawaska

### Monitoring Locations with Site Property Limit

DRAFTED: QS		PROJECT No.: 22-6213A
CHECKED: KM		REVISION DATE: 2023-12-20
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: 1:9028		SHEET No.: 1 of 1

A386280

Measurements recorded in:  Metric  Imperial

**Well Owner's Information**

First Name	Last Name/Organization	E-mail Address		<input type="checkbox"/> Well Constructed by Well Owner
Township of Greater Madawaska				
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
19 Parnell St. P.O. Box 180	Calabogie	ON	K0J5N1H0	

**Well Location**

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Hudko Dam Road			
County/District/Municipality	City/Town/Village	Province	Postal Code
	Calabogie	Ontario	K0J5N1H0
UTM Coordinates	Zone	Easting	Northing
NAD	8	3	1183532585101104106
Municipal Plan and Sublot Number		Other	

**Overburden and Bedrock Materials/Abandonment Sealing Record** (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
				From To
brwn grey	sand granite			0 11'
				11' 65'
	2mm's set onsite in cluster			

**Annular Space**

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From To		
0 54'	3/8 hole plug	
54' 65'	#2 silica sand	

**Results of Well Yield Testing**

After test of well yield, water was:	Draw Down		Recovery	
<input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
Duration of pumping hrs + min	4		4	
Final water level end of pumping (m/ft)	5		5	
If flowing give rate (l/min/GPM)	10		10	
	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
Recommended pump rate (l/min/GPM)	30		30	
Well production (l/min/GPM)	40		40	
Disinfected?	50		50	
<input type="checkbox"/> Yes <input type="checkbox"/> No	60		60	

**Method of Construction**

**Well Use**

<input type="checkbox"/> Cable Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial	<input type="checkbox"/> Not used
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input type="checkbox"/> Domestic	<input type="checkbox"/> Municipal	<input type="checkbox"/> Dewatering
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Driving	<input type="checkbox"/> Livestock	<input checked="" type="checkbox"/> Test Hole	<input checked="" type="checkbox"/> Monitoring
<input checked="" type="checkbox"/> Boring	<input type="checkbox"/> Digging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning	
<input checked="" type="checkbox"/> Air percussion		<input type="checkbox"/> Industrial		
<input type="checkbox"/> Other, specify		<input type="checkbox"/> Other, specify		

**Construction Record - Casing**

**Status of Well**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status of Well
			From	To	
1.5"	PVC	0.25"	0	55'	<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify <input type="checkbox"/> Other, specify

**Construction Record - Screen**

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To
1.75	PVC	10	55'	65'

**Water Details**

**Hole Diameter**

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	Depth (m/ft) From To	Diameter (cm/in)
		0 11'	9"
		11' 65'	4"

**Well Contractor and Well Technician Information**

Business Name of Well Contractor	Well Contractor's Licence No.
Can. Enviro. Drilling Contractors	7131213
Business Address (Street Number/Name)	Municipality
4102 Perth Road, Inverary	S. Frontenac
Province	Postal Code
ON	K0J5N1H0
Business E-mail Address	
info@canek.com	
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
11113493321311	Fillard, Jonathan
Well Technician's Licence No.	Signature of Technician and/or Contractor
3131115	[Signature]
	Date Submitted
	2108311108

**Map of Well Location**

Please provide a map below following instructions on the back.



Comments:

mnd holds the tag

Well owner's information package delivered  Yes  No

Date Package Delivered  
Y Y Y Y M M D D  
Date Work Completed  
2 1 0 8 3 1 1 1 0 8

**Ministry Use Only**  
Audit No. **Z414778**  
Received

A386271

Measurements recorded in:  Metric  Imperial

**Well Owner's Information**

First Name: \_\_\_\_\_ Last Name/Organization: Township of Greater Markham E-mail Address: \_\_\_\_\_  Well Constructed by Well Owner

Mailing Address (Street Number/Name): 19 Kinell St., P.O. Box 180 Municipality: Calabogie Province: ON Postal Code: K0B5T1H0 Telephone No. (inc. area code): \_\_\_\_\_

**Well Location**

Address of Well Location (Street Number/Name): 24 Hurlo Dam Road Township: \_\_\_\_\_ Lot: \_\_\_\_\_ Concession: \_\_\_\_\_

County/District/Municipality: \_\_\_\_\_ City/Town/Village: Calabogie Province: **Ontario** Postal Code: K0B5T1H0

UTM Coordinates: Zone: 18 Easting: 3533169 Northing: 50110518 Municipal Plan and Sublot Number: \_\_\_\_\_ Other: \_\_\_\_\_

**Overburden and Bedrock Materials/Abandonment Sealing Record** (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
brown	cobbles	sand		0	3'
brown	sand			3'	25'
brown	wet sand			25'	32'
grey	granite			32'	55'
IMN set on site					

**Annular Space**

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To	
0	41'	3/5" hole plug
41'	55'	#2 silica sand

**Results of Well Yield Testing**

After test of well yield, water was:  
 Clear and sand free  
 Other, specify \_\_\_\_\_

If pumping discontinued, give reason: \_\_\_\_\_

Pump intake set at (m/ft): \_\_\_\_\_

Pumping rate (l/min / GPM): \_\_\_\_\_

Duration of pumping: \_\_\_\_\_ hrs + \_\_\_\_\_ min

Final water level end of pumping (m/ft): \_\_\_\_\_

If flowing give rate (l/min/GPM): \_\_\_\_\_

Recommended pump depth (m/ft): \_\_\_\_\_

Recommended pump rate (l/min/GPM): \_\_\_\_\_

Well production (l/min/GPM): \_\_\_\_\_

Disinfected?  Yes  No

Time (min)	Draw Down		Recovery	
	Water Level (m/ft)	Time (min)	Water Level (m/ft)	Time (min)
1		1		
2		2		
3		3		
4		4		
5		5		
10		10		
15		15		
20		20		
25		25		
30		30		
40		40		
50		50		
60		60		

**Method of Construction**

Cable Tool  Diamond  Public  Commercial  Not used

Rotary (Conventional)  Jetting  Domestic  Municipal  Dewatering

Rotary (Reverse)  Driving  Livestock  Test Hole  Monitoring

Boring  Digging  Irrigation  Cooling & Air Conditioning

Air percussion  Industrial  Other, specify \_\_\_\_\_

Other, specify \_\_\_\_\_

**Construction Record - Casing**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)		Status of Well
			From	To	
15"	PVC	0.25"	0	42'	<input type="checkbox"/> Water Supply <input type="checkbox"/> Replacement Well <input checked="" type="checkbox"/> Test Hole <input type="checkbox"/> Recharge Well <input type="checkbox"/> Dewatering Well <input checked="" type="checkbox"/> Observation and/or Monitoring Hole <input type="checkbox"/> Alteration (Construction) <input type="checkbox"/> Abandoned, Insufficient Supply <input type="checkbox"/> Abandoned, Poor Water Quality <input type="checkbox"/> Abandoned, other, specify _____ <input type="checkbox"/> Other, specify _____

**Construction Record - Screen**

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To
1.75"	PVC	0.10	42'	52'

**Water Details**

Water found at Depth (m/ft)  Gas  Other, specify \_\_\_\_\_ Kind of Water:  Fresh  Untested

Water found at Depth (m/ft)  Gas  Other, specify \_\_\_\_\_ Kind of Water:  Fresh  Untested

Water found at Depth (m/ft)  Gas  Other, specify \_\_\_\_\_ Kind of Water:  Fresh  Untested

**Hole Diameter**

Depth (m/ft)	Diameter (cm/in)		
		From	To
0	9"	32'	
32'	4"	55'	

**Well Contractor and Well Technician Information**

Business Name of Well Contractor: Can. Enviro. Drilling Contractors Inc Well Contractor's Licence No.: 7131213

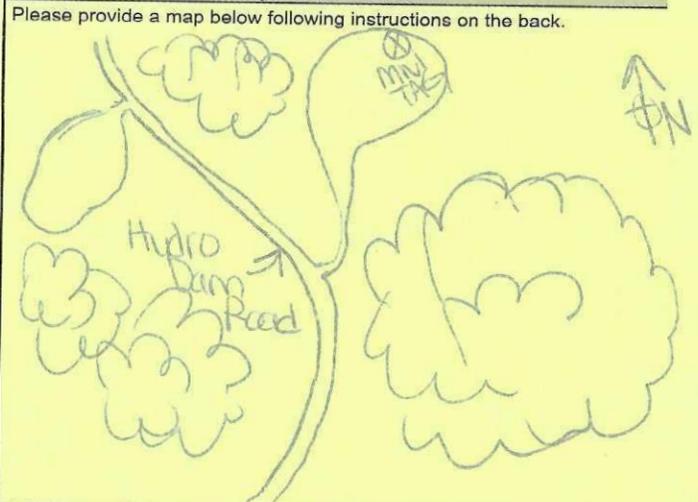
Business Address (Street Number/Name): 4102 Perth Road, Inverary Municipality: S. Brantford

Province: ON Postal Code: K0B5T1H0 Business E-mail Address: info@canedc.com

Bus. Telephone No. (inc. area code): 10113353312311 Name of Well Technician (Last Name, First Name): Fillion Jonathan

Well Technician's Licence No.: 313115 Signature of Technician and/or Contractor: \_\_\_\_\_ Date Submitted: 20081102

**Map of Well Location**



Comments: \_\_\_\_\_

Well owner's information package delivered:  Yes  No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2 0 0 8 1 1 0 2

**Ministry Use Only**

Audit No. 2414777

Received \_\_\_\_\_

Jp2g No. 22-6213A

December 29, 2023

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponaló  
Sr. Environmental Officer

**Re: Black Donald Landfill Site  
Township of Greater Madawaska  
ECA No. A411902  
Expansion Feasibility Study**

Dear Thandeka:

In order to finalize a 2024 work plan and budget we request further MECP review to support an application to Amend the ECA for an additional <math>40,000\text{m}^3</math> landfilling capacity proposed for 2024.

Relevant copies of documentation are included in **Appendix 1**:

- October 25, 2022 Jp2g Feasibility Assessment
- January 6, 2023 TSS Groundwater Alija Bos
- January 11, 2023 TSS Surface Water Mark Phillips
- January 25, 2023 Jp2g Response

The purpose of this submission is to provide an update on the tasks completed in 2023 to address the issues identified by TSS. The proposed expansion of the landfilling area is illustrated on **Drawing 1**.

### **Monitoring Well Installations**

On October 30 and 31, 2023 additional monitoring wells were installed as shown on **Figure 1**, copies of the well records are included in **Appendix 2**.

- BR23-85 (shallow) and BR23-8D (deep) installed between landfilling area and MW08-7
- MW23-7D installed near MW08-7S installed in the deep overburden
- BH-3 was located but it had been destroyed, a replacement well wasn't installed as the MW23-8 nest was located close by and out of the landfilling area expansion

### **Expanded Monitoring Program**

The 2023 groundwater monitoring program involved the more comprehensive laboratory analysis of parameters listed in Schedule 5 Column 1 of the Landfilling Standards (1998) as agreed to by MECP.



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**Arnprior**  
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T: 613-626-0780  
Arnprior@jp2g.com



### **Reduced Monitoring Program**

The 2023 surface water monitoring program included SW4 and SW5 as agreed to by MECP. Based on Jp2g site reconnaissance and field survey of the proposed expansion area on April 18, 2023 and other site visits, there are no permanent watercourses where surface water flow may occur from the landfilling area. There is a natural depression feature at the northwestern corner of the existing landfilling area, however no intermittent flow was observed. Similarly, no flowing water was observed in the ditch along Hydro Dam Road.

### **Monitoring Stations at Sewage Works Outlets**

The feasibility of a sewage works outlet at the northwestern corner of the fill area will be confirmed as part of the detailed design.

### **Outlet Flow Paths**

Additional field survey will be conducted to identify any flow paths from any sewage work outlet.

### **Stormwater Design**

Pending results of additional site survey future monitoring of the flow paths from the sewage works will be provided.

Yours truly,

**Jp2g Consultants Inc.**

**ENGINEERS • PLANNERS • PROJECT MANAGERS**

A handwritten signature in black ink, appearing to read 'K. Mooder', is written over a light blue horizontal line.

Kevin Mooder, MCIP RPP

Principal | Environmental Services

Encls.

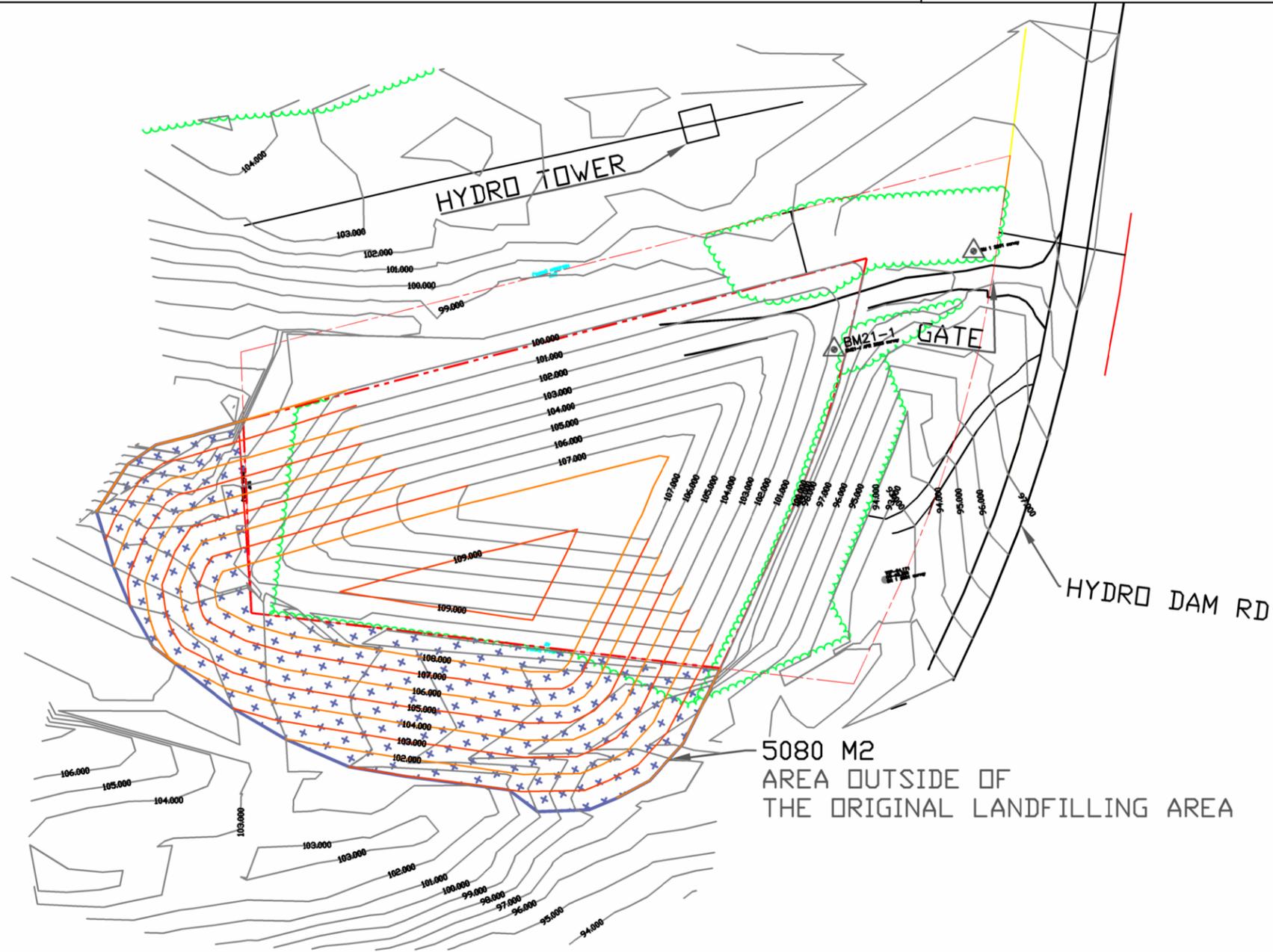
cc. Leonard Emond, Facilities Manager

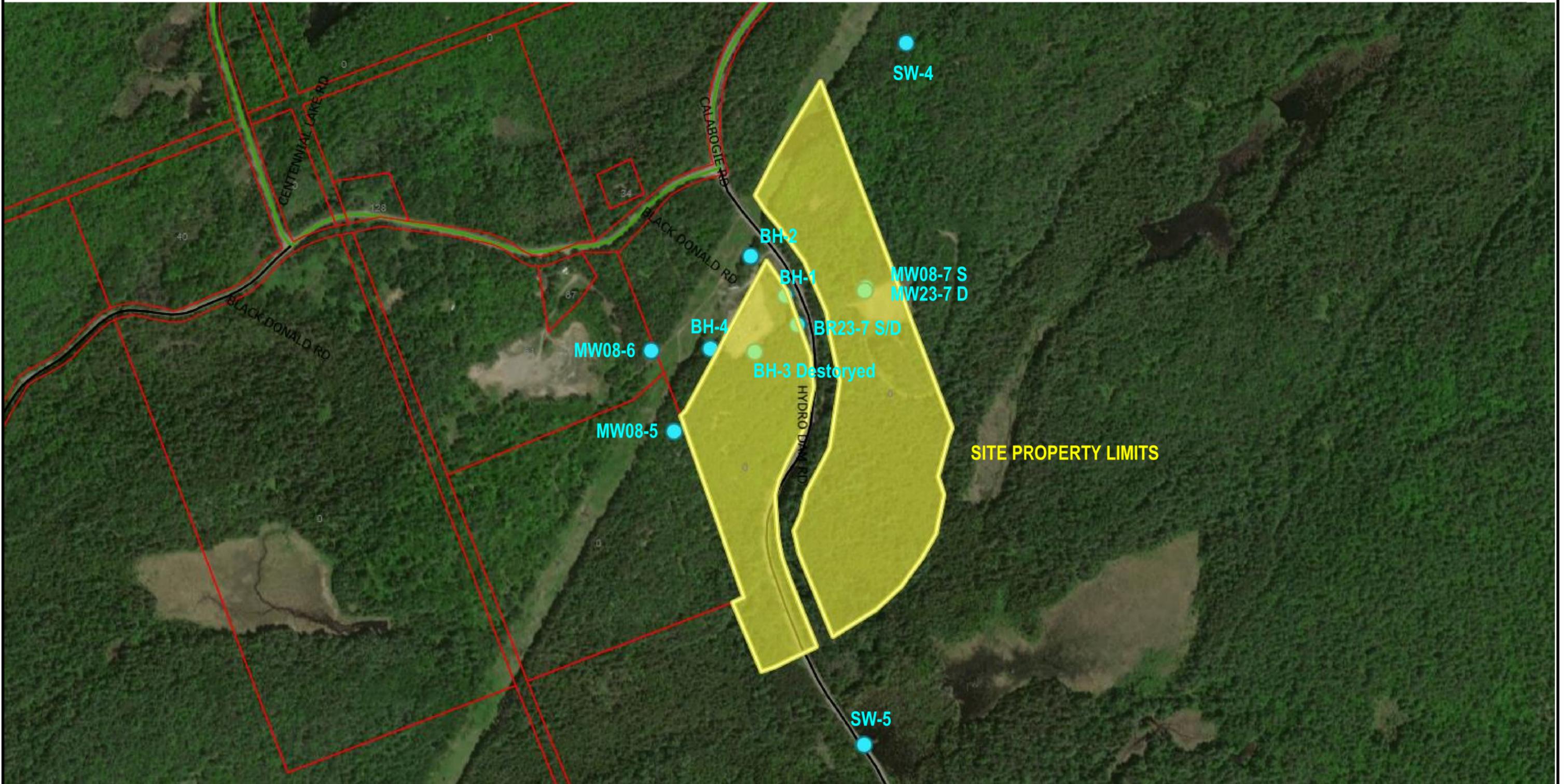
**NOTES**

- |  |   |
|--|---|
| <p>1. BASE CONTOURS IN PROPOSED EXPANSION AREA FROM JP2G SURVEY DATED APRIL 18 2023</p> <p>3. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 109m TO TIE IN. PEAK ELEVATION= 110.00m.</p> <p>4. EXPANSION DESIGN CONTOURS START AT 96.5M A 4:1 SLOPE TO ELEVATION 109M</p> | <p>5. EXPANSION DESIGN CAPACITY= 36500m<sup>3</sup>.</p> <p>6. ELEVATIONS BEYOND LANDFILLING AREAS ARE APPROXIMATE BASED ON JP2G (2001) DRAWINGS AND GREENVIEW DRAWINGS (2010)</p> <p>7. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.</p> |
|--|---|

**Legend**

- |   |                             |   |                |
|---|-----------------------------|---|----------------|
|  | 1.2ha Landfilling Area      |  | Vegetation     |
|  | Existing Design Contours    |  | Property Line  |
|  | Proposed Expansion Contours |  | Expansion area |
|  | Roadway                     |   |                |





## Black Donald Landfill Site - Greater Madawaska

### Monitoring Locations with Site Property Limit

DRAFTED: QS		PROJECT No.: 22-6213A
CHECKED: KM		REVISION DATE: 2023-12-20
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: 1:9028		SHEET No.: 1 of 1

# APPENDIX 1

Jp2g No. 22-6213A

October 25, 2022

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponalo  
Sr. Environmental Officer

**Re: Black Donald Landfill Site  
Township of Greater Madawaska  
ECA No. A411902  
Expansion Feasibility Study**

Dear Thandeka:

On behalf of the Township of Greater Madawaska, we are pleased to provide this feasibility assessment regarding the potential for an expansion at the Black Donald Landfill Site. This report provides the preliminary steps to obtain approval for an expansion and is intended to provide the Township with a foundation for waste management decision making pending Ministry comments.

## 1.0 INTRODUCTION

The Black Donald Landfill Site located on part of Lot 9, Concession 2 and 3, geographic Township of Brougham in the Township of Greater Madawaska, Ontario, currently operates under ECA No. A411902 issued March 27, 1980, as amended which is included in **Attachment 1**. The following provides the additional Notices issued under the ECA:

Notice No. 1 October 22, 2001	Amended to reflect the increase in site service area to include the Township of Greater Madawaska.
Notice No. 2 July 12, 2002	Amendment to include the submission of the development and operations report as per Condition 14.
Notice No. 3 January 24, 2013	Amended to reflect site operations, approval of alternate daily cover and Site Trigger and Contingency Plan.

The environmental monitoring compliance program is based on the ECA Schedule "B" dated January 24, 2013. Operations compliance is based on a Design, Operations and Development Plan by Greenview Environmental Management, dated December 22, 2010 (Greenview, 2010).



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## 2.0 LANDFILLING CAPACITY

The following has been compiled from various sources to estimate the total approved waste disposal volume and the remaining landfilling capacity. Recent Greenview documents have stated the current volume in place is unknown.

### 2.1 Total Design Capacity

Under ECA Notice No. 2 dated July 12, 2002 the Site Development And Operations Plan by Jp2g Consultants Inc. dated January 2001 (Jp2g, 2001) as item 4 in Schedule "A" provided the following site capacity figures:

- theoretical maximum capacity of a 1.2 ha site to a pyramidal peak 54,200m<sup>3</sup>
- preliminary design capacity of a 0.9 ha landfilling area with a 30m buffer along the Township road 25,550m<sup>3</sup>
- detailed design capacity of 34,250m<sup>3</sup> (excluding final cover) with a remaining capacity of 29,350m<sup>3</sup> as of January 1, 2001
- the total landfilled in place volume was approximately 4900m<sup>3</sup> as of January 1, 2001

The ECA Condition (18) dated July 12, 2002 stated the total capacity including final cover is 46,785m<sup>3</sup>

### 2.2 Remaining Capacity

The Preliminary Landfill Expansion Feasibility Studies prepared by Greenview dated August 31, 2007 (Greenview, 2007) cited two (2) remaining capacities.

- As of October 27, 2006 (Golder, 2007) there was an estimated 22,300m<sup>3</sup>, excluding final cover, remaining capacity.
- Using the revised final contours to accommodate the proposed waste transfer station as presented in the proposed 2007 application to amend the ECA, the remaining capacity was approximately 8,400m<sup>3</sup>.

The latter was not implemented, as the Black Donald Site was not selected as one of the waste transfer sites.

Under ECA Notice No. 3 dated January 13, 2013 the Design, Operations And Development Plan (Greenview, 2010) as item 7 in Schedule "A" provided the following remaining capacity figures:

- remaining capacity as of October 20, 2009 is 14,926m<sup>3</sup>
- remaining capacity as of November 2, 2010 is 12,442m<sup>3</sup>

As of December 14, 2021 the remaining capacity was 4400m<sup>3</sup> (Greenview, 2022). The life expectancy could be 2 to 5 years depending on the annual landfilling rate. Based on the annual surveys completed to determine the annual landfilling rate and remaining capacity, the following summarizes the results based on available reports in the Township records.



Year	Annual Landfilled (m3)	Remaining Capacity (m3)	Estimated Years	Waste Summary
2009	4909	14,926	3	2393 cars 2494 trucks 1145 trailers 27 single axle 11 tandem 16 tri-axle
2010	2484	12,442	5	690 cars 505 trucks 67 trailers 4 single axle 3 tandem 4 tri-axle
2011	11,341			
2012	1087 with cover	10,337	9	33 tri-axes 1 trailer
2013	1197	9140	7.6	28 tri-axes 4 trailers
2014				
2015	256	9320	9	12 tri-axes 1 bin
2016	382	8937	10	3 bins 510m <sup>3</sup>
2017				
2018				
2019				
2020	759	6478	12	25 tri-axes 2 bins 410m <sup>3</sup>
2021	2078	4400	5	52 tri-axes 786m <sup>3</sup>

### 3.0 LEGISLATIVE REQUIREMENTS

Under Ontario Regulation 101/07, made under the EA Act, a proponent may increase the capacity by 40,000m<sup>3</sup> or more but not more than 100,000m<sup>3</sup> subject to fulfilling the Environmental Screening Process (ESP). A change of less than 40,000m<sup>3</sup> is exempt from the EA Act.

Approvals for changes to waste disposal sites is obtained under Part V of the Environmental Protection Act (EPA) and reviewed under the Environmental Compliance Approval (ECA) process. Under the Ministry's Requirement for Fees with ECA's (formerly O.Reg 363/98 Section 27 EPA) the province applies fees to review applications.

The July 2020 amendments to the EA Act are proposing changes to O.Reg 101/07 under a new regulation, but not to the above approvals process.



To include the approved total waste disposal volume of 46,785m<sup>3</sup> which includes final cover (Note O.Reg 232/98 defines total waste disposal volume without final cover) by <100,000m<sup>3</sup> the ESP is intended to identify potential environmental effects, concerns and/or issues to be addressed through a phased investigation and consultation process.

Greenview (2007) completed a preliminary landfill expansion feasibility study which included a review of natural heritage features, cultural heritage features and physical environmental features. The report included an Initial Environmental Impact Study by Snider's Ecological Services to assess significant natural features including threatened and endangered species habitat. Additional studies were recommended. The report also included a Stage 1 Archaeological and Cultural Heritage Assessment by The Central Archaeological Group for C.R. Murphy Archaeology. It was determined the potential for significant archaeological sites was low. The scope of work to support an ESP would be much more extensive and requires agency review and comment. In our experience an ESP would cost in the order of \$100,000 to \$200,000 and take approximately 5 years to complete. This cost range depends on the requirements to enhance the current landfill site monitoring program. The Greenview report identified topographical constraints which will limit the expansion of the current landfilling area south and east while maintaining the existing buffers from the Hydro Transmission line and Hydro Dam Road. An expansion to increase the total waste disposal volume by <40,000m<sup>3</sup> maybe acceptable as shown on **Drawing No 1**.

To determine the feasibility of expansion <40,000m<sup>3</sup>, pre-submission consultation with the MECP Ottawa District Office and MECP Technical Support Section (TSS) Regional Office is required prior to the application. This letter combined with the recent Annual Report is anticipated to facilitate this review.

#### **4.0 BLACK DONALD LANDFILL SITE ASSESSMENT**

In order to assess the feasibility of a successful expansion application three (3) main issues need to be considered in consultation with the Ministry.

Legal – the status of the ECA, the adequacy of the landholdings and the municipality's compliance with the conditions.

- correct description of the site defining the landfilling area and total site
- correct legal survey or description of the site
- adequate contaminant attenuation zone (CAZ)
- outstanding ECA conditions to be satisfied
- submissions to satisfy a condition requiring Ministry review and approval

Environmental – the status of the water quality and landfill gas monitoring program and any measured or potential impacts on the surface and groundwater, and the potential impact to other natural environmental features.

- groundwater quality impacts
- surface water quality impacts
- adequacy of surface water flow control/stormwater management
- adequacy of the landfill gas monitoring program
- proximity to environmentally sensitive areas (ESA)
- potential impact on rare or endangered species and habitat (SAR)
- outstanding actions to address any Ministry Technical Support Section (TSS) review comments



Operations – the status of site operations and the potential impact on adjacent land uses and the local community.

- any record of negative effects on-site or on adjacent land uses, i.e. litter, dust, noise, odour, landfill gas
- any record of operational concerns
- outstanding actions to address Ministry inspection reports
- outstanding ECA Conditions to be satisfied

#### 4.1 Legal

The ECA No. A411902 last amended January 24, 2013 describes the Site as a 1.2 hectare waste disposal site. ECA Section (2) 2.12 defines the Site as ‘the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule “A” of the Certificate and consisting of approximately 1.2 hectare landfill site’. Upon review of the documents in Schedule “A” the Site comprises a 0.9m landfilling area within a total site area of 27.2 ha.

ECA Condition (33) required that a Certificate of Prohibition be registered on title. Based on available records it was registered on lands located in Part of Lot 9, Concession 2 and 3, Brougham, being Parts 1 to 4 Plan 49R-15646. As detailed in Section 4.2 the current operation has an adequate CAZ which should be satisfactory for a modest sized expansion. In Section 4.2 and 4.3 it is noted there are no ECA Conditions outstanding regarding environmental monitoring or site operations respectively.

#### 4.2 Environmental

The monitoring program approved under the current ECA is to satisfy Condition 27. The monitoring program as detailed in ECA Schedule “B” consists of the bi-annual collection of static water levels and groundwater samples from seven (7) monitoring wells, and surface water samples collected three times per year from four (4) locations. The following provides an overview of the Environmental Monitoring program based on the work activities and laboratory data from the 2021 Monitoring period.

##### Overview

For the purpose of this submission, we have included the figures from the 2021 Annual Report by Greenview (2022) in **Attachment 2** and Borehole Logs in **Attachment 3**. The groundwater configuration at the site in 2021 was consistent with historical interpretations with an east-west oriented groundwater divide evident in the vicinity of the waste mound, and predominant groundwater flow directions to the east, west, and southeast as shown on Figures 4 and 5 in **Attachment 2**. Additionally, groundwater in the vicinity of the monitoring well MW08-6 was interpreted to flow to the east.

Groundwater immediately downgradient from the site at monitoring wells BH1, BH3, and BH4 was interpreted to be impacted from landfill-related activities in 2021. Most parameter concentrations were above median background groundwater quality results, with non-conformances of ODWS for concentrations of alkalinity, DOC, hardness, iron, manganese, and TDS noted at select monitors. The generally lower parameter concentrations at monitoring well BH3 compared to those at monitoring wells BH1 and BH4 were attributed to its location partially cross-gradient to the waste mound and along the groundwater divide at the site. Results from monitoring well BH1 were interpreted to be most representative of leachate quality at the Black Donald site at this time.



No RUC non-conformances were documented in results from downgradient monitoring well MW08-7 in 2021 that were attributed to landfill-related factors. The noted RUC non-conformance in fall 2021 at MW08-7 for DOC was consistent with DOC concentrations observed in background wells BH2 and MW08-6. Based on the above, the Black Donald site was interpreted to meet the intent of MECP Guideline B-7 at the downgradient eastern CAZ boundary in 2021. Based on 2021 results, it was extrapolated that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally-occurring concentrations of alkalinity, aluminum, DOC, hardness, manganese, and TDS in the background (BH2 and MW08-6), the Black Donald site was interpreted to meet the intent of MECP Guideline B-7 and was interpreted to be in compliance with RUC in 2021 at the southwestern CAZ boundary.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-related activities. Non-conformances of PWQO for concentrations of DO (low), phosphorus, iron and zinc noted in 2021 at select sampling locations for select sampling dates were attributed to naturally occurring conditions in the background (SW-4), as well as to low-flow surface water conditions.

In 2021, PWQO non-conformances at key trigger locations SW-3 and SW-6 for concentrations of iron were attributed to low water/ low-flow conditions, and not to landfill-related activities. Similarly, PWQO non-conformances for concentrations of phosphorus at key trigger location SW-3 were generally consistent with concentrations observed at background location SW-4 and were therefore not attributed to landfill-related factors. No RUC non-conformances were noted for any of the key trigger parameters at key trigger location MW08-7 following inclusion of 2021 results. Based on a review of five (5) year time trend analysis for parameters un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus, the Trigger Mechanism was not interpreted to be activated in 2021.

Part of the feasibility study for the landfill expansion has included a critical review of the monitoring program including:

- enhancement of the groundwater quality sampling with the potential for further delineation of the leachate plume in the overburden and bedrock aquifers
- modify the surface water program by enhancing the sampling and review locations at a significant distance from the fill area

It is anticipated that a proposed expansion will not impact Environmentally Sensitive Areas (ESA) or Species At Risk (SAR), or their habitat as the expansion of the landfilling area is immediately adjacent to the operating fill area.

#### Revised Groundwater Monitoring Program

The existing monitoring program was reviewed to assess groundwater and quality and locations, and where feasible bolster the program to accurately address necessary impacts from the landfill. **Attachment 4** indicates the existing, and proposed revision of the monitoring program. As shown, monitoring wells are to be sampled on an annual basis for the full set of parameters as per Schedule 5 Column 1 of the Landfill Standards (1998). This increase in parameters will help establish a more comprehensive data set for the boundary compliance wells, to compare with the background and leachate wells.



The updated program will continue to sample the monitoring wells as per ECA Schedule “B”, with the proposed addition of the following as shown on **Drawing No 2** (a Greenview base plan)

- one (1) bi-level monitoring well within the overburden (if available) and bedrock aquifers east of the landfilling area to further delineate the plume within the groundwater towards MW08-7;
- compliance well MW08-7 is installed in the overburden (sand material), see borehole log in **Attachment 3**, therefore it is recommended to also install a bedrock monitoring well in this location to delineate leachate in the bedrock aquifer in this direction; and
- monitoring well BH3 was destroyed in 2021 due to landfilling activities; this well should be reinstated to aid in assessing leachate migration south of the fill area.

The water quality analysis to be expanded to Schedule 5 Column 1 of the Landfill Standards (1988). Upon installation and sampling it is further recommended to update the trigger mechanism and contingency plan to reflect a proposed expansion.

#### Revised Surface Water Monitoring Program

The original program included surface water monitoring locations SW-1, SW-2, SW-4, SW-4, SW-5 and SW-7. SW-4 was relocated and represents background surface water quality at the site. In 2009 the Ministry agreed to remove SW-1, SW-2 and SW-7 from the monitoring program as they were typically observed to be dry. In the 2015 Annual Report the Township requested that surface water sampling be deleted from the monitoring program. The MECP letter dated July 7, 2016 reiterated that it should continue. Locations SW-3 and SW-6 are located a significant distance from the landfilling area as shown on **Figure 3 in Attachment 2** and could be removed from the program.

Upon completion of a more detailed topographic survey and review of surface water drainage from the expanded landfilling area, additional sampling locations may be considered. The proposed analysis is to be expanded to Schedule 5 Column 3 of the Landfill Standards (1998).

To establish a more comprehensive water quality data base, in accordance with ECA Condition 28 we request District Manager approval to alter the groundwater and surface water monitoring program as shown in **Attachment 4**.

### **4.3 Operational**

Landfilling at the Black Donald WDS initially involved a trench, burn and cover operation in the 1970s. Based on a test pit program conducted in 1998 a landfilling area of approximately 0.4ha was identified within the 1.2 ha site and an estimated in place waste volume of 4400m<sup>3</sup>. A copy of the plan is included in **Attachment 5**. The base elevations were developed from an assumed elevation.

At the time of the 2001 application to amend the Certificate an estimated in place volume of 4900m<sup>3</sup> was stated. The Site Development and Operations Plan, January 2001 presented a design with final contours providing a remaining capacity of 34,250 m<sup>3</sup> excluding final cover. A copy of the 2001 design drawings are included in **Attachment 5**.



Landfilling operations included an area method of landfilling over the former waste disposal area and towards Hydro Dam Road within the limits of a 0.9 ha landfilling area which applied a 30m buffer from Hydro Dam Road and a 15m buffer from the Hydro One easement limit.

On April 5, 2010 the Black Donald site was closed to the public for waste and recycling operations. The Greenview Design, Operations and Development Plan, December 2010 design utilized the Jp2g concept and detailed a five (5) staged approach for landfilling. A copy of the 2010 Stage 5 drawing up to final contours without final cover is included in **Attachment 5**.

### Landfilling Operations

The Greenview 2010 report details the current landfilling procedures. The site is approved to receive leaf and yard waste, bulky and construction & demolition (C&D) waste from municipal vehicles and Township approved haulers only, under the supervision of Township staff. The bulky and C&D waste is stockpiled on the active landfilling area and is ground by a licensed contractor for use as an alternative cover material source as per ECA Conditions 16(a) and 35(a) and (b). ECA Conditions 16(b) and (c) permit the Site to receive non-hazardous solid domestic waste on a temporary basis, i.e. in the event waste from the transfer stations cannot be received elsewhere.

### Waste Diversion

There is no curb side collection of household waste and recyclables in the Township unless contracted directly by a homeowner or business. Currently waste received at the three (3) waste transfer sites are hauled to Moose Creek for disposal. Blue box recyclables are transferred to Emterra in Renfrew, cardboard is hauled to OVWRC near Pembroke. Other recyclable materials are picked up by licensed haulers. Household hazardous waste is accepted at the Renfrew Landfill Site facility.

### ECA Operations Review

All waste deliveries to the Site are inspected by trained municipal employees and records maintained of the waste disposal operations. The following ECA conditions are being satisfied.

- 15 (a) The Owner shall develop the Site in accordance with the Site Design, Operations and Development Plan, dated December 22, 2010, item 7 of Schedule "A".
- (b) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site personnel, and the natural environment.
- 20 All incoming waste shall be inspected prior to being received at the Site to ensure that the Site is approved to accept such a waste.
- 21 The Owner shall ensure that all wastes at the Site are managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- 22 The Owner shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g., spills, maintenance work) in a record book located at the Site.



- 23 The Owner shall conduct weekly inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, detected during these inspections shall be recorded in a log, and promptly corrected.
- 24 (a) A sign shall be posted in a prominent location at the entrance at the Site stating the hours of operation, the Owner's name, staff contact and telephone to all in the event of an emergency or any complaints.
- (b) Complaints received from the public or adjacent neighbours shall be recorded in a logbook created and maintained for this purpose.
- 25 (a) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site.
- (b) All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416.325.300 or 1.800.268.6060, and the Municipality, and shall be recorded in a logbook as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences.
- (c) All waste material from a spill or process upset, shall be managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- 35 (a) The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
- (b) The Owner shall ensure that Construction and Demolition and Bulky Waste is stored and processing within the landfill footprint, as shown in Figure 6, Proposed Site Design, of item 7 of Schedule "A".
- 36 (a) The Owner shall ensure that leaf and yard storage and composting is conducted as described in the Site Design, Operations and Development Plan, item 7 of Schedule "A".
- (b) A maximum of 1000 cubic meters of leaf and yard waste may be temporarily stored within the staging area.
- (c) Leaf and yard wastes shall be moved to the established composting area within the three months of arrival at the Site.
- (d) A maximum of 500 cubic meters of leaf and yard may be processed within the composting area at any time.
- 37 (a) The Owner shall ensure that cover material is applied at the Site as follows:
- Intermediate – Once every six (6) months, across the entire working face, and/or in areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 0.3 meters of soil or an approved thickness of alternative cover material shall be placed.
  - Final – In areas where landfilling has been completed to final contours, a minimum of 0.6 meters thick layer of final cover soil shall be placed, followed by a 0.15 meter of topsoil.



- (b) In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, followed by 0.15 meters of soil.
- (c) The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 37(a):
  - leaf and yard waste mixed with soil cover and/or wood chips
  - composted or partially-composted leaf and yard waste
  - asphalt shingles
  - clean wood chips
  - contaminated soil, non-hazardous
  - processed C&D and bulky waste materials

### Ministry Site Inspections

According to Township records a site inspection was completed May 26, 2015. A site inspection report dated July 6, 2015 requested the following:

1. Weekly inspections as per Condition 23 of the ECA.
2. Records of inspections as per Condition 22 of the ECA
3. Signage to be improved as per Condition 24(a) of the ECA
4. Access by unauthorized person is prevented by better fencing as per Section 11(6) of the O.Reg 347 of the EPA.

In reference to the 2021 Annual Report (Greenview, 2022) the Township received a site inspection report dated October 9, 2019. The report includes the following action items:

1. Township shall begin keeping weekly record of the equipment and facilities at the Site as per Condition 23 of the ECA
2. Recommend posting a No Dumping sign at the entrance and take further steps to prevent dumping as required by Section 11(16) of O.Reg 347

An Action Plan was filed by Greenview dated November 25, 2019. The Township submitted photos of the signage on February 14, 2020.

### Jp2g Site Review

Jp2g conducted a site inspection on September 16 and 29, 2022 to review current operations and assess the feasibility of an expansion to the landfilling area. All signage was in good condition and the gate was locked. The access road to the fill area was in satisfactory condition. A large stockpile of unprocessed bulky and C&D waste was deposited on the waste mound, the ground waste has been spread and there was little wind-blown litter. Areas of the waste mound had received earth/granular material final cover and some slopes were fairly steep. Overall, the waste mound needed re-grading to achieve the 4:1 side slopes and final contours where landfilling was completed.



## 5.0 EXPANSION PROPOSAL

The existing landfilling area is located on a topographic bedrock high with slopes southeast and east. Overburden is characterized by a fine to medium sand of approximately 0.3 to 1.5m in thickness with local bedrock outcropping near the fill area. MW08-7 located to the east on the opposite side of Hydro Dam Road has over 8m of overburden thickness.

Based on groundwater elevation measurements over the past 20 years there is a shallow groundwater flow to the east, west and southwest which is generally consistent with the slope of the ground topography.

MW08-6 is considered the background well installed on Crown Land on the opposite side of the Hydro transmission line. BH1 is located approximately 25m east and downgradient of the fill area and the water quality is characterized by elevated concentrations of landfill leachate parameters. Given the proximity to Hydro Dam Road, road salting may also be a factor.

A RUC assessment was completed at MW08-7 which is located to the southeast of the fill area and 180m southeast of BH1 at the easterly limit of the CAZ. No RUC exceedances were documented, as the elevated DOC concentration was also detected in the background well.

In support of the proposed expansion, we propose the installation of additional overburden and bedrock monitoring wells. Water quality analysis to be expanded to Schedule 5 Column 1 of the Landfill Standards. We propose to maintain the current surface water sampling locations SW-4 (background) and SW-5 and expand the analysis to include the parameters in Schedule 5 Column 3 of the Landfill Standards. Upon further detailed topographic survey of the expansion area additional locations may be identified.

Due to the Hydro transmission line and Hydro Dam Road the expansion of the fill area is limited to the south and southeast. **Drawing No. 1** illustrates a conceptual expansion which could add another 30,000 to <40,000m<sup>3</sup> of waste disposal capacity. The final design requirements for the proposed expansion will require additional field elevation survey.



We trust this summary is satisfactory and will be considered by the Ottawa District Office and TSS in their review of the latest Annual Report. Should you have any questions please do not hesitate to contact the undersigned.

Yours very truly,  
**Jp2g Consultants Inc.**  
Engineers • Planners • Project Managers

A handwritten signature in black ink, appearing to read 'K Mooder', written in a cursive style.

Kevin Mooder, MCIP, RPP  
Principal | Environmental Services

A handwritten signature in black ink, appearing to read 'Andrea Sare', written in a cursive style.

Andrea Sare, C.Tech, EP.  
Environmental Consultant

A handwritten signature in black ink, appearing to read 'Andrew Buzza', written in a cursive style.

Andrew Buzza, P.Geo  
Sr. Hydrogeologist

KM/AS/AB/jlp

cc Leonard Emon Facilities Manager

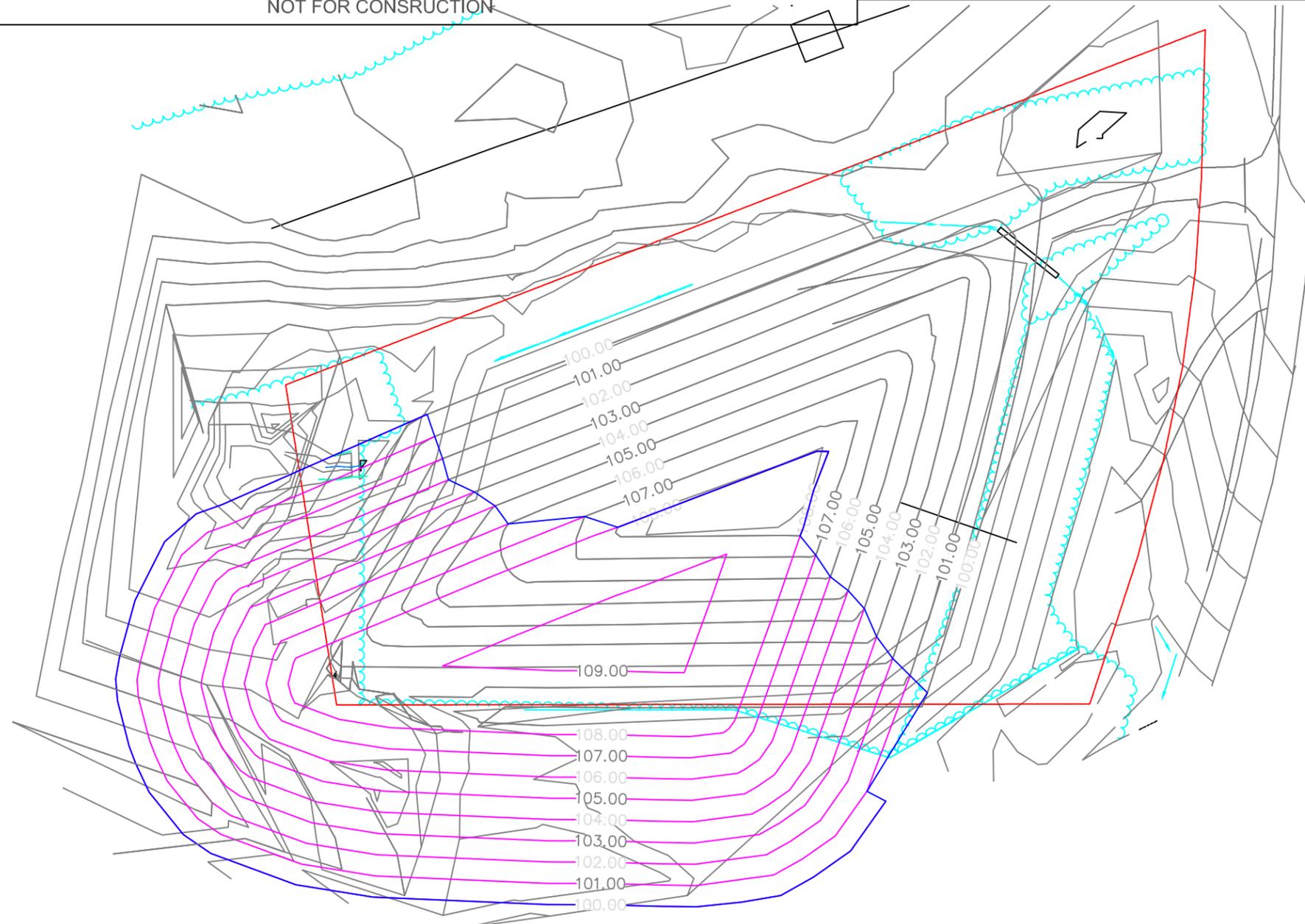
# Drawings

**NOTES**

1. EXPANSION DESIGN CONTOURS START AT 96.5M A 4:1 SLOPE TO ELEVATION 109M
  2. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 109m TO TIE IN. PEAK ELEVATION= 110.00m.
  3. EXPANSION DESIGN ESTIMATED CAPACITY= 36500m<sup>3</sup>. (Base on flat plane of 100m elv.)
  4. ELEVATIONS ARE APPROXIMATE BASE ON JP2G (2001) DRAWINGS AND GREENVIEW DRAWING (2010)
  5. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.
- NOT FOR CONSTRUCTION

**Legend**

- 0.9ha Landfilling Area
- Existing Contours
- Proposed Contours
- Roadway

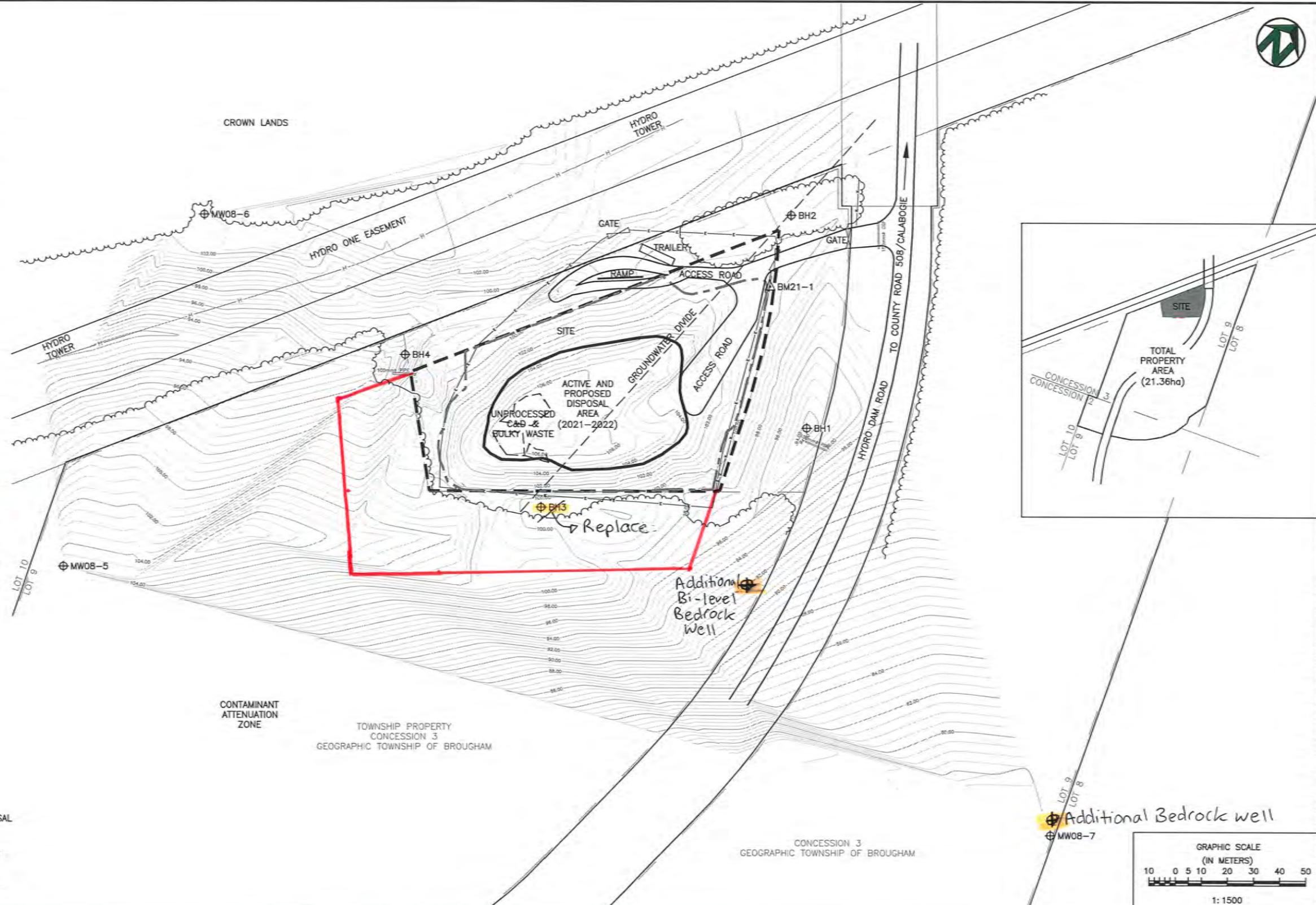


**LEGEND**

- PROPERTY BOUNDARY
- - - APPROVED WASTE DISPOSAL AREA
- · - · - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- · - · - CONTAMINANT ATTENUATION ZONE
- 100.00 MAJOR TOPOGRAPHIC CONTOUR (2m)
- MINOR TOPOGRAPHIC CONTOUR (0.5m)
- ON-SITE ROAD
- RIGHT-OF-WAY
- · - · - FENCELINE
- · - · - ELECTRIC BEAR FENCE
- · - · - APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE

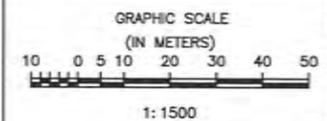
*Proposed limits of Expansion*

*Additional monitoring wells*



**NOTES**

1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Bancroft, Ontario  
613.332.0957  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF GREATER MADAWASKA**

PROJECT:  
EXISTING SITE CONDITIONS PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**2**

2 OF 6

G:\InfoCAD\102\_Greater Madawaska\102.21.014 - TOM - BLACK DONALD WDS - 2021 AY FIGURES - FINAL.dwg

# **Attachment 1**

## **ECA**

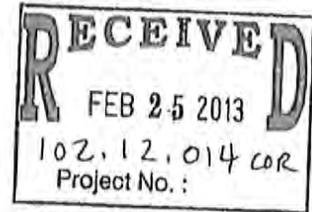
**AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A411902

Notice No. 3

Issue Date: January 24, 2013

The Corporation of the Township of Greater Madawaska  
1101 Francis St  
Post Office Box, No. 180  
Greater Madawaska, Ontario  
K0J 1H0



Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Rd  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Approval No. A411902 issued on March 27, 1980, and amended on October 12, 2001 and July 12, 2002 for the use and operation of a 1.2 hectare waste disposal site, as follows:*

This Notice of Amendment updates the Approval to reflect current site operations, approves alternative daily cover and the Site Trigger and Contingency Plan.

**The following definitions are added:**

"Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation listed in Schedule "A".

"Construction and Demolition and Bulky Waste" or "C&D waste" means wastes resulting from construction, and includes the following: asphalt shingles, mattresses, furniture, carpet, tree stumps, drywall, wallboard, wood (painted and unpainted).

**The following Conditions are revoked and replaced:**

- (15) (a) The Owner shall develop the Site in accordance with the Site Design, Operations and Development Plan, dated December 22, 2010, item 7 of Schedule "A".
- (b) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site

personnel, and the natural environment.

- (16) (a) The Site shall only receive only non-hazardous solid Construction and Demolition and Bulky Waste, and leaf and yard waste, generated from within the Township of Greater Madawaska.
- (b) The Site may receive non-hazardous solid domestic waste from within the Township of Greater Madawaska, on a temporary basis, only with prior written authorization from the District Manager.
- (c) Prior notification of 48-hours must be provided to the District Manager for receipt of any domestic waste.
- (23) The Owner shall conduct weekly inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition at all times. Any deficiencies, which might negatively impact the environment, which are detected during these inspections shall be recorded in a log, and promptly corrected.
- (26) The Owner shall implement the Site surfacewater and groundwater monitoring program as described in Schedule "B" of this Approval.

#### **Site Trigger and Contingency Plan**

- (29) The Owner shall establish the surfacewater and groundwater trigger and contingency plan, as described in Section 6.2 of the Design, Development and Operations Plan, item 7 of Schedule "A".

#### **The following Conditions are added:**

##### **Waste Processing**

- (35) (a) The Owner shall ensure that only Ministry-approved contractors carry out the processing of the Construction and Demolition and Bulky Waste at the Site.
- (b) The Owner shall ensure that Construction and Demolition and Bulky Waste is stored and processed within the landfill footprint, as shown in Figure 6, Proposed Site Design, of item 7 of Schedule "A".

##### **Leaf and Yard**

- (36) (a) The Owner shall ensure that leaf and yard storage and composting is conducted as described in the Site Design, Operations and Development Plan, item 7 of Schedule "A".
- (b) A maximum of 1000 cubic metres of leaf and yard waste may be temporarily stored within the staging area.
- (c) Leaf and yard wastes shall be moved to the established composting area within three months of arrival

at the Site.

- (d) A maximum of 500 cubic metres of leaf and yard waste may be processed within the composting area at any time.
- (d) Composted leaf and yard waste may only be used as alternative daily cover at the Site; it may not be re-used by the public.

#### **Cover**

(37)(a) The Owner shall ensure that cover material is applied at the Site as follows:

- Intermediate - Once every six (6) months, across the entire working face, and/or in areas where landfilling has been temporarily discontinued for six (6) months or more, a minimum thickness of 0.3 metre of soil or an approved thickness of alternative cover material shall be placed; and
  - Final -In areas where landfilling has been completed to final contours, a minimum of 0.6 metre thick layer of final cover soil shall be placed, followed by 0.15 metre of topsoil.
- (b) In the event that domestic waste is received at the Site on a temporary basis, daily cover shall be applied, at the end of each working day, consisting of a minimum of 0.15 m of soil.

#### **Alternative Daily Cover**

- (c) The Owner may apply the following materials as alternative intermediate cover, in the same thicknesses as described in Condition 37 (a):
- leaf and yard waste mixed with soil cover and/or wood chips;
  - composted or partially-composted leaf and yard waste;
  - asphalt shingles;
  - clean wood chips;
  - contaminated soil - non-hazardous;
  - processed C&D and bulky waste materials.

## Schedule "A"

The following items are added to Schedule "A".

7. Report entitled "Design, Operations and Development Plan, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, Ontario", prepared by Greenview Environmental Management Limited, dated December 22, 2010.
8. Letter dated July 30, 2012, from Dan Hagan, Greenview Environmental Management, to Lynda Mulcahy, MOE, RE: Application for Approval of Waste Disposal Sites, Black Donald Waste Disposal Site (A411902), Township of Greater Madawaska, County of Renfrew, MOE reference number: 3866-CTJ5V, with responses to waste review comments and questions.
9. e-mail from Dan Hagan, Greenview Environmental Management Limited, to Lynda Mulcahy, MOE, sent August 22, 2012, 9:57am, Subject: RE TGM - Black Donald WDS - Application for Approval of Waste Disposal Sites - MOE Request for Additional Information (MOE Reference Number: 3866-8CTJ5V)

Schedule "B" is added to the Approval

Site Groundwater and Surfacewater Monitoring Program

Location	Frequency	Parameters
<u>Groundwater</u> BH1, BH2, BH3, BH4, MW08-5, MW08-6, MW08-7  1 QA/QC	Twice per year (Spring, Fall)	Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc  field measurements (pH, conductivity, temperature), water levels
BH1	Once every 5 years (Spring)	VOCs - EPA 624
<u>Surface Water</u> SW-3, SW-4, SW-5, SW-6  1 QA/QC	Three Times (Spring, Summer, Fall)	Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, nitrite, phenols, potassium, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc, TSS  Field Measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation))

The reasons for this amendment to the Approval are as follows:

Condition 15 was revised to reflect the updated Design, Operations and Development plan for the Site, and to ensure the Site does not cause nuisance or impacts.

Condition 16 was revised to clarify the currently-approved wastes that may be received at the Site.

Condition 23 was revised to update the Site inspection requirement.

Condition 26 was revised to reflect the updated Site monitoring programs.

Condition 29 was added to approve the Site trigger and contingency plan.

Condition 35 is added to ensure that storage and processing of construction and demolition wastes are carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 36 is added to ensure that leaf and yard waste storage and composting is carried out as described in the updated Design, Operations and Development plan, and are carried out in an environmentally-safe manner.

Condition 37 is included to specify cover requirements for the Site, to ensure operations to not cause impacts or nuisance.

Schedule B was added to the Approval to include the updated Site monitoring program.

**This Notice shall constitute part of the approval issued under Approval No. A411902 dated March 27, 1980**

*In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed

*Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.*

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;

7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Review Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5

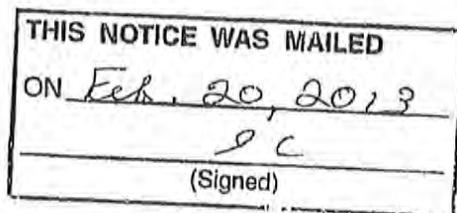
AND

The Director appointed for the purposes of  
Part II.1 of the Environmental Protection Act  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.*

DATED AT TORONTO this 24th day of January, 2013



---

Tesfaye Gebrezghi, P.Eng.  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

LM/

c: District Manager, MOE Ottawa  
Tyler H. Peters, Greenview Environmental Management Limited ✓

K. Hebert  
SIRE BM C03 250 ✓



Ontario

Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A411902  
Notice No. 2

The Corporation of the Township of Greater Madawaska  
1101 Francis Street  
Bagot, Blythfield And Brougham, Ontario  
K0J 1H0

MINISTRY OF THE ENVIRONMENT  
JUL 18 2002  
OTTAWA

Site Location: Black Donald Waste Disposal Site  
34 Hydro Dam Road  
Greater Madawaska Township, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A411902 issued on March 27, 1980, and amended on October 22, 2001 for submission of development and operations report as per Condition No. (14) of October 22, 2001 amendment, as follows:*

**Condition No. (14) is hereby revoked.**

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**SITE OPERATIONS:**

- (15) The Site shall be constructed, operated and maintained in an environmentally safe manner, which minimizes the impacts of dust, odour, noise, litter, vector and vermin on the general public, Site personnel, and the natural environment, all in accordance to the Development and Operations Plan, Items 4, 5 and 6 of Schedule "A".
- (16) The Site shall only receive non-hazardous municipal waste that is generated from within the Township of Greater Madawaska.
- (17) The normal daily hours of operation for receiving waste at the Site are 7 am to 9 pm.
- (18) The total volumetric capacity of the Site, including waste, daily, interim and final cover, is 46,785 cubic meters.
- (19) The Owner shall ensure that there is no burning of waste, trees, brush and or clean wood piles at the Site.
- (20) All incoming waste shall be inspected prior to being received at the Site to ensure that the Site is approved to accept such a waste.

- (21) The Owner shall ensure that all wastes at the Site are managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.
- (22) The Owner shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g. spills, maintenance work) in a record book located at the Site.
- (23) The Owner shall conduct daily inspections of the equipment and facilities at the Site to ensure that they are maintained in good working condition all the times. Any deficiencies, which might negatively impact the environment, detected during these inspections shall be recorded in a log, and promptly corrected.
- (24) (a) A sign shall be posted in a prominent location at the entrance of the Site stating the hours of operation, the Owner's name, staff contact and telephone number to call in the event of an emergency or any complaints;
- (b) Complaints received from the public or adjacent neighbours shall be recorded in a log book created and maintained for this purpose.
- (25) (a) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site;
- (b) All spills and upsets shall be immediately reported to the Ottawa District Office or the Ministry's Spills Action Centre at 416-325-3000 or 1-800-268-6060, and the Municipality, and shall be recorded in a log book as to the nature of the spill or upset, and the action taken for clean-up, correction and prevention of future occurrences; and
- (c) All waste material resulting from a spill or process upset, shall be managed and disposed of in accordance with Ontario Regulation 347, R.R.O. 1990, as amended.

#### **MONITORING AND REPORTING REQUIREMENTS**

- (26) Surface and groundwater monitoring shall be conducted in accordance to Section 9.1 and 9.2, Item 4 of Schedule "A" provided that the following conditions are met:
- (a) Prior to the development of the Site, the Owner shall establish that the seasonal high water table is at least one meter below the proposed excavation bottom;
- (b) In addition to the parameters listed in Table 2, Section 9.1, Item 4 of Schedule "A", Nitrate and Ammonia shall be included for groundwater monitoring; and
- (c) The background groundwater monitoring well (BH-1) shall be established further away from the waste pile, and one groundwater monitoring well shall be established at the midway point of the Site's southern boundary.
- (27) By March 31, 2003, and on an annual basis thereafter, the Owner shall submit to the District Manager, an annual report on the development, operation and monitoring of the Site, including any

recommendations or changes to the annual monitoring program, in accordance to Section 10.1, Item 4 of Schedule "A".

- (28) A written approval from the District Manager shall be obtained for any changes to the annual monitoring program prior to these changes being implemented.
- (29) (a) In accordance to the Phased Plan outlined in Section 9.1, Item 4 of the Schedule "A", and by March 31, 2003, included in the annual monitoring report, the Owner shall submit to the District Manager for written approval, trigger levels for initiating investigative activities into the cause of an increase in contaminant concentrations as established by the surface and ground water monitoring programs along with appropriate investigative activities and contingency measures;
- (b) Within six (6) months from exceedance of the established trigger levels, the Owner shall submit to the Director for approval, the design of appropriate contingency measures and provide detailed plans, specifications and description for the design, operation and maintenance for the appropriate remedial actions; and
- (c) The remedial actions shall be implemented within nine months from the approval by the Director.

#### **BUFFER AREA AND CONTAMINANT ATTENUATION ZONE**

- (30) Within 60 days of issuance of this Amendment, the Owner shall arrange for a legal survey of the Site and required buffer area, as specified in Items 4 and 5 of Schedule A, to be conducted by an Ontario Land Surveyor registered under the Surveyors Act.
- (31) (a) By June 30, 2003, the Owner shall acquire the lands required for the contaminant attenuation zone in accordance to Figure 2 and Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other methods for bringing the Site into compliance with respect to Guideline B-7, Reasonable Use Criteria and other applicable Ministry Regulations, Guidelines and Policies.
- (b) (i) By June 30, 2003, the Owner shall acquire lands required for the 30 meter southern and western buffer areas in accordance to Drawing 1, Item 4 of the Schedule "A". Alternatively, the Owner shall propose, by June 30, 2003, to the Director for approval, other Site development methods to allow for a 30 meter southern and western buffer within the current Site boundary.
- (ii) The Owner shall not commence waste disposal activities on the southern and western Site boundary until Condition (31)(b)(i) has been met.
- (c) Within 30 days of purchase of lands noted in Condition (31)(a) and (31)(b), the Owner shall submit to the Director an updated legal survey of these lands for addition of these lands to the Certificate of Approval.

- (32) The Owner shall ensure that no wastes are deposited within the designated 15 meter northern buffer area and the 30 meter eastern buffer area after the date of issuance of this Certificate of Approval.

#### **PROHIBITION AND REGISTRATION ON TITLE**

- (33) Pursuant to Section 197 of the EPA neither the Owner nor any person having an interest in the Site shall deal with the Site in any way without first giving a copy of this Certificate to each person acquiring an interest in the Site as a result of the dealing.

(a) The Owner shall:

(i) Within sixty (60) calendar days of the date of this Certificate, submit to the Director for the Director's signature two (2) copies of a completed Certificate of Prohibition containing a registerable description of the Site, in accordance with Form 1 of O. Reg. 14/92 (Document General- Form 4- Land Registration Reform Act); and

(ii) Within ten (10) calendar days of receiving the Certificate of Prohibition signed by the Director, register the Certificate of Prohibition in the appropriate Land Registry Office on title to the Site and submit to the Director immediately following registration the duplicate registered copy.

#### **SITE CLOSURE**

- (34) Within 2 years prior to the Site reaching its final capacity specified in this Amendment, the Owner shall submit to the Director, for approval, a plan for closure, post closure monitoring and maintenance of the Site. The plan shall include but not be limited to the final contours of the Site, completion, inspection and maintenance of the final cover, an assessment of the adequacy of the monitoring and contingency plans and any other post closure monitoring and care.

#### **The following items are added to SCHEDULE "A":**

4. Township of Greater Madawaska, Black Donald Waste Disposal Site, Site Development and Operations Plan, Prepared by Jp2g Consultants Inc. dated January 2001.

5. Letter and accompanying documents dated November 13, 2001, from Brian Whitehead, Jp2g Consultants Inc., addressed to John Kaasalainen, MOE.

6. Letter dated March 13, 2002, from Nafiseh Pourhassani, P. Eng., MOE, addressed to Cathy Reddy, The Corporation of the Township of Greater Madawaska.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A411902 dated March 27, 1980 and amended on October 22, 2001.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary\*  
Environmental Review Tribunal  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

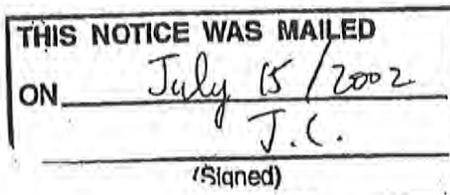
AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

The above noted waste disposal site is approved under Section 39 of the *Environmental Protection Act*.

DATED AT TORONTO this 12th day of July, 2002



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

NP/

c: District Manager, MOE Ottawa District Office  
Andrew Polley, MOE, Ottawa District Office ✓  
Bruce Harman, Lakefield Research Ltd.

A. P. 1/15  
Please establish trading of  
compliance dates.

EB



Ontario

Ministry of the Environment  
Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL  
WASTE DISPOSAL SITE  
NUMBER A 411902  
Notice No. 1

Corporation of the Township of Greater Madawaska  
P.O. Box 180  
1101 Francis Street,  
Calabogie, Ontario  
K0J 1H0

OCT 25 2001  
OTTAWA

Site Location: Black Donald Waste Disposal Site  
Pt. Lot 9, Conc. 3, 34 Hydro Dam Road  
Geographical Township of Brougham  
Township of Greater Madawaska, County of Renfrew

*You are hereby notified that I have amended Provisional Certificate of Approval No. A 411902 issued on March 27, 1980 for an increase in the site service area to include the Township of Greater Madawaska, as follows:*

**The following conditions of approval are added to the Provisional Certificate of Approval:**

**DEFINITIONS**

- (2) For the purpose of this Certificate of Approval, unless the contrary intention appears, the following words and phrases shall have the following meaning attributed to them:
  - 2.1 "Adverse Effect" is as defined in the Environmental Protection Act, R.S.O. 1990.
  - 2.2 "Applicant" and/or "Owner" means the Township of Greater Madawaska.
  - 2.3 "Certificate" means the Provisional Certificate of Approval No. A 411902, as amended from time to time, including all schedules attached to and forming part of the Certificate.
  - 2.4 "Crown" means Her Majesty the Queen in Right of Ontario.
  - 2.5 "Director" means the one or more persons who from time to time are so designated for the purpose of Part V of the Environmental Protection Act.
  - 2.6 "District Manager" means the District Manager of the Ministry's Ottawa District Office.
  - 2.7 "EPA" means the Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended.
  - 2.8 "Ministry" and/or "MOE" means the Ontario Ministry of the Environment.
  - 2.9 "ODWS" means the Ontario Drinking Water Standards, as amended.
  - 2.10 "OWRA" means the Ontario Water Resources Act, R.S.O. 1990, as amended.

- 2.11 "PWQO" means the Provincial Water Quality Objectives, as amended.
- 2.12 "Site" means the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule "A" of the Certificate and consisting of approximately a 1.2 hectare landfill site.
- 2.13 "Supporting Documentation" refers to the reports listed in Schedule "A" of the Certificate.

#### GENERAL

- (3) The requirements specified in this Provisional Certificate of Approval are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Provisional Certificate of Approval in no way abrogates the Applicant's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
- (4) The requirements of this Provisional Certificate of Approval are severable. If any requirement of this Provisional Certificate of Approval, or the application of any requirement of this Provisional Certificate of Approval to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of this Provisional Certificate of Approval shall not be affected in any way.
- (5) The Applicant shall ensure compliance with all the terms and conditions of this Provisional Certificate of Approval. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and is grounds for enforcement.
- (6) (a) The Applicant shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Provisional Certificate of Approval, including but not limited to, any records required to be kept under this Provisional Certificate of Approval; and
- (b) In the event the Applicant provides the Ministry with information, records, documentation or notification in accordance with this Provisional Certificate of Approval (for the purposes of this condition referred to as "Information"),
- (i) the receipt of Information by the Ministry;
  - (ii) the acceptance by the Ministry of the information's completeness or accuracy; or
  - (iii) the failure of the Ministry to prosecute the Applicant, or to require the Applicant to take any action, under this Provisional Certificate of Approval or any statute or regulation in relation to the Information;

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Applicant relating to the Information, amounting to

non-compliance with this Provisional Certificate of Approval or any statute or regulation.

- (7) The Applicant shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:
- (a) carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this Provisional Certificate of Approval relates; and,  
  
without restricting the generality of the foregoing, to:
    - (i) enter upon the premises where the records required by the conditions of this Provisional Certificate of Approval are kept;
    - (ii) have access to and copy, at reasonable times, any records required by the conditions of this Provisional Certificate of Approval;
    - (iii) inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this Provisional Certificate of Approval; and
    - (iv) sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this Provisional Certificate of Approval.
- (8) (a) Where there is a conflict between a provision of any document referred to in Schedule "A", and the conditions of this Provisional Certificate of Approval, the conditions in this Provisional Certificate of Approval shall take precedence; and
- (b) Where there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall prevail.
- (9) The Applicant shall ensure that all communications/correspondence made pursuant to this Provisional Certificate of Approval includes reference to the Provisional Certificate of Approval number A411902.
- (10) The Applicant shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
- (a) change of Applicant or operator of the Site or both;
  - (b) change of address or address of the new Applicant;

- (c) change of partners where the Applicant or operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, 1991 shall be included in the notification to the Director;
- (d) any change of name of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (form I or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
- (e) change in directors or officers of the corporation where the Applicant or operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 9(d), supra.
- (11) In the event of any change in ownership of the Site, the Applicant shall notify, in writing, the succeeding owner of the existence of this Provisional Certificate of Approval, and a copy of such notice shall be forwarded to the Director.
- (12) Any information relating to this Provisional Certificate of Approval and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
- (13) All records and monitoring data required by the conditions of this Provisional Certificate of Approval must be kept on the Owner's premises for a minimum period of two (2) years from the date of their creation.

#### **DEVELOPMENT AND OPERATIONS**

- (14) Within 3 months of the date of this Notice, the Applicant shall submit to the Director for approval an updated development and operations report and supporting hydrogeological study outlining how the remaining capacity of the Site is to be utilized. These reports shall include the following information
- site plans showing the waste disposal footprint, buffer zones, and contaminant attenuation zones, if required, including the ownership of such lands;
  - site operation and development plans;
  - daily/intermediate/final cover requirements;
  - security, fencing, signage, site supervision, housekeeping and screening requirements;
  - surface drainage plans, leachate and gas control plans;
  - a proposed monitoring program for landfill gas, leachate, groundwater, and surface water including trigger mechanisms and contingency plans;
  - reporting requirements; and
  - closure plans.

All in accordance with the following plans and specifications which are added to Schedule "A" of the Certificate:

1. The Application for a Provisional Certificate of Approval for a Waste Disposal Site dated January 11, 2001 as signed by Cathy Reddy, Clerk Treasurer of the Township of Greater Madawaska.
2. The letter dated January 31, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. providing the purpose and basis for this amendment.
3. The letter dated March 1, 2001 to Mr. A. Dominski of the Ministry of the Environment, Environmental Assessment and Approvals Branch from Mr. Brian Whitehead of Jp2g Consultants Inc. requesting that the proposed amendment be split into two parts, one for the service area change and another for the site development aspects as well as the reasons for this request.

*The reasons for this amendment to the Certificate of Approval are as follows:*

*The reasons for this amendment are to allow for an increase in service area for the waste disposal site and to update the Certificate to meet the Ministry's current requirements.*

*The reasons for each of the conditions of approval are as follows:*

- 1) *The reason for Condition (2) is to define the specific meaning of terms used to simplify the conditions in this Certificate.*
- 2) *The reason for Conditions (3), (4), (5), (8), (9), (10), (11), (12) and (13) is to clarify the legal rights and responsibilities of the Owner.*
- 3) *The reason for Condition (6) and (7) is to ensure that the appropriate Ministry staff have ready access to information and the operations of the Site which are approved under this Provisional Certificate of Approval. Condition (7) is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Environmental Protection Act, the Ontario Water Resources Act, and the Pesticides Act, as amended.*
- 4) *The reason for Condition (14) is to ensure that the continued use and operation of the Site is done in an environmentally acceptable manner.*

**This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No.A 411902 dated March 27, 1980, as amended.**

*In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:*

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and; The grounds on which you intend to rely at the hearing in relation to each portion appealed.

*The Notice should also include:*

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

*And the Notice should be signed and dated by the appellant.*

*This Notice must be served upon:*

The Secretary\*  
Environmental Appeal Board  
2300 Yonge St., 12th Floor  
P.O. Box 2382  
Toronto, Ontario  
M4P 1E4

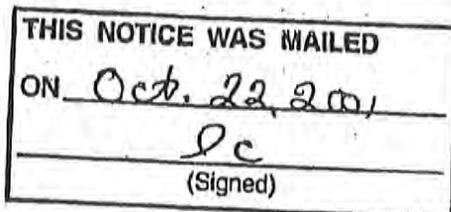
AND

The Director  
Section 39, *Environmental Protection Act*  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

\* Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

*The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.*

DATED AT TORONTO this 12th day of October, 2001



Ian Parrott, P.Eng.  
Director  
Section 39, *Environmental Protection Act*

JK/

c: District Manager, MOE Ottawa ✓  
Brian Whitehead, Planner, Jp2g Consultants Inc.



Ontario

Ministry  
of the  
Environment

133 Dalton St., Box 820  
Kingston, Ontario  
K7L 4X6

March 27, 1980

Township of Brougham  
Dacre, Ontario  
NOJ 1NO.

RE: Dump Site  
Lot 9, Concession III  
Township of Brougham  
County of Renfrew

The enclosed revised Provisional Certificate of Approval contains a condition requiring it be registered on title. The reason for this condition is attached to the Certificate.

Two copies of the Certificate and reasons are on long paper to facilitate registration. Both of these should be taken to the Land Registry Office and one returned to the Director with registration particulars.

If your Certificate does not contain sufficient legal description for registration because you have not given one to the Director, you will have to provide one under Section 23(1) (e) of The Registry Act or in your application under The Land Titles Act.

In the event that the site including its buffer, is part of a larger parcel of land and you do not wish to prepare a new survey at this time, you may register the Certificate against the larger parcel of land. If you do so, the Director is prepared, if requested in the future.

1. In the case of land recorded under The Land Titles Act, to consent to an application to delete the registration from the title of lands not within the site including its buffer zone, and
2. In the case of land recorded under The Registry Act, to issue a Certificate that lands not used for the actual disposal of waste or buffer zone have not been so used.

Such documents would be issued after suitable draft documents including legal description were submitted by you or your successor. The purpose of such documents would be to assure subsequent purchasers that the lands in question were not affected by section 46 of the Environmental Protection Act.

Yours very truly

  
Director



Ministry  
of the  
Environment

Provisional Certificate No. A 411902

### PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Brougham  
Dacre, Ontario  
NOJ 1NO

for the use and operation of a 1.2 hectare dump site

all in accordance with the following plans and specifications:

Located: Lot 9, Concession III  
Township of Brougham  
County of Renfrew

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and 5% other wastes, limited to scrap metal, brush, lumber and construction debris.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

THIS IS A TRUE COPY OF THE  
ORIGINAL CERTIFICATE MAILED  
ON Apr 9/80

(Signed)

Dated this 27th day of March, 19 80.

Director, Section 39,  
The Environmental Protection Act 1971



Ministry of the  
Environment

## NOTICE

TO: Township of Brougham  
Dacre, Ontario  
NOJ 1NO

You are hereby notified that Provisional Certificate of Approval No. A 411902 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

The reason for the condition requiring registration of the Certificate is that Section 46 of The Environmental Protection Act, 1971 prohibits any use being made of the lands after they cease to be used for waste disposal purposes in order to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

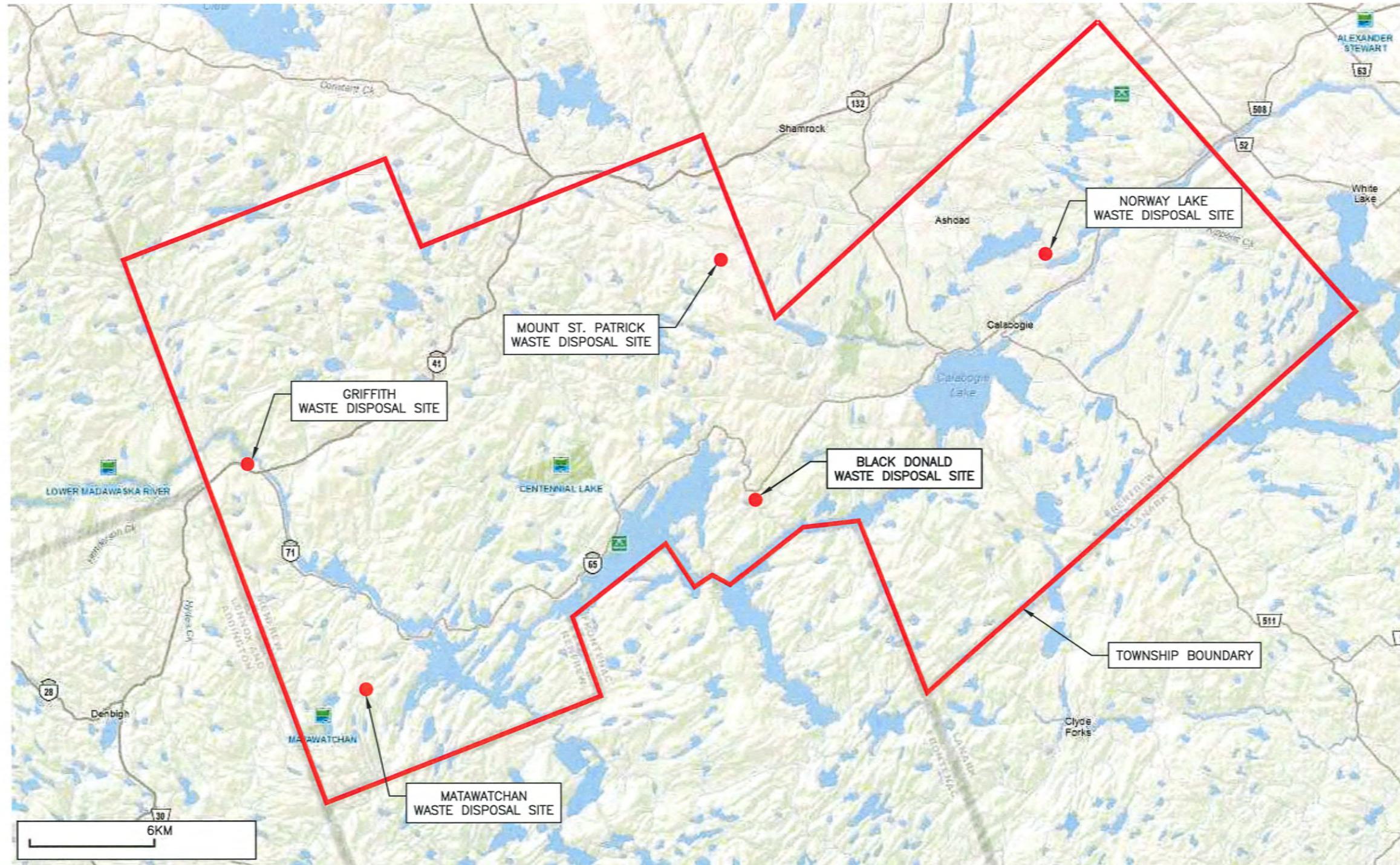
The Secretary,  
Environmental Appeal Board, AND  
1 St. Clair Ave. West,  
5th Floor,  
Toronto, Ontario.  
M4V 1K7

The Director,  
Section 39  
Ministry of the Environment,

DATED this 27th day of March , 1980 .

*Handwritten signature*

**Attachment 2**  
**2021 Annual Report Figures**



SOURCE: ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, 2016.



13 Commerce Court  
Bancroft, Ontario  
613.332.9057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
AS NOTED	MAR 2022



PROJECT:

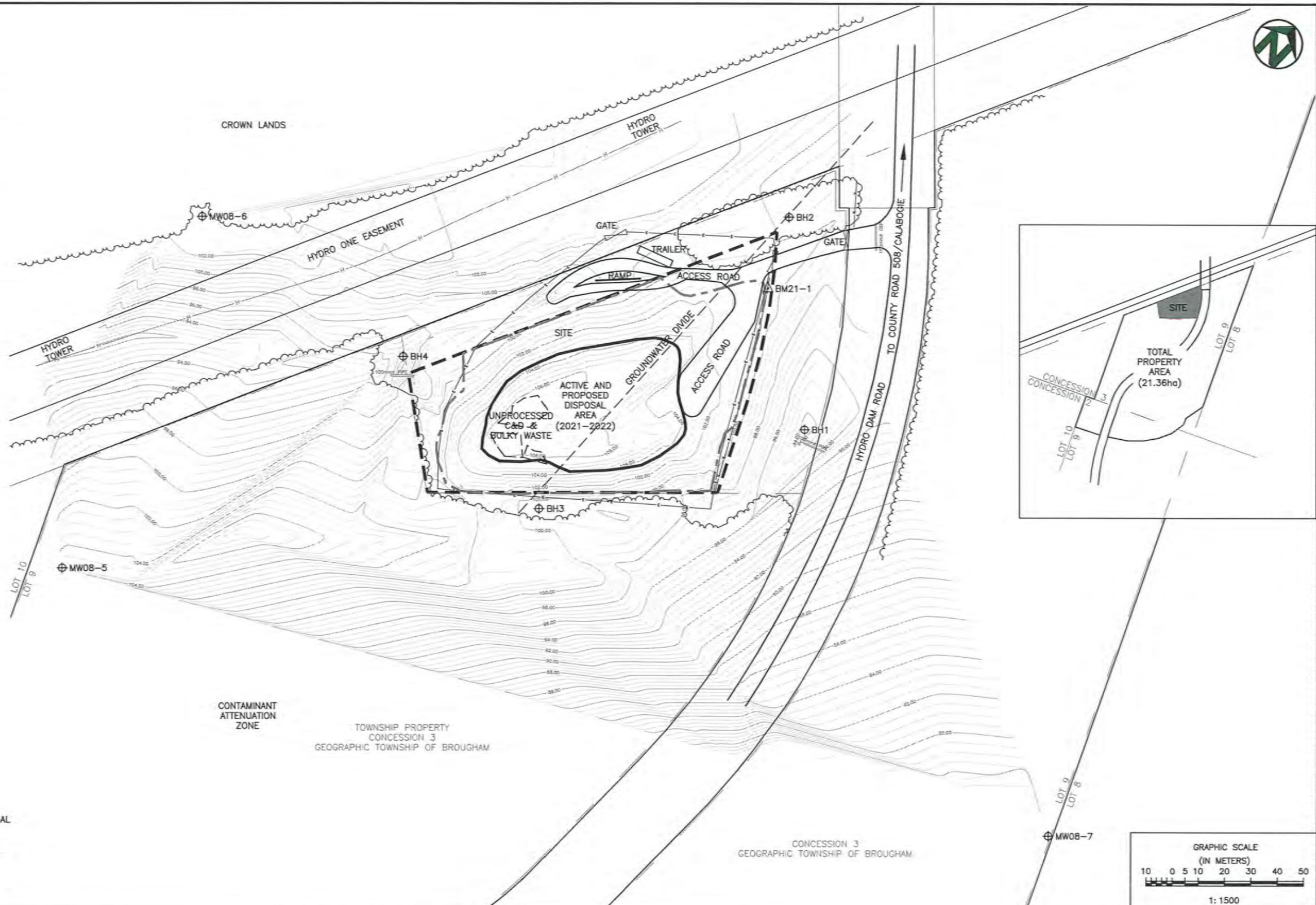
REGIONAL LOCATION PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**1**  
1 OF 6

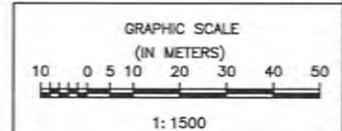
**LEGEND**

- PROPERTY BOUNDARY
- — — APPROVED WASTE DISPOSAL AREA
- - - - EXISTING LIMIT OF WASTE
- — — APPROXIMATE ACTIVE DISPOSAL AREA
- — — CONTAMINANT ATTENUATION ZONE
- 100.00 — MAJOR TOPOGRAPHIC CONTOUR (2m)
- — — MINOR TOPOGRAPHIC CONTOUR (0.5m)
- — — ON-SITE ROAD
- — — RIGHT-OF-WAY
- — — FENCELINE
- — — ELECTRIC BEAR FENCE
- — — APPROXIMATE TREE LINE
- — — HYDRO ONE EASEMENT
- — — OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- △ BM BENCHMARK
- — — UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
BM21-1  
IB ALONG FENCE LINE HEADING UP TO ACTIVE DISPOSAL AREA.  
ELEVATION = 100.818mm
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON DECEMBER 14, 2021.



**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.9057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF  
GREATER MADAWASKA**

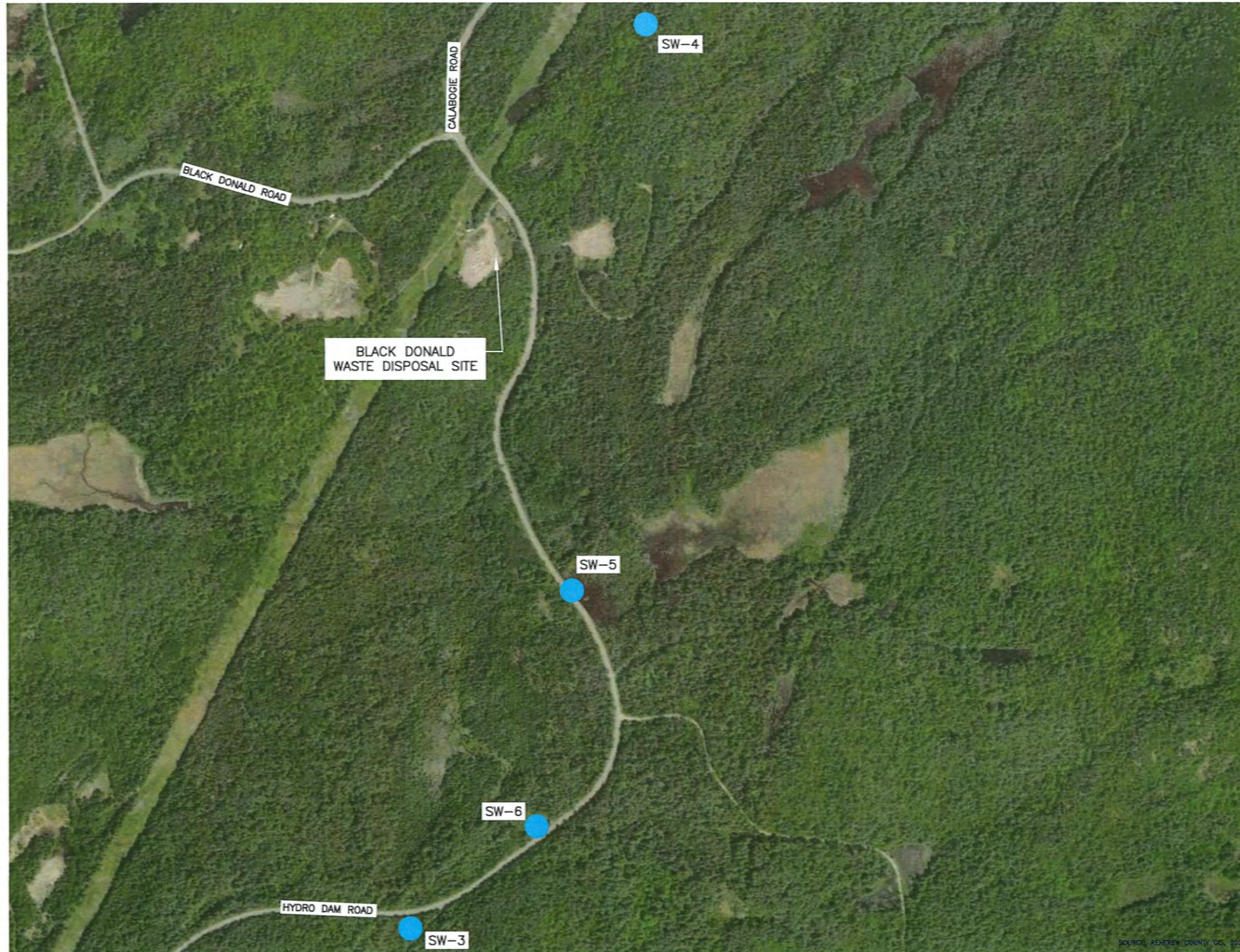
PROJECT:  
**EXISTING SITE CONDITIONS PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA**

PROJECT No:  
102.21.014

FIGURE:  
**2**

2 OF 6

G:\AutoCAD\102\_Greater\_Madawaska\102.21.014 - TOM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg



NOTE: ALL LOCATIONS APPROXIMATE.

SOURCE: KENTON COUNTY GIS, 2021.



13 Commerce Court  
Bancroft, Ontario  
613.332.9057  
greenview-environmental.ca

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1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
NTS	MAR 2022

CLIENT:

THE TOWNSHIP OF  
GREATER MADAWASKA

PROJECT:

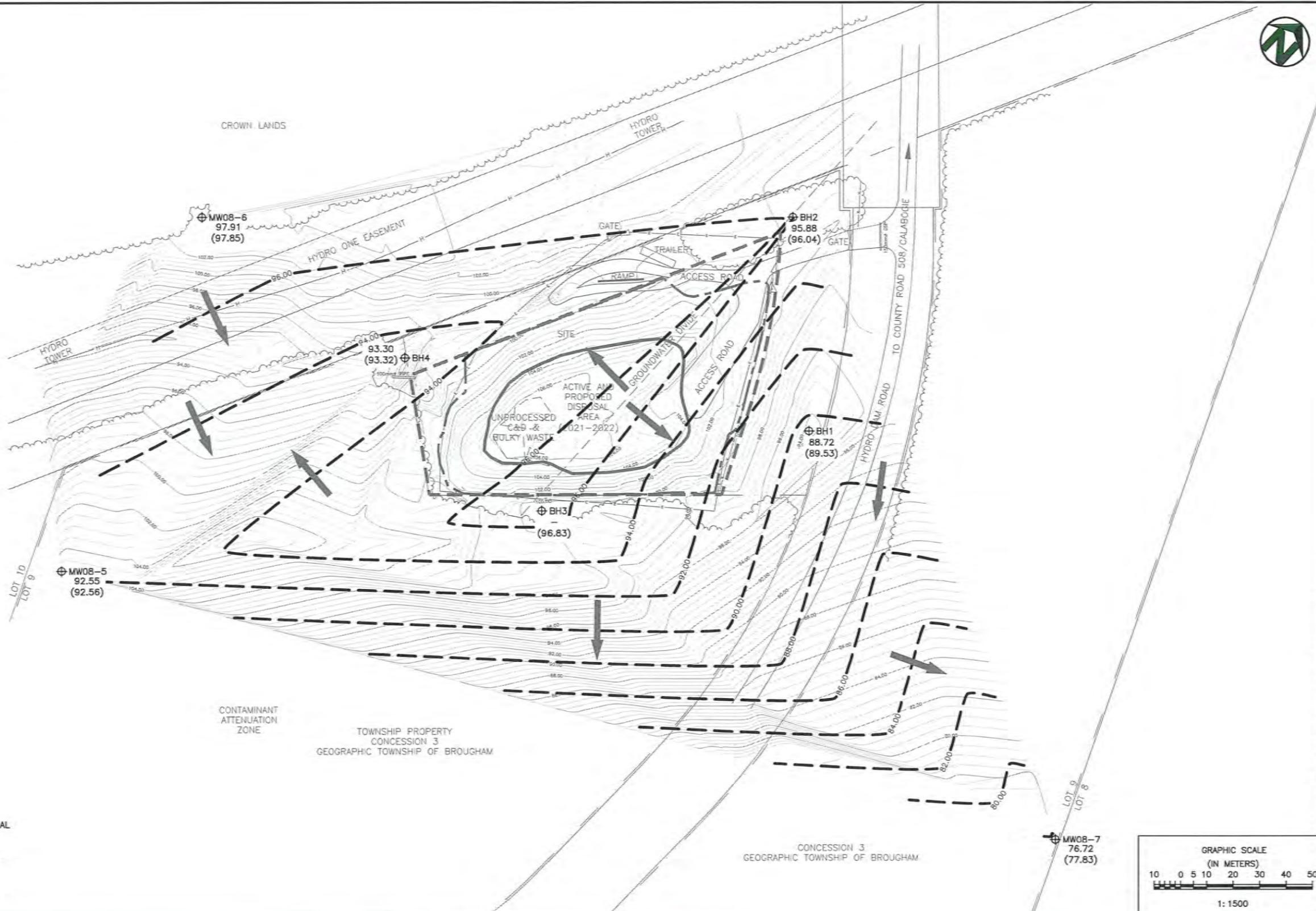
SURFACE WATER MONITORING LOCATION PLAN  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:	102.21.014
FIGURE:	<b>3</b>
	3 OF 6

G:\AutoCAD\103 Greater Madawaska\102.21.014 - TBM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg

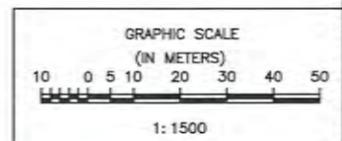
**LEGEND**

- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- - - - - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- - - - - CONTAMINANT ATTENUATION ZONE
- 100.00 — TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- - - - - APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- 96.00 EQUIPOTENTIAL CONTOUR (MAY 18, 2021)
- 88.18 GROUNDWATER ELEVATIONS
- (89.16) NOVEMBER 04, 2021 (MAY 18, 2021)
- ← GROUNDWATER FLOW DIRECTION
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

1. BENCHMARKS  
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ELEVATION = 100.818mm
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**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.9157  
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF GREATER MADAWASKA**

PROJECT:  
ENVIRONMENTAL MONITORING LOCATION PLAN – SPRING  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

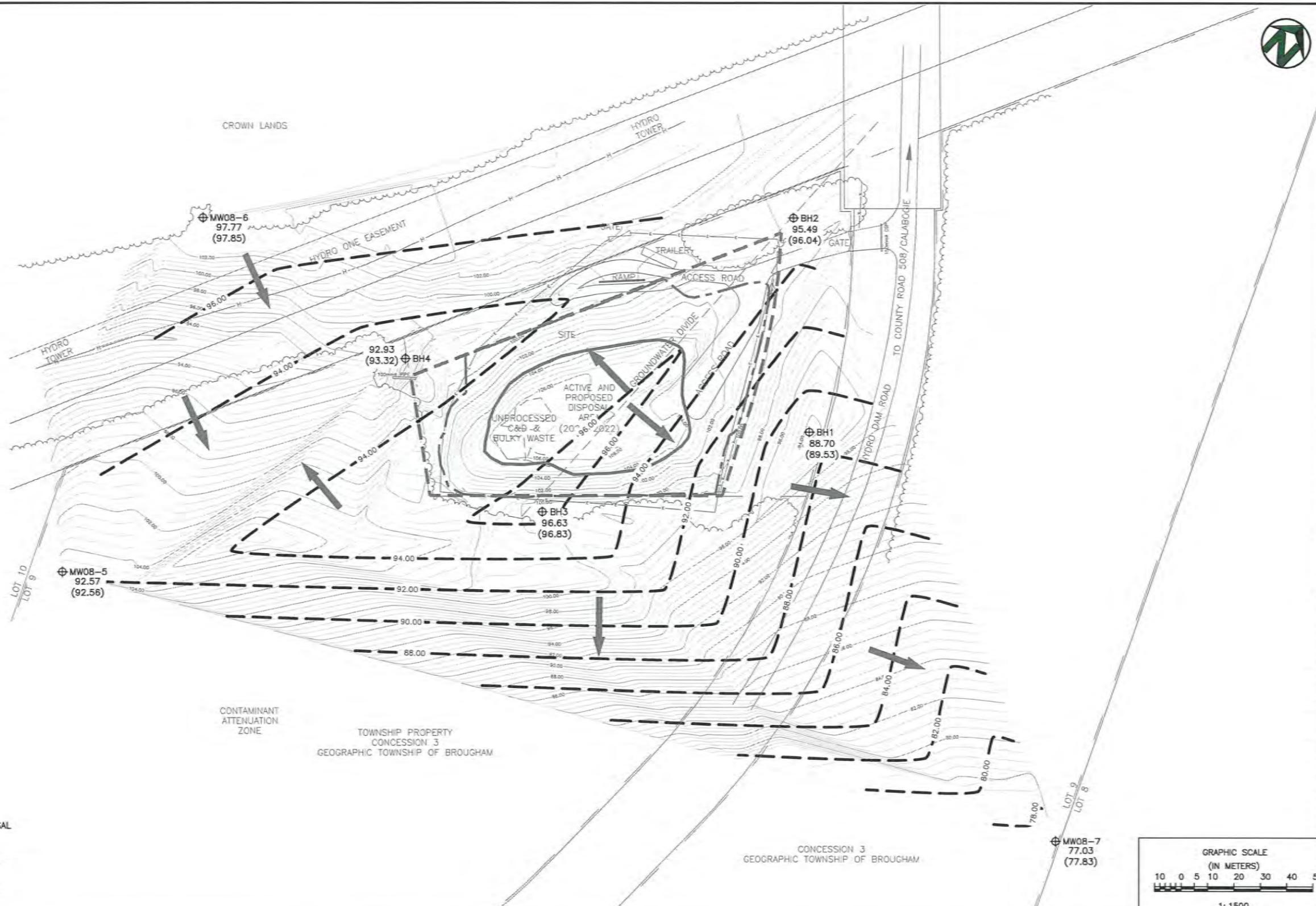
FIGURE:  
**4**

4 OF 6

G:\AutoCAD\102 Greater Madawaska\102.21.014 - TBM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg

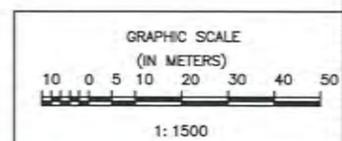
**LEGEND**

- PROPERTY BOUNDARY
- - - - - APPROVED WASTE DISPOSAL AREA
- - - - - EXISTING LIMIT OF WASTE
- APPROXIMATE ACTIVE DISPOSAL AREA
- CONTAMINANT ATTENUATION ZONE
- 100.00 TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- - - - - APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- ⊕ BH4 GROUNDWATER MONITORING WELL
- 96.00 EQUIPOTENTIAL CONTOUR (AUGUST 19, 2021)
- 88.18 GROUNDWATER ELEVATIONS (AUGUST 19, 2021)
- 89.16 GROUNDWATER ELEVATIONS (MAY 18, 2021)
- ← GROUNDWATER FLOW DIRECTION
- △ BM BENCHMARK
- UNPROCESSED C&D & BULKY WASTE



**NOTES**

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**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Brampton, Ontario  
613.332.8057  
greenview-environmental.ca

No.	DATE	BY	REMARKS
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0	JAN25-22	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF  
GREATER MADAWASKA**

PROJECT:  
**ENVIRONMENTAL MONITORING LOCATION PLAN – SUMMER  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA**

PROJECT No:  
102.21.014

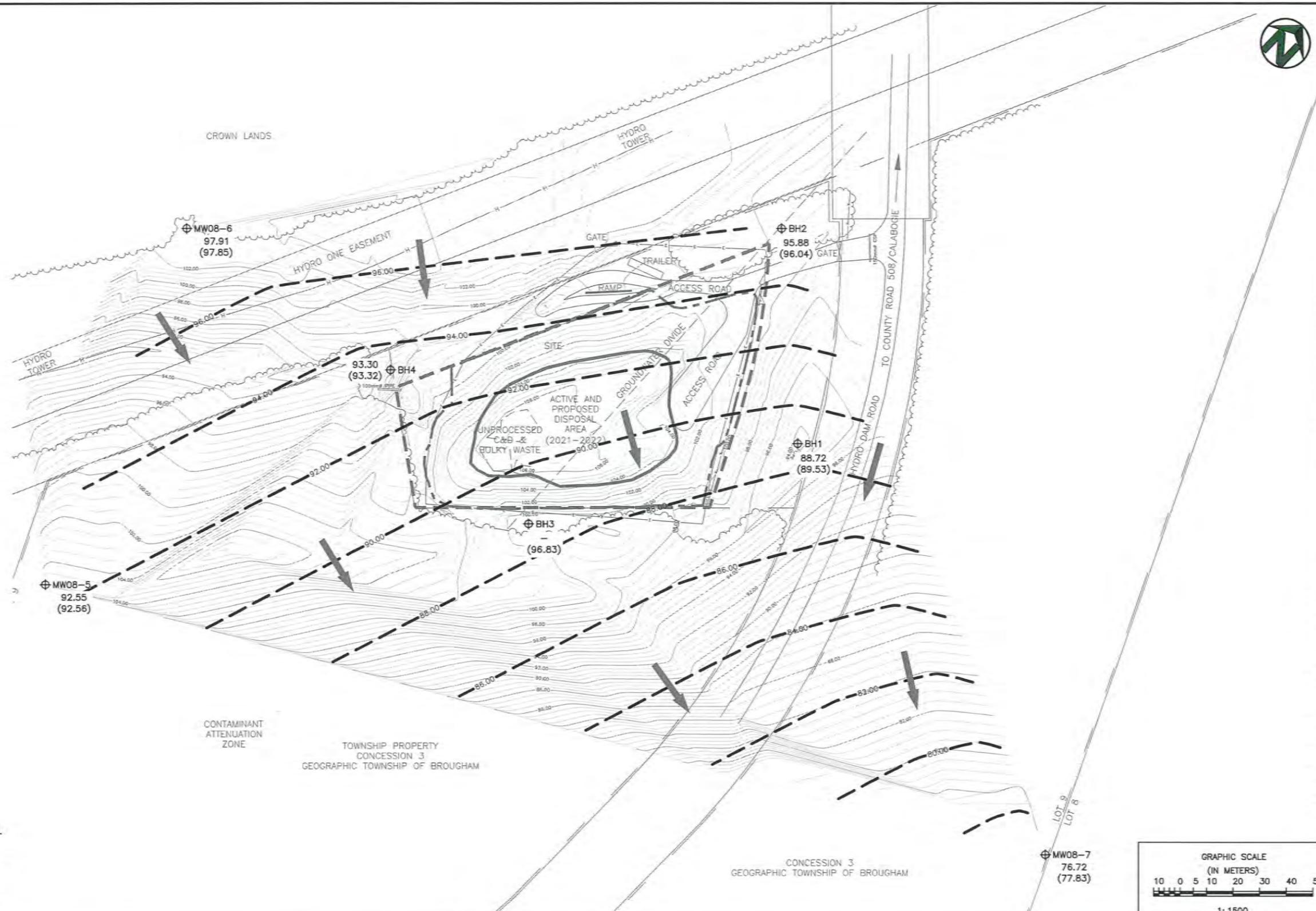
FIGURE:  
**5**

5 OF 6

G:\AutoCAD\102 Greater Madawaska\102.21.014 - TDM - BLACK DONALD WDS.dwg | 102.21.014 - TDM - BLACK DONALD WDS - 2021 AR FIGURES - PHUL.dwg

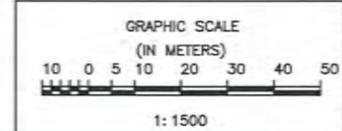
**LEGEND**

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**NOTES**

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**Greenview**  
ENVIRONMENTAL MANAGEMENT

13 Commerce Court  
Burlington, Ontario  
N7R 1M7  
613.332.9057  
greenview-environmental.ca

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SCALE: 1:1500	DATE: MAR 2022

CLIENT:  
**THE TOWNSHIP OF GREATER MADAWASKA**

PROJECT:  
ENVIRONMENTAL MONITORING LOCATION PLAN – FALL  
2021 ANNUAL MONITORING REPORT  
BLACK DONALD WASTE DISPOSAL SITE  
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:  
102.21.014

FIGURE:  
**6**

6 OF 6

G:\mtdaw\102 Greater Madawaska\104 Black Donald WDS\102.21.014 - TDM - BLACK DONALD WDS - 2021 AR FIGURES - FINAL.dwg

# **Attachment 3**

## **Borehole Logs**

<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 21-373	<b>BOREHOLE:</b> 1	1 of 1
<b>HYDROGEOLOGICAL INVESTIGATION</b> Black Donald Landfill FOR: Township of Brougham		<b>DATE:</b> 13 July 2001 <b>GEOLOGIST</b> BJS <b>ELEVATION</b> 93.4 m	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE					N VALUE				WATER CONTENT (%)					
				NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD	15	30	45	60	10	20	30	40
1		<b>SAND</b> Reddish and medium brown fine sand, trace to some medium and coarse sand, trace fine and coarse gravel, trace silt, subtle laminations, moist, compact. -occasional cobbles observed below 0.6 m.	1		SS	20	2	80										
1.5		-heavy oxidation observed below 1.2 m.	2		SS	25	3	70										
2		<b>MARBLE BEDROCK</b> Light grey to whitish marble bedrock, massive, pepper appearance, some oxidation along fractures between about 1.7 m and 3.1 m. Weathered section - broken rock between about 1.7 m and 1.9 m. Open fracture with oxidation at about 2.10 m to 2.12 m. Minor oxidation along fracture at about 2.8 m.	3		SS	37/0.08m	8	50										
3			4		HQ			100	78									
4			5		HQ			96	100									
5			6		HQ			106	96									
6			7		HQ			100	82									
7.7		Borehole terminated at 7.69 m in marble bedrock.																

Project No: 10392-001  
 Project: Black Donald Waste Disposal Site  
 Client: Township of Greater Madawaska  
 Location: Black Donald

**Log of Borehole: BH2**

Logged By: D.Bucholtz

Depth m	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 98.904m						Well Equipped with lockable steel casing and weather proof lock.
0.82		Top Soil Black, organic, dry, with rootlets	-0.15					Stick-up = 0.82
1.0		Sand Fine, loose, dry	-0.61	22		SS		Concrete
1.52		Marble Bedrock Light grey to white with black specks.				HQ		0.05m dia. PVC
1.52 - 2.74		Fractures from 1.52m to 2.74m.				HQ		Bentonite
2.74 - 3.35		Fractures oxidized.				HQ		
3.35 - 4.88		Mostly competent, fractures @ 3.35m, 4.88m, 6.40m.				HQ		
4.88 - 6.40						HQ		WL October 8, 2002 = 4.18m
6.40 - 7.08						HQ		Silica Sand
7.08		End of Borehole	-7.08			HQ		

Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: September 23, 2002  
 Checked by: B.Harman

185 Concession Street  
 Lakefield, ON, Canada  
 K0L 2H0

Sheet: 1 of 1

Project No: 10392-001 **Log of Borehole: BH3**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
ft -3 -2 -1 0	m -1 0		1					Well Equipped with lockable steel casing and weather proof lock.
		Ground Surface - 99.004m						Stick-up = 0.86
1		Sand Fine, brown, loose, dry	-0.3	50		SS		Concrete
2		Marble Bedrock Light grey to white with black specks.				HQ		0.05m dia. PVC
3		Fractures with sand and root from 0.30m to 2.85m.						Bentonite
4		Fractures oxidized.						
5		Mostly competent, fractures @ 4.17m, 5.94m, 7.01m, 7.47m.				HQ		
6								
7						HQ		WL October 8, '02 = 3.53m
8								
9						HQ		
10								
11						HQ		
12								
13						HQ		
14								
15						HQ		
16								
17						HQ		
18								
19						HQ		
20								Silica Sand
21						HQ		
22								
23						HQ		
24								
25						HQ		
26								
27						HQ		
28			-8.53					Screen = 1.52m x 0.052m
29		End of Borehole						

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 25, 2002

Checked by: B.Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
K0L 2H0

Project No: 10392-001 **Log of Borehole: BH4**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 95.962m	-0.1					Well Equipped with lockable steel casing and weather proof lock.
0.84		Sand Medium, brown, dry, with rootlets in top 0.10m	-0.61	50 (0.15m)		SS	Concrete	Stick-up = 0.84
1		Marble Bedrock Light grey to white with black specks.				HQ	0.05m dia. PVC	
2		Heavily fractured from 0.61m to 3.04m.				HQ	Bentonite	
3		Soft, brittle, varicose fracture with sand from 3.66m to 4.27m				HQ		
4		Fractures oxidized.				HQ		
5		Mostly competent, fractures @ 4.72m, 5.64m, 6.25m.				HQ		WL October 8, 02 = 4.08m
6						HQ	Silica Sand	
7		End of Borehole	-7			HQ		

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 23, 2002

Checked by: B. Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
KDL 2H0



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 89 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1757  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-5

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m		Ground Surface						Stick-up = 0.89 m
0		Top Soil Dark brown, organic, dry, loosely compacted.	1	AS	40			Concrete
2	1	Fine to Medium Sand Light brown to grey, fine to medium sand, dry, loosely compacted.	2	HQ	80			Bentonite Chips
4		Marble Bedrock Light grey to white with black specks, marble bedrock.	3	HQ	100			
6		Oxidized fractures from 1.83 m to 2.82 m, and from 11.25 m to 12.50 m.	4	HQ	90			
8	3	Mostly competent, fractures from 6.55 m to 11.12 m.	5	HQ	100			
10			6	HQ	100			
12			7	HQ	100			
14	5		8	HQ	100			
16			9	HQ	100			
18			10	HQ	100			
20	7							
22								
24								
26								
28								
30	9							
32								
34								Well screen = 3.05 m x 0.05 m
36	11							
38								
40								
42	13							Water level June 5, 2008 = 12.85 m
44		End of Borehole						

Drilled By: Lantech Drilling Ltd.

Drill Method: CME 75 Diamond Bit Coring

Drill Date: June 2, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1



Greenview Environmental Management Limited  
 89 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1G0  
 t: (613) 832-0057  
 f: (613) 332-1767  
 e: solutions@greenview-environmental.ca

### Log of Monitoring Well: MW08-6

Project No.: 102.08.014  
 Project: Black Donald Waste Disposal Site  
 Client: Township of Greater Madawaska  
 Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m		Ground Surface						Stick-up = 0.87 m
0		Top Soil Dark brown, organic, dry, loosely compacted.	1	AS	25			Concrete
2	1	Fine to Medium Sand Light brown, fine to medium sand, dry, loosely compacted.	2	HQ	100			Bentonite Chips
4		Marble Bedrock Light grey to white with black specks, marble bedrock.						
6		Heavily fractured from 0.05m to 1.45m.	3	HQ	100			
8		Oxidized fractures @ 3.81m, 4.17m, 5.28m, 5.59m, and 7.48m.	4	HQ	100			
10	3							
12			5	HQ	95			
14			6	HQ	100			
16	5							
18			7	HQ	100			
20								
22	7		8	HQ	100			
24								
26			9	HQ	100			
28								
30	9		10	HQ	100			
32								
34			11	HQ	100			
36	11							

Water level June 5, 2008 = 5.50 m

Drilled By: Lantech Drilling Ltd.  
 Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: June 3, 2008

Logged By: J. Bailey  
 Checked By: T. Peters  
 Sheet: 1 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 532-0057  
 f: (613) 532-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-6

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
38			9	HQ	100			Well screen = 6.10 m x 0.05 m
40	12		10	HQ	100			
42			11	HQ	100			
44			12	HQ	100			
46	14		13	HQ	100			
48			14	HQ	100			
50			15	HQ	100			
52	16		16	SS	100			
54								
56								
58	18							
60								
62								
64								
66	20							
68								
70								
72	22							
74								
76		End of Borehole						

Drilled By: Lantech Drilling Ltd.  
 Drill Method: CME 75 Diamond Bit Coring  
 Drill Date: June 3, 2008

Logged By: J. Bailey  
 Checked By: T. Peters  
 Sheet: 2 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1757  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-7

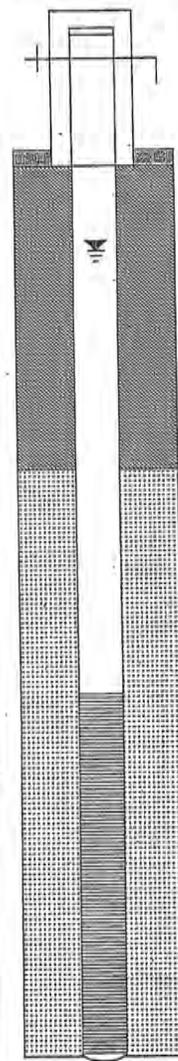
Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
0		Ground Surface						
0 - 1.5	[Symbol]	Medium Sand and Gravel Brown, medium sand with small to medium gravel, wet, compacted.	1	AS				
1.5 - 3.05	[Symbol]	Fine to Medium Sand and Gravel Light brown, fine to medium sand with small to medium gravel, wet, compacted.	2	SS	10			
			3	SS	5			
			4	SS	15			
3.05 - 26	[Symbol]	Fine to Medium Sand Light brown, fine to medium sand, wet, compacted, small to medium cobble at 3.05 m.	5	SS	50			
			6	SS	10			
			7	SS	75			
26		End of Borehole						



Stick-up = 0.85 m

Concrete

Water level June 5, 2008 = 0.91 m

Bentonite Chips

Silica Sand

Well screen = 3.05 m x 0.05 m

Drilled By: Lantech Drilling Ltd.

Drill Method: Hollow Stem Augers

Drill Date: June 5, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1

**Attachment 4**  
**Current vs Proposed**  
**Monitoring Program**

**ATTACHMENT 4**  
**Current vs. Proposed Monitoring Program**

Current Program: Schedule B, ECA A411902

**Site Groundwater and Surface water Monitoring Program:**

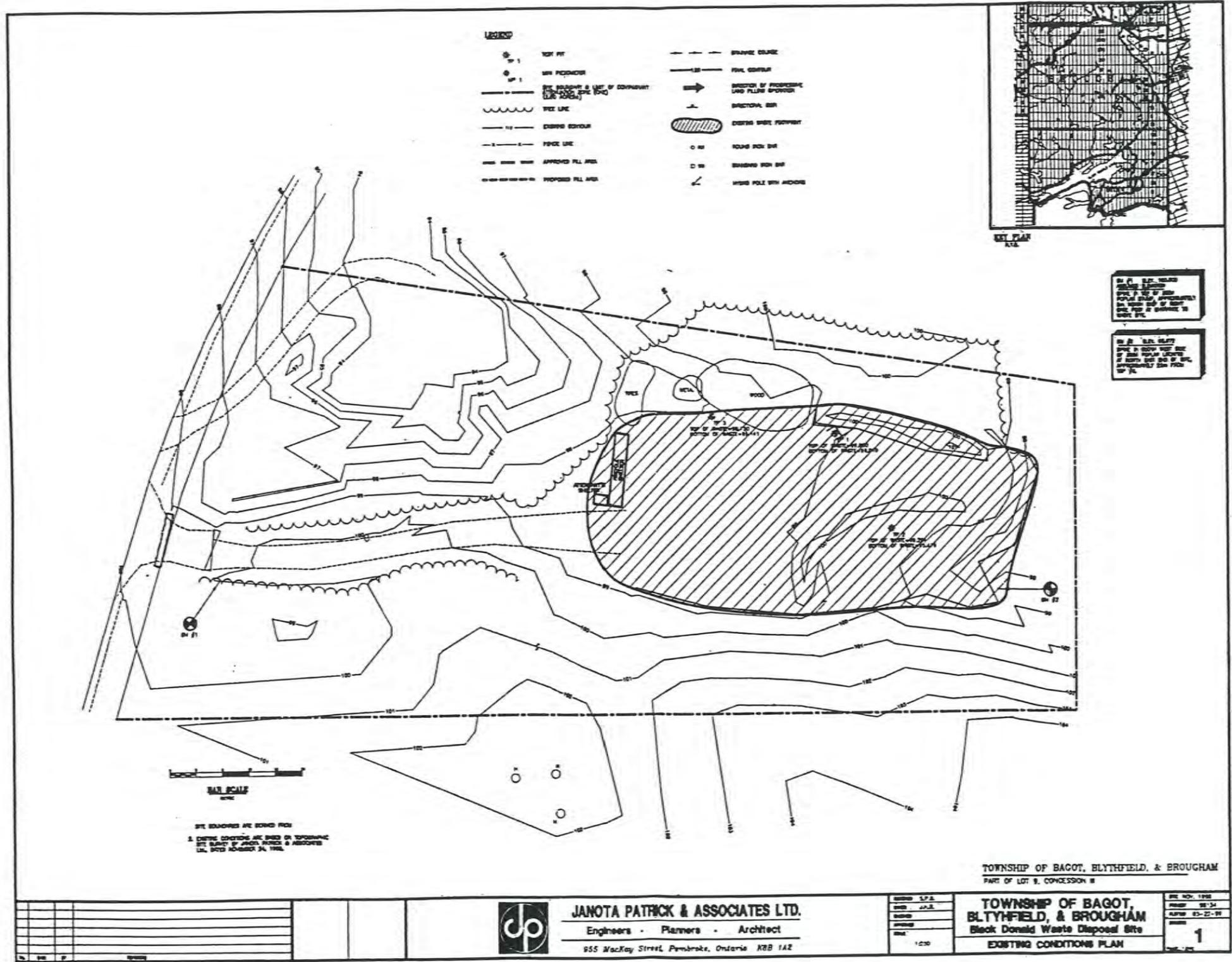
Location	Frequency	Parameters
<u>Groundwater</u> BH1, BH2, BH3, BH4, MW08-5, MW08-6, MW08-7  1 QA/QC	Twice per year (Spring, Fall)	Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc.  Field measurements (pH, conductivity, temperature), water levels
BH1	Once every 5 years (Spring)	VOCs- EPA 624
Surface Water SW-3, SW-4, SW-5, SW-6  1 QA/QC	Three Times (Spring, Summer, Fall)	Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate nitrite phenols, potassium sodium, strontium, sulphate total phosphorus, TKN, TDS, zinc, TSS  Field measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation))

Proposed Program:

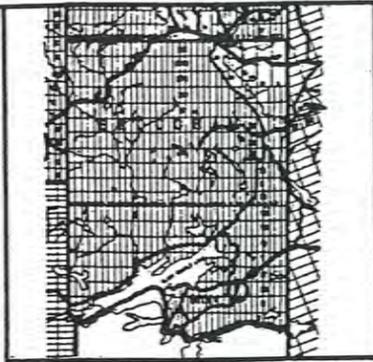
Location	Frequency	Parameters
<p><u>Groundwater</u>            BH1, BH2, BH3, BH4, MW08-5,            MW08-6, MW08-7            + 1 bilevel monitoring well            + 1 bedrock monitoring well            (possible replacement of BH3)</p> <p>1 QA/QC</p>	<p>Twice per year (Spring, Fall)</p>	<p>Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc</p> <p><i>Add: conductivity, pH, mercury, arsenic, lead, nitrite, TSS (leachate), BOD5 (leachate)</i></p> <p>Field measurements (pH, conductivity, temperature), water levels. <i>Add: landfill gas measurements</i></p>
<p>BH1 (leachate)</p>	<p>Once every 5 years (Spring)</p>	<p>VOCs- EPA 624</p>
<p>Surface Water            SW-4, SW-5</p> <p>1 QA/QC</p>	<p>Three Times (Spring, Summer, Fall)</p>	<p>Alkalinity, ammonia, BOD, boron, cadmium, calcium, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate nitrite, phenols, potassium sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc, TSS</p> <p><i>Add: conductivity, pH, lead, mercury, arsenic, barium, chromium</i></p> <p>Field measurements (pH, conductivity, dissolved oxygen, temperature, unionized ammonia (calculation)), <i>Add: flow</i></p>

# **Attachment 5**

## **Drawings**



- LEGEND**
- SPOT HT
  - SPOT HT
  - EXISTING & PROPOSED CONTOUR (LINE NUMBER)
  - ~ WOOD
  - EXISTING FENCE LINE
  - FENCE LINE
  - APPROVED FILL AREA
  - PROPOSED FILL AREA
  - BRIDGE CROSSING
  - PAUL CENTER
  - DIRECTION OF PROPOSED LAND FILLING OPERATION
  - DIRECTIONAL SIGN
  - ROAD SIGN SET
  - ROAD SIGN SET
  - ∠ HIGH POLE SIGN MONITOR



Site boundaries are shown with a dashed line. Existing contours are based on topographic data survey by J. Patrick & Associates Ltd. dated November 24, 1988.

**SCALE**  
1:1000

SITE BOUNDARIES ARE SHOWN WITH  
EXISTING CONTOURS ARE BASED ON TOPOGRAPHIC  
DATA SURVEY BY J. PATRICK & ASSOCIATES  
LTD. DATED NOVEMBER 24, 1988.

TOWNSHIP OF BAGOT, BLYTHFIELD, & BROUGHAM  
PART OF LOT 9, CONCESSION III




**JANOTA PATRICK & ASSOCIATES LTD.**  
Engineers - Planners - Architects  
855 MacKay Street, Pembroke, Ontario K8B 1A2

DATE	12-20
BY	J.P.
CHECKED	J.P.
SCALE	1:1000

**TOWNSHIP OF BAGOT,  
BLYTHFIELD, & BROUGHAM**  
Black Donald Waste Disposal Site  
EXISTING CONDITIONS PLAN

DATE	12-20
BY	J.P.
CHECKED	J.P.
SCALE	1:1000
	1

THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.



BM #1 ELEV. 100.000  
ASSUMED ELEVATION  
SPIKE IN TOP OF 300Ø  
POPLAR STUMP, APPROXIMATELY  
5m NORTH EAST OF RIGHT  
GATE POST AT ENTRANCE TO  
WASTE SITE.

BM #2 ELEV. 98.572  
SPIKE IN SOUTH WEST SIDE  
OF 300Ø POPLAR LOCATED  
AT NORTH EAST END OF SITE,  
APPROXIMATELY 22m FROM  
TSP #3.

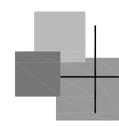
**LEGEND**

- TREE LINE
- EXISTING CONTOUR NOV. 2001
- CULVERT
- DRAINAGE COURSE
- BENCHMARK
- MANAGEMENT AREA 2001
- RIP RAP
- FOOTPRINT



EXISTING CONDITIONS ARE BASED ON TOPOGRAPHIC SITE SURVEY BY Jp2g CONSULTANTS INC. DATED NOVEMBER 6, 2001.

No.	DATE	BY	REVISIONS


**Jp2g Consultants Inc.**  
 ENGINEERS · PLANNERS · PROJECT MANAGERS  
 PEMBROKE · OTTAWA

DESIGNED	
DRAWN	MOC
CHECKED	
APPROVED	
SCALE	HORIZ. 1:400

**TOWNSHIP OF GREATER MADAWASKA**  
**BLACK DONALD LANDFILL SITE**  
 EXISTING CONDITIONS PLAN

DATE	MAY 2002
PROJECT	2006017
PLOTTED	May 07/2002
DRAWING	<b>1</b>

R:\Drawing\2002\2006017\2006017.dwg

R:\Drawing\2002\2006017\2006017.dwg



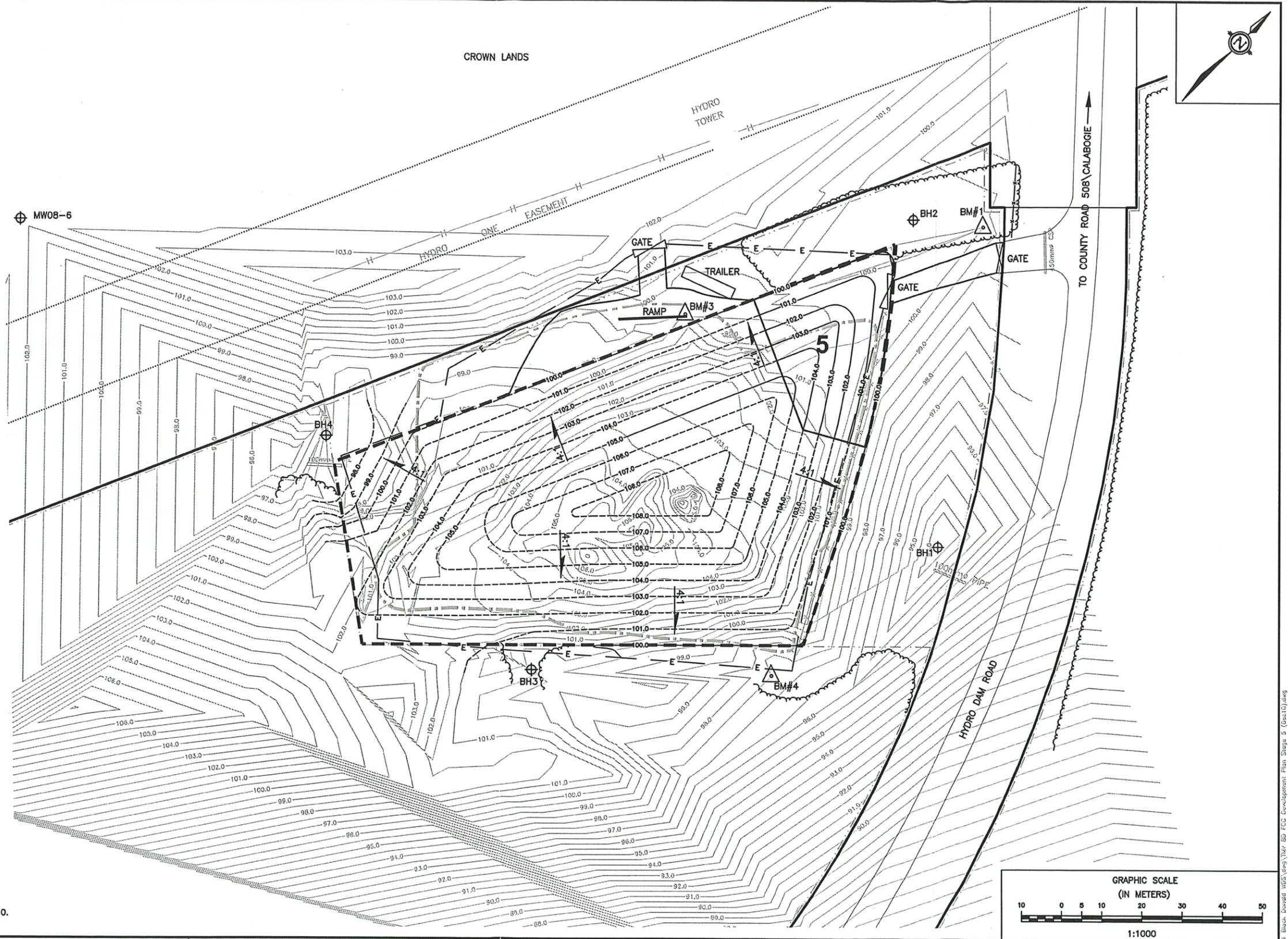


**LEGEND**

- PROPERTY BOUNDARY
- APPROVED WASTE DISPOSAL AREA
- EXISTING LIMIT OF WASTE (AS OF NOVEMBER 2010)
- CONTAMINANT ATTENUATION ZONE
- TOPOGRAPHIC CONTOUR LINE
- PROPOSED FINAL CONTOURS AT CLOSURE (TO TOP OF WASTE)
- 4:1 PROPOSED MAXIMUM GRADE
- 5 PROPOSED STAGE
- PROPOSED FINAL CONTOURS AT CLOSURE (TO TOP OF WASTE ACHIEVED WITHIN STAGE)
- ON-SITE ROAD
- RIGHT-OF-WAY
- FENCELINE
- ELECTRIC BEAR FENCE
- APPROXIMATE TREE LINE
- HYDRO ONE EASEMENT
- OVERHEAD UTILITIES
- BH3 GROUNDWATER MONITORING WELL
- BM#1 BENCHMARK

**NOTES**

1. BENCHMARKS
  - BM#1 SPIKE IN TOP OF 300mmØ POPLAR STUMP, APPROXIMATELY 5m NORTHWEST OF RIGHT GATE POST AT ENTRANCE TO WASTE SITE. ASSUMED ELEV. = 100.000m
  - BM#3 CUT CROSS LOCATED ON NORTH END OF CONCRETE RETAINING WALL AT RAMP. ELEVATION = 99.570m
  - BM#4 PAINTED ORANGE TARGET ON BEDROCK OUTCROP LOCATED AT BOTTOM OF SLOPE. ELEVATION = 99.500m
2. DRAWING BASED ON DIGITAL INFORMATION BY GOLDER ASSOCIATES, 2006.
3. NEW MONITORING WELLS (MW08-5, MW08-6 & MW08-7) INSTALLED, AND SURVEYED BY GREENVIEW (JUNE 2008).
4. UPDATED TOPOGRAPHIC SURVEYS OF ACTIVE AREA COMPLETED BY GREENVIEW ON OCTOBER 20, 2009, AND NOVEMBER 2, 2010.



No.	DATE	BY	REVISIONS

**Greenview**  
ENVIRONMENTAL MANAGEMENT  
Greenview Environmental Management Limited  
69 Cleak Avenue, PO Box 100  
Bancroft, Ontario K0L 1C0  
tel: (613) 332-0057  
fax: (613) 332-1767  
email: solutions@greenview-environmental.ca

DRAWN BY: HLB	CHECKED BY: THP
DESIGNED BY:	APPROVED BY: THP
SCALE: 1:1000	DATE: DEC. 2010

CLIENT:  
**TOWNSHIP OF  
GREATER MADAWASKA**

PROJECT:  
**BLACK DONALD WASTE DISPOSAL SITE**

FIGURE:  
**PROPOSED SITE DEVELOPMENT PLAN  
STAGE 5**

PROJECT No:  
102.10.014

FIGURE:  
**12**

**Ministry of the  
Environment,  
Conservation and Parks**  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone: 613.549.4000  
or 1.800.267.0974

**Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs**  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



MEMORANDUM

January 6, 2023

TO: Thandeka Ponalo  
Senior Environmental Officer  
Ottawa Area Office  
Eastern Region

FROM: Alija Bos  
Hydrogeologist  
Water Resources Unit  
Technical Support Section  
Eastern Region

RE: Black Donald Waste Disposal Site A411902  
2021 Annual Monitoring Report  
ECHO Task #1-134990036

---

As requested, I have reviewed the following documents entitled:

- *“2021 Annual Report, Black Donald Waste Disposal Site (A362202), Township of Greater Madawaska, Count of Renfrew, Ontario”* dated March 21, 2022, prepared by Greenview Environmental Management (GEM)
- *“Black Donald Landfill Site Township of Greater Madawaska, ECA No. A411902, Expansion Feasibility Study” Prepared by JP2G Consultants Inc., dated October 25<sup>th</sup>, 2022.*

The Township of Greater Madawaska submitted an assessment on the feasibility to expand the site for continued disposal of bulky and Construction and Demolition (C&D) waste. Based upon the information provided in the document above, I submit the following comments for your consideration. I have provided main conclusions and recommendations in the “Summary” section of this memorandum and more detailed comments in the “Conclusions and Recommendations” section below.

**Summary**

- The migration of leachate is downward into a thin sand layer and into the fractured marble bedrock.
- A north-south trending groundwater divide is thought to exist beneath the waste mound causing landfill leachate to migrate west and east. groundwater level data confirms that a groundwater basin exists in and around BH4 which would limit the northwestward migration of leachate.

- The Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern and southwestern CAZ boundaries in 2021.
- I recommend that the report should be reviewed by the Surface Water Unit.
- I support the proposed expansion area from a groundwater perspective, provided additional multilevel downgradient monitoring wells are installed, monitoring well BH3 is replaced, and the monitoring program and trigger mechanism are updated as discussed below.

### **Site Description and Environmental Compliance Approval**

The Black Donald Waste Disposal Site (WDS) is located on part of Lot 9, Concession 2 and 3, geographic Township of Brougham in the Township of Greater Madawaska, Ontario.

The Black Donald WDS operates under Environmental Compliance Approval No. A411902 last amended January 24, 2013, which describes the Site as a 1.2 hectare waste disposal site. ECA Section (2) 2.12 defines the Site as “the entire waste disposal site including the landfilling area and the buffer lands as listed in Schedule “A” of the Certificate and consisting of approximately 1.2 hectare landfill site”. Upon review of the documents in Schedule “A” the Site comprises a 0.9 ha landfilling area within a total site area of 27.2 ha.

The site received waste from the Township’s Griffith, Norway Lake, and Mount St. Patrick Transfer Stations.

It was previously requested (2016) by Greenview and the Township that MECP consider removing the requirement for surface water sampling as part of the monitoring requirements, as surface water quality data did not indicate impacts related to landfill-related activities. Based on the MECP surface water technical support review, it was indicated that monitoring should continue as part of the environmental monitoring program.

### **Proposed Expansion**

It is my understanding that the current site has a design waste capacity of 34,250m<sup>3</sup> (excluding final cover). The theoretical maximum capacity of a 1.2 ha site to a pyramidal peak is 54,200m<sup>3</sup>.

The figure provided by GEM illustrates a conceptual expansion which could add another 30,000 to <40,000m<sup>3</sup>. A change of less than 40,000m<sup>3</sup> is exempt from the EA Act. As such, JP2G has recommended the application be less than 40,000m<sup>3</sup>. This represents a proposed expansion of ~73% from the current approval.

As of December 14, 2021, the remaining capacity was 4400m<sup>3</sup> (Greenview, 2022). The life expectancy could be 2 to 5 years depending on the annual landfilling rate.

The WDS was closed to the public on April 5<sup>th</sup>, 2010, with disposal available for municipal vehicles and Township-approved haulers only. Since 2010 the site has been used for the stockpiling of construction and demolition and bulky wastes prior to processing and disposal within the approved waste disposal area (AWDA). Bentonite clay material was placed at the WDS in 2021, as part of the regular and final cover requirements.

### **Topography and Drainage**

The consultant described the area to be generally hilly and forested. The site is located on a topographic high, and a steep slope leading to a low-lying area is located at the south, west and southeast limit of the waste site. Drainage is through the surficial sand at the site following topography to roadside ditches along Hydro Dam Road.

### **Geological and Hydrogeological Conditions**

Overburden geology is characterized by a thin veneer of sandy overburden, 0.3-1.5 metres thick, overlying the fractured marble bedrock unit. Bedrock outcrops, knolls, and knob hills are noted to be prevalent in the vicinity of the Black Donald site, which confirms the shallow nature of overburden soils and the proximity of the bedrock contact to surface near the site.

The hydrogeological conceptual model for the site is that landfill leachate moves down into the underlying native sand unit, then into groundwater in the fractured marble bedrock where it flows southeast and southwest. Groundwater was encountered in the shallow fractured marble bedrock.

It is interpreted that a groundwater divide exists at the waste mound, and predominant flow is southeast and southwest.

An eastward trending groundwater flow direction was interpreted in the vicinity of monitoring well MW08-6. Based on the upgradient location of MW08-6 relative to the waste mound, groundwater quality at MW08-6 was interpreted to be characteristic of background groundwater quality at the site. A north-south oriented groundwater basin depression was also interpreted to exist in the vicinity of BH4 and MW08-5, based on groundwater elevations and contours measured and calculated from field measurements.

The closest residential well is located approximately 700m northwest and upgradient from the site.

### **Groundwater – Surface Water Interaction**

The groundwater is inferred to eventually discharge to surface water downgradient within the CAZ of the site.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-

related activities by GEM. Detailed review and interpretation of surface water conditions are provided by the ministry's surface water reviewer.

### **Groundwater Monitoring**

The monitoring program approved under the current ECA is to satisfy Condition 27. The monitoring program as detailed in ECA Schedule "B" consists of the bi-annual collection of static water levels and groundwater samples from seven (7) monitoring wells, and surface water samples collected three times per year from four (4) locations.

GEM conducted spring (May 18), and fall (November 4) groundwater monitoring of the site in 2021. This was an approved reduction from the Spring, Summer and Fall sampling previously occurring. The Township with support from their consultant sampled and surveyed the monitoring wells and surface water stations.

#### *Background Water Quality*

MW08-6 is considered the background well installed on Crown Land on the opposite side of the Hydro transmission line. This well has shown DOC ODWS non-conformance and an increasing trend in the past 5 years.

BH2 is also considered a potential background location located approximately 25m east and downgradient of the fill area. Water quality is characterized by elevated concentrations of some landfill leachate parameters however given the proximity to Hydro Dam Road, road salting may also be a factor. There was one ODWS non-conformance for Dissolved Organic Carbon (DOC) at BH2. There appears to be an increasing DOC trend in this well. This well is not an ideal background location and MW08-6 should be used for background water quality assessment moving forward.

#### *Leachate Quality*

BH1 has historically been used for VOC sampling and can be considered the leachate characterization well at this site.

Groundwater at BH-1 was interpreted to be most representative of leachate quality at the Black Donald site. Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location BH-1 were as follows:

Monitoring Well	ODWS Non-Conformance		Five (5) Year Trend Analysis	
	Spring 2021	Fall 2021	Increasing	Decreasing
BH1	<ul style="list-style-type: none"> <li>Alkalinity</li> <li>DOC</li> <li>Hardness</li> <li>Manganese</li> <li>Total Dissolved Solids (TDS)</li> </ul>	<ul style="list-style-type: none"> <li>Alkalinity</li> <li>DOC</li> <li>Hardness</li> <li>Iron</li> <li>Manganese</li> <li>TDS</li> </ul>	<ul style="list-style-type: none"> <li>Ammonia (un-ionized)</li> <li>Nitrate</li> <li>Sodium</li> <li>Sulphate</li> </ul>	<ul style="list-style-type: none"> <li>Aluminum</li> <li>Barium</li> <li>Calcium</li> <li>Chloride</li> <li>Hardness</li> <li>Iron</li> <li>Magnesium</li> <li>Manganese</li> <li>Potassium</li> <li>Strontium</li> <li>Total Kjeldahl Nitrogen (TKN)</li> </ul>

These values are not surprising given the well location immediately downgradient of the waste mound. Older landfills often have nitrogen concerns as a result of the generation of ammonia, and nitrate, dissolved solids and the concentrations of these vary depending on the age of the landfill.

Based on 2021 results, groundwater at BH-4 was interpreted to be impacted by landfill-related activities: however, to a lesser extent than at leachate monitoring well BH-1. The interpretation that groundwater in the western portion of groundwater flow at the site was less impacted than the eastern component of groundwater flow at the site was supported by horizontal gradients calculated in spring, summer, and fall 2021 and documented groundwater quality. Considering the groundwater flow directions calculated following 2021 groundwater monitoring events and based on similar historical calculations, BH4 was interpreted to be the downgradient receiver of groundwater flow from the vicinity of the waste mound and from the northwest in the vicinity of background monitoring well MW08-6.

*Downgradient Water Quality / Trigger Mechanism*

Groundwater immediately downgradient from the site at monitoring wells BH1, BH3, and BH4 was interpreted to be impacted from landfill-related activities in 2021. Most parameter concentrations were above median background groundwater quality results, with non-conformances of ODWS for concentrations of alkalinity, DOC, hardness, iron, manganese, and TDS noted at select monitors. The generally lower parameter concentrations at monitoring well BH3 compared to those at monitoring wells BH1 and BH4 were attributed to its location partially cross-gradient to the waste mound and along the groundwater divide at the site. BH4 is the southwest CAZ boundary well.

It was interpreted that concentrations resultant of landfill-related factors originating in the vicinity of the waste mound would not likely migrate past the western CAZ boundary. Instead, groundwater was interpreted to flow in a southerly direction along the apparent groundwater basin towards MW08-5 and the downgradient southwestern CAZ boundary. Therefore, it is interpreted that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally-occurring high concentrations of alkalinity, aluminum, DOC, hardness, and TDS in the background, the site was interpreted to conform with MECF Guideline B-7 and was in

compliance with RUC in 2021 at the southwestern CAZ boundary. Given historical flow direction maps, I find this assumption to be reasonable. Groundwater flow directions calculated in fall 2021 are different than historical measurements as a result of BH3 being destroyed and therefore a weight bias for the model has shifted to the remaining wells. A replacement well for BH3 should be installed.

### **Guideline B-7**

Guideline B-7 indicates that the groundwater quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Standards for non-health related parameters and in excess of 25% of the difference between background and the Ontario Drinking Water Standards for health-related parameters.

No RUC non-conformances were documented in results from downgradient monitoring well MW08-7 in 2021 that were attributed to landfill-related factors. The noted RUC non-conformance in fall 2021 at MW08-7 for DOC was consistent with DOC concentrations observed in background wells BH2 and MW08-6. Based on the above, the Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern CAZ boundary in 2021. Based on 2021 results, it was extrapolated that given the considerable distance of BH4 to the downgradient southwestern CAZ boundary (approximately 170 m), and naturally occurring elevated concentrations of alkalinity, aluminum, DOC, hardness, manganese, and TDS in the background (BH2 and MW08-6), the site was interpreted to conform with MECP Guideline B-7 at the southwestern CAZ boundary.

Based on the surface water quality results in 2021, and the significant distance of each sampling location from the Black Donald site, the surface water systems south and southeast of the Black Donald site were not interpreted to be impacted from landfill-related activities by the consultant. Non-conformances of PWQO for concentrations of DO (low), phosphorus, iron and zinc noted in 2021 at select sampling locations for select sampling dates were attributed to naturally occurring conditions in the background (SW-4), as well as to low-flow surface water conditions.

In 2021, PWQO non-conformances at key trigger locations SW-3 and SW-6 for concentrations of iron were attributed to low water/ low-flow conditions, and not to landfill-related activities. Similarly, PWQO non-conformances for concentrations of phosphorus at key trigger location SW-3 were generally consistent with concentrations observed at background location SW-4 and were therefore not attributed to landfill-related factors.

No RUC non-conformances were noted for any of the key trigger parameters at key trigger location MW08-7 following inclusion of 2021 results. Based on a review of five (5) year time trend analysis for parameters un-ionized ammonia, barium, boron, chloride, chromium, COD, iron, nitrate, sodium, sulphate, TKN and total phosphorus, the Trigger Mechanism was not interpreted to be activated in 2021.

## **Conclusions and Recommendations**

The migration of leachate is downward into a thin sand layer and into the fractured marble bedrock.

A north-south trending groundwater divide is thought to exist beneath the waste mound causing landfill leachate to migrate west and east. groundwater level data confirms that a groundwater basin exists in and around BH4 which would limit the northwestward migration of leachate.

The Black Donald site was interpreted to conform with MECP Guideline B-7 at the downgradient eastern and southwestern CAZ boundaries in 2021.

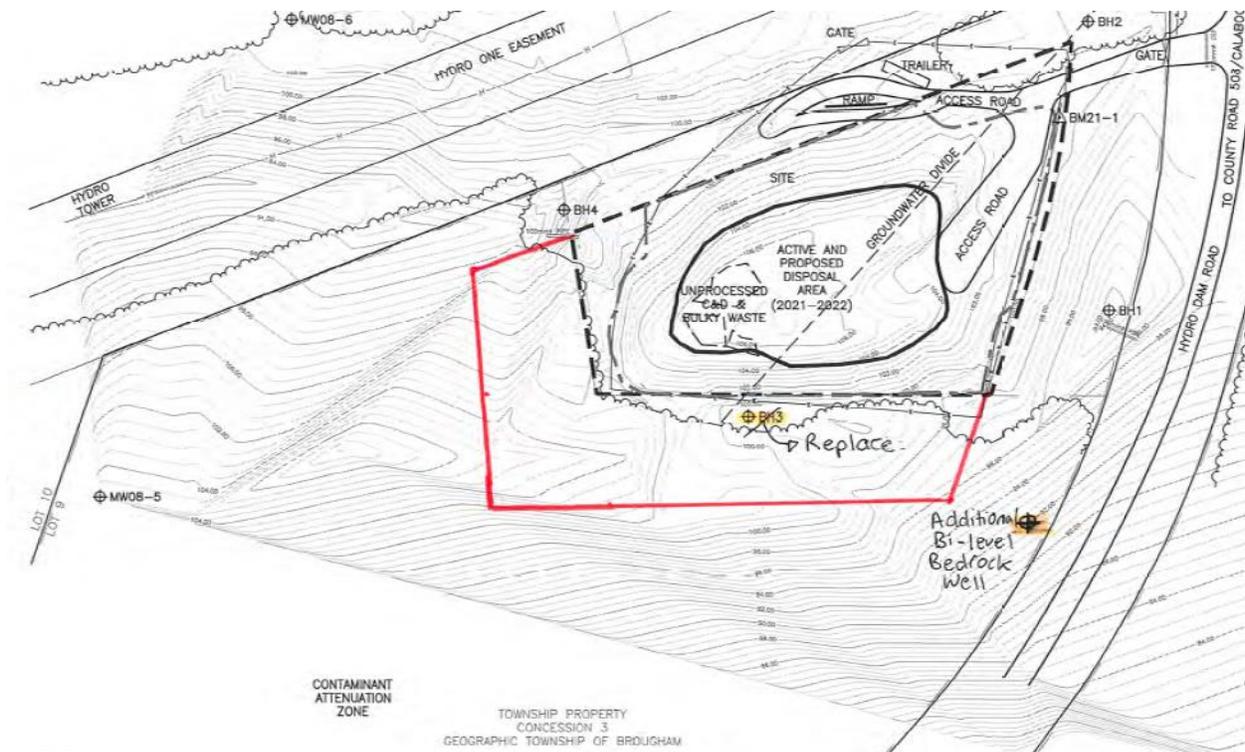
I recommend that the report should be reviewed by the Surface Water Unit.

The consultant has provided the following recommendations in relation to the proposed expansion and my response to each recommendation is provided in bold typeface:

1. The updated monitoring program will continue to sample the monitoring wells as per ECA Schedule "B", with the proposed addition of the following as shown on Drawing No 2 below (Greenview base plan)

- one (1) bi-level monitoring well within the overburden (if available) and bedrock aquifers east of the landfilling area to further delineate the plume within the groundwater towards MW08-7; **I support this recommendation in order to evaluate the potential for offsite migration of leachate impacted groundwater downgradient of the expansion area.**
- compliance well MW08-7 is installed in the overburden (sand material), therefore it is recommended to also install a bedrock monitoring well in this location to delineate leachate in the bedrock aquifer in this direction; **I support this recommendation. This is shown in the figure included below from the GEM report. The red line represents the proposed expansion areas.**

**I would like to request an additional design drawing be submitted with the cross section of the waste areas (historical and proposed) including elevations.**



- monitoring well BH3 was destroyed in 2021 due to landfilling activities; this well should be reinstated to aid in assessing leachate migration south of the fill area. **I support this recommendation.**

2. The water quality analysis will be expanded to Schedule 5 Column 1 of the Landfill Standards (1988).

This includes the following parameters: Alkalinity, aluminum, ammonia, barium, boron, cadmium, calcium, chromium, cobalt, chloride, COD, copper, DOC, hardness, iron, magnesium, manganese, nitrate, phenols, potassium, silicon, sodium, strontium, sulphate, total phosphorus, TKN, TDS, zinc.

**I support the proposed use of Schedule 5 Column 1 and also recommend that the following parameters are also added to the regular groundwater monitoring program: conductivity, pH, mercury, arsenic, lead, nitrite, TSS (leachate), BOD5 (leachate). I further recommend that the following field measurements are added to the regular groundwater monitoring program: pH, conductivity, temperature, water levels and landfill gas measurements.**

Upon installation and sampling it is further recommended to update the trigger mechanism and contingency plan to reflect the proposed expansion and additional monitoring locations. **I support this recommendation.**

**I support the proposed 73% expansion area from a groundwater perspective, provided additional multilevel downgradient monitoring wells are installed, monitoring well BH3 is replaced, and the monitoring program and trigger mechanism are updated as discussed above.**



---

Alija Bos

P.Geo., Regional Hydrogeologist

ec: Mark Phillips, Surface Water Specialist  
Thandeka Ponalo, Sr. Environmental Officer  
V. Castro, Water Resources Unit Supervisor  
C. Klein, Technical Support Section Manager

c: GW File RE GM 01 02 (Black Donald Waste Disposal Site)  
AB / ECHO 1-134990036

**Ministry of the  
Environment,  
Conservation and Parks**  
Eastern Region  
1259 Gardiners Road, Unit 3  
Kingston ON K7P 3J6  
Phone: 613.549.4000  
or 1.800.267.0974

**Ministère de l'Environnement,  
de la Protection de la nature  
et des Parcs**  
Région de l'Est  
1259, rue Gardiners, unité 3  
Kingston (Ontario) K7P 3J6  
Tél: 613 549-4000  
ou 1 800 267-0974



MEMORANDUM

January 11, 2023

**TO:** Thandeka Ponalo  
Senior Environmental Officer  
Ottawa District Office  
Eastern Region, MECP

**FROM:** Mark Phillips  
Surface Water Scientist,  
Water Resource Unit,  
Eastern Region, MECP

**RE:** **2021 Annual Monitoring Report and Expansion Feasibility Study  
Black Donald Waste Disposal Site  
Part Lot 9, Concession 3, Geographic Township of Brougham  
34 Hydro Dam Road, Township of Greater Madawaska, County of Renfrew  
Certificate of Approval (ECA) No. A411902  
ECHO #: 1-134948602**

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I have reviewed the following documents from a surface water impact perspective and provide the recommendations below for your consideration:

1. 2021 Annual Report (Greenview Environmental Management Limited; March 21, 2022);
2. Black Donald Landfill Site Expansion Feasibility Study (Jp2g Consultants Inc.; October 25, 2022);
3. Memorandum from B. Metcalfe on the 2015 Annual Monitoring Report – Black Donald Waste Disposal Site (Metcalf; July 4, 2016); and
4. Memorandum from A. Bos on the 2021 Annual Monitoring Report (Bos; January 6, 2023).

## **Background**

The Black Donald Waste Disposal Site (WDS) operates as an active waste disposal site and in accordance with the Provisional Certificate of Approval A411902. The Black Donald WDS was closed to the public on April 5, 2010. However, disposal operations at the site are currently available to municipal vehicles and Township-approved haulers only. The site is currently operating as a municipal solid waste landfill, accepting domestic, construction and demolition, and bulky waste for disposal. The landfill site currently consists of an approved fill area of 0.9 ha within a total licensed area of 21.36 ha, inclusive of lands used for operational buffer and CAZ purposes. The landfill site functions as a natural attenuating site.

Based on the 2021 fill rate, the remaining capacity at this site was calculated to be approximately 4,400 m<sup>3</sup> which equates to approximately 5 years of remaining capacity.

### **Surface Water Regime**

The landfilling area is located on a topographical high bounded to the north by a bedrock ridge along the hydro transmission corridor. Site/area groundwater and surface water flow direction has been determined to be to the southeast and southwest. The primary pathway for groundwater flow is interpreted to flow downgradient towards discharge within the CAZ lands. Surface water sampling locations are located at the intermittent creek and wetland/bog complex approximately 500 metres downgradient from the site. The WDS is located within the Black Donald Lake watershed, Madawaska River Basin.

### ***2021 Annual Monitoring Report***

In 2021 surface water monitoring was conducted by Greenview on May 18, August 19, and November 4. Surface water samples were collected when water was present at sample stations SW3, SW4, SW5 and SW6. The collected surface water samples were analyzed for routine general chemistry parameters, a limited metals parameters analyses and phenols. Field measurements were taken for pH, conductivity, dissolved oxygen and water temperature for each surface water sampling event.

The 2021 surface water monitoring program measured PWQO exceedances at SW-4 for total phosphorus and zinc; for iron and low dissolved oxygen at SW-5; for total phosphorus and (high) pH at SW-6; and for total phosphorus, iron, manganese, and zinc at SW-3.

None of the exceedances have been attributed to landfill related impacts. The trigger mechanism was not triggered in 2021.

### ***Expansion Feasibility Study***

The proposed expansion at this site would involve the addition of 30,000 to < 40,000 m<sup>3</sup> of waste disposal capacity.

The proposed expansion is to be completed in 5 phases, with final cover applied to completed areas following each phases' completion.

A sewage works consisting of swales for the collection and transmission of stormwater to one of two stormwater control ponds is being proposed. Both ponds will be affixed with outlet control structures.

## Comments/Recommendations

- The consultants indicate that the PWQO exceedances measured in 2021 were minor and not attributed to the landfill related impacts. I agree with this assessment.
- The consultants have recommended a reduction in the surface water monitoring locations to include the background station (SW-4) and SW-5 only. I support this recommendation. Following the completion of the recommended topographic survey it would be preferable to establish a surface water monitoring station(s) down-gradient of the landfill in closer proximity to the waste disposal site. If a surface water monitoring location exists between SW5 and the landfill, then I would support removing SW-5 as well, since it is located a substantial distance from the WDS.
- The consultants have also recommended that the sampled parameters list be increased to match Schedule 5, Column 3 of the Landfill Standards. I support both these recommendations, however I recommend the inclusion of calculated unionized ammonia. I would also suggest that the surface water sampling program be reduced to twice per year (spring, fall) to match the groundwater sampling program.
- The consultants have recommended that a new topographic survey be completed and that additional surface water station locations will be identified as appropriate. I agree with this recommendation and would further add that a monitoring sample location be established at the outlet of the proposed surface water control ponds (sewage works outlets).
- The topographic survey should detail the outlet flow paths from the stormwater works.
- Specific design details for the stormwater works should be provided for review.

The existing waste disposal site has not been found to be causing a risk to surrounding surface water features. In my opinion the risk of surface water impacts to area surface waters from the proposed expansion is low. I support, in principle, the proposed expansion.

Please contact me if you have any questions regarding the above comments.

*Original to be Signed*

Mark Phillips

ec: C. Klein, Tech. Support Manager, MECP  
V. Castro, (A)WRU Supervisor, MECP  
E. Tieu, Ottawa District Supervisor, MECP  
Groundwater Unit Files (A. Bos)  
ECHO

Jp2g No. 22-6213A

January 25, 2023

Ministry of the Environment, Conservation and Parks  
2430 Don Reid Drive, Unit #103  
Ottawa, ON K1H 1E1

Attention: Thandeka Ponalo  
Sr. Environmental Officer

Re: **Black Donald WDS**  
**ECA No. A362202**  
**Expansion Feasibility Study**

Dear Thandeka:

We acknowledge receipt of the Groundwater review comments dated January 6, 2023 and the Surface Water review comments dated January 11, 2023 on our October 25, 2022 submission.

The following conclusions and recommendations from the memorandums have been reproduced (in part) in **bold** for convenience, and our response provided:

**Alija Bos Hydrogeologist January 6, 2023 review of:**

- 2021 Annual Report March 21, 2022 by Greenview Environmental Management
- Expansion Feasibility Study October 25, 2022 by Jp2g

**1. The updated monitoring program will continue to sample the monitoring wells as per the ECA Schedule “B” with the addition of the following:**

- **A bi-level monitoring well within overburden (if available) and bedrock located east of landfilling area towards MW08-7**
- **A bedrock monitoring well in the MW08-7 location. Request a cross section drawing of the waste area (historical and proposed) including elevations**
- **A replacement well for BH-3**

Jp2g have prepared an estimate of probable costs to complete the new well installations in 2023 for consideration of Council. Regarding the plan and cross section drawing, there is additional survey required of the expansion area scheduled in the spring 2023, these plans will be included in the 2023 Annual Report.



---

**Ottawa**  
1150 Morrison Dr., #410  
Ottawa, ON, K2H 8S9  
T: 613-828-7800  
Ottawa@jp2g.com

---

**Pembroke**  
12 International Dr.  
Pembroke, ON, K8A 6W5  
T: 613-735-2507  
Pembroke@jp2g.com

---

**Arnprior**  
16 Edward St. S., #53B  
Arnprior, ON, K7S 3W4  
T: 613-828-7800  
Arnprior@jp2g.com



**2. The water quality analysis will be expanded to Schedule 5 Column 1 of the Landfill Standards (1998). Upon new well installation and sampling an updated trigger mechanism and contingency plan is recommended.** Jp2g will conduct the 2023 monitoring with the more comprehensive set of parameters first with the existing wells and then to include the new wells when installed. The current trigger and contingency plan is detailed in Section 6.2 of the Design, Development and Operations Plan December 2010. An updated trigger mechanism and contingency plan will be provided based on the more recent sampling results and will be presented in the final Expansion Feasibility Study.

**Mark Phillips Surface Water Scientist January 11, 2023 review of:**

- 2021 Annual Report March 21, 2022 by Greenview Environmental Management
- Expansion Feasibility Study October 25, 2022 by Jp2g
- Memo by B. Metcalfe on the 2015 AMR
- Memo by A. Bos on the 2021 AMR

**1. I support the reduction of sampling locations to include SW-4 and SW-5. Following completion of the topographic survey it is preferable to establish a monitoring station(s) closer to the waste disposal site.** Jp2g will conduct the survey in the spring 2023 and observe the spring freshet for potential locations.

**2. I would further add that a monitor sample location be established at the outlet of the proposed surface water control ponds (sewage works outlets).**

The Greenview Design, Development and Operations Plan December 2010 does not include control ponds but drainage ditches along the north-eastern portion of the fill area adjacent to Hydro Dam Road and at the southwest corner of the site. The final Expansion Feasibility Study will include an assessment of the requirement for new surface water controls.

**3. The topographic survey should detail the outlet flow paths from the stormwater works.**  
Agreed.

**4. Specific design details for the stormwater works should be provided for review.**

The final Expansion Feasibility Study will provide adequate detail to confirm surface water flow paths and additional monitoring locations to assess environmental compliance.

Yours truly,

**Jp2g Consultants Inc.**

**ENGINEERS • PLANNERS • PROJECT MANAGERS**

A handwritten signature in black ink, appearing to read 'K. Mooder', written in a cursive style.

Kevin Mooder, MCIP RPP

Principal | Environmental Services

cc Leonard Emon



## APPENDIX 2

A386280

Measurements recorded in:  Metric  Imperial

Page 1 of 1

**Well Owner's Information**

First Name	Last Name/Organization	E-mail Address		<input type="checkbox"/> Well Constructed by Well Owner
Township of Greater Madawaska				
Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
19 Parnell St. P.O. Box 180	Calabogie	ON	K0J5N1H0	

**Well Location**

Address of Well Location (Street Number/Name)	Township	Lot	Concession
Hudko Dam Road			
County/District/Municipality	City/Town/Village	Province	Postal Code
	Calabogie	Ontario	K0J5N1H0
UTM Coordinates	Zone	Easting	Northing
NAD	8	3	1183532585101104106
Municipal Plan and Sublot Number		Other	

**Overburden and Bedrock Materials/Abandonment Sealing Record** (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)
				From To
brwn grey	sand granite			0 11'
				11' 65'
	2mm's set onsite in cluster			

**Annular Space**

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From To		
0 54'	3/8 hole plug	
54' 65'	#2 silica sand	

**Results of Well Yield Testing**

After test of well yield, water was:	Draw Down		Recovery	
<input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify	Time (min)	Water Level (m/ft)	Time (min)	Water Level (m/ft)
If pumping discontinued, give reason:	Static Level			
	1		1	
Pump intake set at (m/ft)	2		2	
Pumping rate (l/min / GPM)	3		3	
Duration of pumping hrs + min	4		4	
Final water level end of pumping (m/ft)	5		5	
If flowing give rate (l/min/GPM)	10		10	
	15		15	
	20		20	
Recommended pump depth (m/ft)	25		25	
Recommended pump rate (l/min/GPM)	30		30	
Well production (l/min/GPM)	40		40	
Disinfected?	50		50	
<input type="checkbox"/> Yes <input type="checkbox"/> No	60		60	

**Method of Construction**

**Well Use**

- |  |                                  |   |   |  |
|--|----------------------------------|---|---|--|
| <input type="checkbox"/> Cable Tool                | <input type="checkbox"/> Diamond | <input type="checkbox"/> Public         | <input type="checkbox"/> Commercial                 | <input type="checkbox"/> Not used              |
| <input type="checkbox"/> Rotary (Conventional)     | <input type="checkbox"/> Jetting | <input type="checkbox"/> Domestic       | <input type="checkbox"/> Municipal                  | <input type="checkbox"/> Dewatering            |
| <input type="checkbox"/> Rotary (Reverse)          | <input type="checkbox"/> Driving | <input type="checkbox"/> Livestock      | <input checked="" type="checkbox"/> Test Hole       | <input checked="" type="checkbox"/> Monitoring |
| <input checked="" type="checkbox"/> Boring         | <input type="checkbox"/> Digging | <input type="checkbox"/> Irrigation     | <input type="checkbox"/> Cooling & Air Conditioning |  |
| <input checked="" type="checkbox"/> Air percussion |                                  | <input type="checkbox"/> Industrial     |   |  |
| <input type="checkbox"/> Other, specify            |                                  | <input type="checkbox"/> Other, specify |   |  |

**Construction Record - Casing**

**Status of Well**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	
			From	To
1.5"	PVC	0.25"	0	55'

<input type="checkbox"/> Water Supply	<input type="checkbox"/> Replacement Well	<input type="checkbox"/> Test Hole	<input type="checkbox"/> Recharge Well	<input type="checkbox"/> Dewatering Well
<input checked="" type="checkbox"/> Observation and/or Monitoring Hole	<input type="checkbox"/> Alteration (Construction)	<input type="checkbox"/> Abandoned, Insufficient Supply	<input type="checkbox"/> Abandoned, Poor Water Quality	<input type="checkbox"/> Abandoned, other, specify
<input type="checkbox"/> Other, specify				

**Construction Record - Screen**

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To
1.75	PVC	0.10	55'	65'

**Water Details**

**Hole Diameter**

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Gas <input type="checkbox"/> Other, specify	Depth (m/ft) From To	Diameter (cm/in)
		0 11'	9"
		11' 65'	4"

**Well Contractor and Well Technician Information**

Business Name of Well Contractor	Well Contractor's Licence No.	
Can. Enviro. Drilling Contractors	7131213	
Business Address (Street Number/Name)	Municipality	
4102 Perth Road, Inverary	S. Frontenal	
Province	Postal Code	Business E-mail Address
ON	K0J5N1H0	info@canek.com
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)	
11113473212311	Fillard, Jonathan	
Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3131115	[Signature]	2108311108

**Map of Well Location**

Please provide a map below following instructions on the back.



Comments:

mnd1 holds the tag

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
<input type="checkbox"/> Yes <input type="checkbox"/> No	Y Y Y Y M M D D	
	Date Work Completed	Audit No. <b>Z414778</b>
	2108311108	Received

A386271

Measurements recorded in:  Metric  Imperial

Page 1 of 1

**Well Owner's Information**

First Name <i>Township of Greater Markham</i>	Last Name/Organization	E-mail Address	<input type="checkbox"/> Well Constructed by Well Owner
Mailing Address (Street Number/Name) <i>19 Kinross St, P.O. Box 180</i>	Municipality <i>Calabogie</i>	Province <i>ON</i>	Postal Code <i>K0B5T1H0</i>
Telephone No. (inc. area code)			

**Well Location**

Address of Well Location (Street Number/Name) <i>34 Audio Dam Road</i>	Township	Lot	Concession
County/District/Municipality	City/Town/Village <i>Calabogie</i>	Province <b>Ontario</b>	Postal Code <i>K0B5T1H0</i>
UTM Coordinates NAD   8   3   18   353   3169   501   0518	Zone	Easting	Northing
Municipal Plan and Sublot Number		Other	

**Overburden and Bedrock Materials/Abandonment Sealing Record** (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
<i>brown</i>	<i>cobbles</i>	<i>sand</i>		<i>0</i>	<i>3'</i>
<i>brown</i>	<i>sand</i>			<i>3'</i>	<i>25'</i>
<i>brown</i>	<i>wet sand</i>			<i>25'</i>	<i>32'</i>
<i>grey</i>	<i>granite</i>			<i>32'</i>	<i>55'</i>
<i>IMN set on site</i>					

**Annular Space**

Depth Set at (m/ft)	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
From	To	
<i>0</i>	<i>41'</i>	<i>3/5" hole plug</i>
<i>41'</i>	<i>55'</i>	<i>#2 silica sand</i>

**Results of Well Yield Testing**

After test of well yield, water was: <input type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify _____	Draw Down	Recovery
If pumping discontinued, give reason:	Time (min)	Water Level (m/ft)
	Time (min)	Water Level (m/ft)
Pump intake set at (m/ft)	Static Level	
	1	1
Pumping rate (l/min / GPM)	2	2
	3	3
Duration of pumping hrs + min	4	4
	5	5
Final water level end of pumping (m/ft)	10	10
	15	15
If flowing give rate (l/min/GPM)	20	20
	25	25
Recommended pump depth (m/ft)	30	30
	40	40
Recommended pump rate (l/min/GPM)	50	50
	60	60
Well production (l/min/GPM)	Disinfected? <input type="checkbox"/> Yes <input type="checkbox"/> No	

**Method of Construction**

**Well Use**

- |  |                                  |   |   |  |
|--|----------------------------------|---|---|--|
| <input type="checkbox"/> Cable Tool                | <input type="checkbox"/> Diamond | <input type="checkbox"/> Public               | <input type="checkbox"/> Commercial                 | <input type="checkbox"/> Not used              |
| <input type="checkbox"/> Rotary (Conventional)     | <input type="checkbox"/> Jetting | <input type="checkbox"/> Domestic             | <input type="checkbox"/> Municipal                  | <input type="checkbox"/> Dewatering            |
| <input type="checkbox"/> Rotary (Reverse)          | <input type="checkbox"/> Driving | <input type="checkbox"/> Livestock            | <input checked="" type="checkbox"/> Test Hole       | <input checked="" type="checkbox"/> Monitoring |
| <input checked="" type="checkbox"/> Boring         | <input type="checkbox"/> Digging | <input type="checkbox"/> Irrigation           | <input type="checkbox"/> Cooling & Air Conditioning |  |
| <input checked="" type="checkbox"/> Air percussion |                                  | <input type="checkbox"/> Industrial           |   |  |
| <input type="checkbox"/> Other, specify _____      |                                  | <input type="checkbox"/> Other, specify _____ |   |  |

**Construction Record - Casing**

**Status of Well**

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	
			From	To
<i>15"</i>	<i>PVC</i>	<i>.25"</i>	<i>0</i>	<i>42'</i>

<input type="checkbox"/> Water Supply	<input type="checkbox"/> Replacement Well	<input checked="" type="checkbox"/> Test Hole	<input type="checkbox"/> Recharge Well	<input type="checkbox"/> Dewatering Well
<input checked="" type="checkbox"/> Observation and/or Monitoring Hole	<input type="checkbox"/> Alteration (Construction)	<input type="checkbox"/> Abandoned, Insufficient Supply	<input type="checkbox"/> Abandoned, Poor Water Quality	<input type="checkbox"/> Abandoned, other, specify _____
<input type="checkbox"/> Other, specify _____				

**Construction Record - Screen**

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To
<i>1.75"</i>	<i>PVC</i>	<i>010</i>	<i>42'</i>	<i>52'</i>

**Water Details**

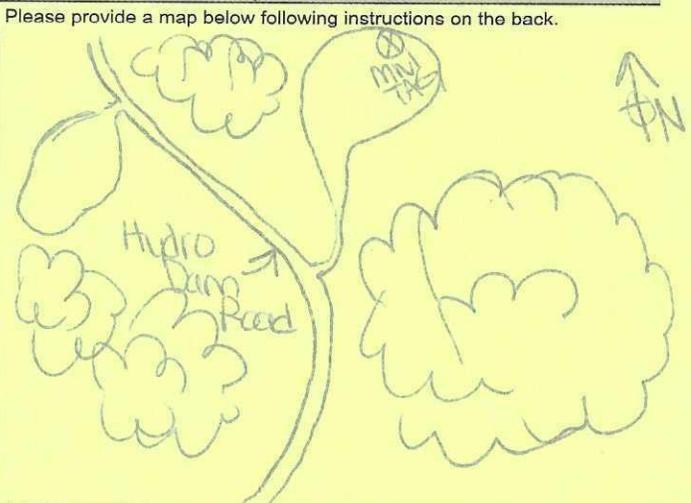
**Hole Diameter**

Water found at Depth (m/ft) <input type="checkbox"/> Gas	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Other, specify _____	Depth (m/ft) From	To	Diameter (cm/in)
Water found at Depth (m/ft) <input checked="" type="checkbox"/> Gas	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input checked="" type="checkbox"/> Other, specify _____	<i>0</i>	<i>32'</i>	<i>9"</i>
Water found at Depth (m/ft) <input type="checkbox"/> Gas	Kind of Water: <input type="checkbox"/> Fresh <input type="checkbox"/> Untested <input type="checkbox"/> Other, specify _____	<i>32'</i>	<i>55'</i>	<i>4"</i>

**Well Contractor and Well Technician Information**

Business Name of Well Contractor <i>Can. Enviro. Drilling Contractors Inc.</i>	Well Contractor's Licence No. <i>7131213</i>
Business Address (Street Number/Name) <i>4102 Perth Road, Inverary</i>	Municipality <i>S. Frontenac</i>
Province <i>ON</i>	Postal Code <i>K0B5T1H0</i>
Business E-mail Address <i>info@canedc.com</i>	
Bus. Telephone No. (inc. area code) <i>6133532231</i>	Name of Well Technician (Last Name, First Name) <i>Ellison Jonathan</i>
Well Technician's Licence No. <i>313115</i>	Signature of Technician and/or Contractor <i>[Signature]</i>
Date Submitted <i>08/03/2020</i>	

**Map of Well Location**



Comments:

Well owner's information package delivered <input type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered YYYYMMDD <i>20200803</i>	Date Work Completed YYYYMMDD <i>20200803</i>
<b>Ministry Use Only</b>		Audit No. <i>2414777</i>
Received		

# Black Donald Waste Disposal Site

## Final

### Expansion Feasibility Study 2024 Township of Greater Madawaska

September 5, 2024  
Revised October 10, 2024  
Jp2g Project # 22-6213A





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Appendix B	Legal Documents
Appendix C	Initial Environmental Impact Study
Appendix D	Stage I Cultural Heritage Assessment



## Distribution List

PDF	Association / Company
1	Township of Greater Madawaska
1	Ministry of the Environment, Conservation and Parks - Ottawa District Office
1	Jp2g Consultants Inc.

### Jp2g Consultants Inc. Signatures

Report Prepared By:

\_\_\_\_\_  
**Quentin Sprunt**  
Junior Environmental Tech

Report Reviewed By:

\_\_\_\_\_  
**Kevin Mooder, MCIP RPP**  
Manager | Environmental Services

Report Reviewed By:

\_\_\_\_\_  
**Andrew Buzza, P.Geo**  
Senior Hydrogeologist



## 1 Introduction

The Black Donald Waste Disposal Site (WDS) is located in Part Lot 9, Concession 2 and 3, within the geographic Township of Brougham, now in the Township of Greater Madawaska at 34 Hydro Dam Road. Under ECA No. A411902 Notice No. 2 dated October 12, 2001 the site was described as a 1.2 ha landfill site. Subsequently the Township acquired additional property for a total site area of 21.36 ha. As part of the Township's waste management strategy, the Black Donald WDS was selected to receive bulky waste for disposal while the proposed waste transfer stations accepted domestic waste, as shown on **Figure 1**.

The Black Donald WDS ceased receiving regular non-hazardous solid domestic waste in April 2010. Under the amended ECA No. A411902 Notice No. 3 issued January 24, 2013 the landfill site receives construction and demolition and bulky waste (C&D waste as defined in the ECA) to be stockpiled and ground for disposal. The ECA also allows the receipt of non-hazardous solid domestic waste on an emergency basis, and leaf and yard waste for composting. Site development is detailed in the Design, Operations and Development Plan dated December 22, 2010 (Greenview, 2010).

The total site capacity of the site including waste, daily, interim and final cover is 46,785m<sup>3</sup> (ECA Condition 18). As of November 2010 the remaining capacity was 12,442m<sup>3</sup> (Greenview, 2010).

On November 25, 2022 the Township received an Inspection Report dated November 21, 2022 by Thandeka Ponalo, MECP Environmental Compliance Officer which reviewed the 2021 Annual Report (Greenview, 2022) and summarized observations during a site visit. The main observation/corrective action to address non-compliance was related to the limited remaining capacity.

The 2021 Annual Report reported there was an estimated remaining site capacity of 4,400m<sup>3</sup>, and based on an average (mean) five year fill rate (2017 to 2021) of 897m<sup>3</sup> is equivalent to a remaining site life of approximately five years.

However, Greenview did not address the fact that the 2021 landfilling rate was approximately 2,078m<sup>3</sup> and with similar quantities landfilled the site could have a life expectancy of just over two years.

The action requested by the Ministry included:

1. The Township shall conduct an assessment of the approved waste disposal area to determine the accurate remaining capacity of the site.
2. The Township shall submit to the Ministry a drawing of the landfilling area that shows the areas that have been overfilled in relation to the approved contours.
3. The Township shall submit to the Ministry an action plan to address how the site will be brought back into compliance in relations to the approved landfill design and capacity limits.

A copy of the Site Inspection is included in **Appendix A**.

Greenview completed the 2022 Annual Report dated February 2023 but did not acknowledge the MECP Inspection Report. During the summer 2022 the Township had a tender call for the environmental monitoring and reporting for all five (5) of their waste disposal sites. Jp2g Consultants Inc. were successful and also initiated an Expansion Feasibility Study for the Black Donald Landfill Site in August 2022. However, Greenview did not provided AutoCAD files of the previous design and surveys, so supplemental capacity analysis was completed for the 2023 Annual Report dated March 26, 2024 and this Feasibility Study.



## 2 MECP Consultation Summary

The MECP consultation was coordinated through Thandeka Ponalo Environmental Compliance Officer Ottawa District Office. Jp2g filed a summary of the proposed expansion dated October 25, 2022 detailing the site's capacity, ECA requirements, legal, environmental and operational considerations. The following lists the relevant correspondence with MECP that occurred:

- January 6, 2023 TSS Groundwater
- January 11, 2023 TSS Surface Water
- January 25, 2023 Jp2g response
- December 29, 2023 Jp2g status update

Copies of these documents are included in **Appendix A**.

The following sections highlight key comments and issues to address as a result of the MECP consultation, and an assessment of requirements to be included in the supporting documentation for an amended ECA identified in the Expansion Feasibility Study.

## 3 Legal Requirements

This section includes a review of the ECA conditions as they may affect the expansion proposal. A copy of the ECA is included in documentation provided in **Appendix A**.

### Site Description

A 1.2 ha landfilling area within a total site area of 21.36 ha. The expansion will increase the existing 0.9 ha landfilling area by 5875m<sup>2</sup> to 1.49 ha.

### General

Conditions 1 to 13 maybe updated to reflect current Ministry requirements.

### Site Operations

Condition 15 to be amended to reflect the new Design and Operations (D&O) Report for the expansion.

Condition 18 to be amended to reflect the new total capacity of the site without final cover.

Condition 26 will reflect the proposed surface water and groundwater monitoring program described in **Section 4.0** of this report and to be inserted as a new Schedule in the amended ECA.

Condition 27 to be amended to reflect current Annual Report requirements.

Condition 28 to be amended to reflect the Ministry requirements to approve changes to the monitoring plan in the future.

Condition 29 to reflect the surface water and groundwater trigger and contingency plan to be included in the new D&O Report.

### Buffer Area and Contaminant Attenuation Zone

Conditions 30 to 32 were satisfied. Copies of the legal survey and Certificate of Prohibition are included in **Appendix B**.

### Site Closure

Condition 35(b) to be amended to reflect the proposed design in the D&O Report.



### Leaf and Yard

Condition 36 to remain

### Cover

Condition 37(c) the title reflect alternative intermediate cover?

We acknowledge that the MECP may opt to issue an amended ECA which revokes and replaces all previously issued ECAs.

## 4 Environmental Requirements

This section includes a review of the water quality and landfill gas monitoring program and any measured or potential impact on the surface water and groundwater quality and risk due landfill gas. In addition, an assessment of the expansion's potential impact on other natural heritage features is reviewed.

### 4.1 Surface Water Monitoring

ECA Schedule "B" as amended January 24, 2013 identifies four (4) locations SW-3, SW-4, SW-5 and SW-6 to be sampled three (3) times a year. A site specific list of parameters for analysis are included.

In accordance with the October 25, 2022 submission to MECP, Jp2g recommended that SW-3 and SW-6 are removed as they are located a significant distance from the landfilling area and laboratory analysis be expanded to include the parameters in Schedule 5 Column 3 of the Landfill Standards.

The MECP response from Mark Phillips, Surface Water Specialist dated January 11, 2023 agreed to remove the sampling locations and recommended after more detailed topographical survey to establish a surface water monitoring station downgradient and closer to the fill area. Mr. Phillips also agreed to the laboratory analysis.

All the surface water locations identified in the ECA Schedule "B" do not effectively monitor the potential impact to surface water resources in proximity to the site. Jp2g reviewed the historical monitoring locations including those established in the initial investigation, established by Golder Associates Ltd. and the monitoring locations conducted by Greenview. These are illustrated on **Figure 2**. Jp2g conducted a thorough site review and propose the following locations as illustrated on **Figure 3**:

- Keep former SW-2 and SW-5 locations to monitor flow to the southwest from the fill area.
- Add SW-8 as the new background location.
- Add SW-9 to monitor any surface water flow to the northeast from the fill area.
- Keep former SW-4 located downgradient from SW-8 and SW-9.

The MECP review dated January 11, 2023 requested that the additional topographic survey should detail the outlet flow paths for proposed stormwater works. The 2001 design by Jp2g Consultants Inc. proposed a surface water control pond and outlet in the northwest corner of the landfilling area. There is a natural ravine running parallel to the hydro corridor in this location. A surface water sampling location (SW-2) was established however to date has not experienced any significant flow, Golder (2007) recommended it be removed from the monitoring program and it is not included in Schedule "B" of the ECA. We propose to include it in the amended ECA as expansion of the fill area may increase surface water runoff in this direction. There are no other surface water runoff features in close proximity to the landfilling area. No stormwater controls are proposed.



The details of the surface water monitoring program is described in the D&O Report.

## 4.2 Groundwater Monitoring

ECA Schedule “B” as amended January 24, 2013 identifies seven (7) monitoring wells to be sampled in the spring and fall. A site specific list of parameters for analysis are included.

In accordance with the October 25, 2022 submission to MECP, three (3) additional wells were installed and laboratory analysis has been expanded for all monitoring wells to include the parameters in Schedule 5 Column 1 of the Landfill Standards.

The MECP response from Alija Bos, Hydrogeologist dated January 6, 2023 agreed to the additional monitoring wells, the more comprehensive water quality analysis for all wells, and that the trigger mechanism is to be updated to support the expansion. The reviewer also requested a cross section of the waste area, historical and proposed (see **Drawing 3**).

BH-3 has been decommissioned as it is located within the proposed landfilling area expansion, the monitoring well locations are illustrated on **Figure 3**.

The details of the groundwater monitoring program and trigger mechanism is described in the D&O Report.

## 4.3 Landfill Gas Monitoring

Gas monitoring is currently not part of the ECA. We propose monitoring at all monitoring wells during each groundwater sampling event as described in the D&O Report.

## 4.4 Natural and Cultural Heritage Features

Greenview Environmental Management (Greenview) completed a Preliminary Landfill Expansion Feasibility Study dated August 31, 2007 which included a natural and cultural heritage assessment for the Black Donald WDS.

The Initial Environmental Impact Study completed by Snider’s Ecological Services is included in **Appendix C**.

The Stage I Cultural Heritage Assessment completed by C.R. Murphy is included in **Appendix D**.

While both of these studies recommended additional investigation it was to support a major expansion of the site to accommodate domestic waste. As the site only accepts C&D waste and the expansion is in an area previously disturbed additional study was deemed unnecessary.

The Township has not consulted with the First Nation and Metis communities as the expansion is within the limits of municipal property.

# 5 Operational Requirements

This section includes a review of historical records and the proposed expansion in consideration of any negative impacts on-site or on adjacent lands, and concerns with the landfilling operations.



## 5.1 Historical Overview

ECA No. A411902 was issued March 27, 1980 for a 1.2 ha dump site to accept domestic and 5% other wastes, limited to scrap metal, brush, lumber and construction debris. To reflect changing operations the following amendments were issued by the Ministry:

Notice No. 1 October 22, 2001 – To increase the service area to include the Township of Greater Madawaska and require an updated site development and operations plan for the 1.2 ha landfill site.

Notice No. 2 July 12, 2002 – For the construction, operation and maintenance of the site in accordance with the Site Development and Operations Plan prepared by Jp2g Consultants Inc. dated January 2001. The total volumetric capacity of the site including waste, daily, interim and final cover is 46,785m<sup>3</sup>.

Notice No. 3 January 24, 2013 – For the use and operation of the site for disposal of construction and demolition and bulky waste (C&D waste) for disposal, and leaf and yard waste for composting in accordance with the Design, Operations and Development Plan prepared by Greenview dated December 22, 2010.

### Landfilling Operations

The Black Donald WDS receives C&D Waste from municipal vehicles from the Township's waste transfer sites and Township approved haulers only, under the supervision of municipal staff. The normal hours for receiving waste at the site are 7 am to 9 pm.

The current design of the landfilling area is consistent with the Jp2g 2001 application:

- maximum side slopes of 25% (4H:1V)
- peak elevation of 108m (assumed elevation)
- maintain 15m buffer from Hydro transmission corridor and a 30m buffer to Hydro Dam Road

C&D waste is deposited on the fill area and ground once per year, spread and compacted.

### Signage

A sign at the entrance stating the status of the site to be maintained.

### Inspection and Record Keeping

Monthly inspect the status of the access road, gate, fencing and the C&D waste stockpile. Waste delivery screening of haulers loads and type of load is recorded by Township staff. Records of the inspections and waste deliveries are kept at the Municipal Office and reported in the Annual Report.

### Remaining Capacity

The Greenview Design Operations and Development Plan presented the following remaining capacity figures: as of October 2019 14,926m<sup>3</sup> and as of November 2, 2010 12,442m<sup>3</sup>. Based on the review of available past Annual Reports the following summarizes landfilling operations and remaining capacity estimates. Greenview determined the remaining capacity by subtracting the annual landfill volume from the previous years estimate. The 2023 remaining capacity estimate by Jp2g was based on comparing the landfilled waste mound as shown on **Drawing 1** to the 2010 design without final cover.



Year	Annual Landfilled (m <sup>3</sup> )	Remaining Capacity (m <sup>3</sup> )	Estimated Years	Waste Summary
2009	4909	14,926	3	2393 cars 2494 trucks 1145 trailers 27 single axle 11 tandem 16 tri-axle
2010	2484	12,442	5	690 cars 505 trucks 67 trailers 4 single axle 3 tandem 4 tri-axle
2011	11,341			
2012	1087 with cover	10,337	9	33 tri-axes 1 trailer
2013	1197	9140	7.6	28 tri-axes 4 trailers
2014				
2015	256	9320	9	12 tri-axes 1 bin
2016	382	8937	10	3 bins 510m <sup>3</sup>
2017				
2018				
2019				
2020	759	6478	12	25 tri-axes 2 bins 410m <sup>3</sup>
2021	2078	4400	5	52 tri-axes and 786m <sup>3</sup> unprocessed C&D waste
2022	826	3575	4	34 tri-axes and 700m <sup>3</sup> unprocessed C&D waste
2023	857	2718	3	0
2024	0	2718	3	0

The 2023 Annual Report reported that there was 2718m<sup>3</sup> of capacity remaining after the waste received in 2022 was ground and landfilled. No waste was received in 2023 and 2024. If the site received 857m<sup>3</sup> of landfilled waste the life expectancy would be 3 years, however if the quantity increased the site capacity would be exhausted without approval for the expansion.



## 5.2 Proposed Expansion

The 2024 design is based on a geodetic elevation survey, rather than the assumed elevation of 100m at benchmark #1 near the site entrance which was used in the 2001 design. Under the current ECA the 1.2 ha landfilling area has a total volumetric capacity including waste, daily interim and final cover of 48,785m<sup>3</sup> (ECA Condition 18). The actual fill area is 0.9 ha. The proposal is to extend the fill area to the southwest over an area of 5,875m<sup>2</sup> providing an additional 36,500m<sup>3</sup> of capacity (excluding final cover) as shown on **Drawing 2**.

A phased landfilling approach will be conducted at the Black Donald WDS to progressively match into the existing 4:1 slope along the southwesterly portion of the landfilling area.

Phase 1 – to apply clean fill in the northwest and northeast corners to establish a minimum base elevation of 276m above sea level.

Phase 2 – landfilling from the northwest to the northeast up to the 278.5m elevation.

Phase 3 – landfilling from the northwest to the northeast over Phase 2 up to the 281m elevation.

Phase 4 – Landfilling from the northwest to the northeast over Phase 3 up to 283.5m elevation.

Phase 5 – Landfilling from the northwest to the northeast over Phase 4 up to the final design contour elevation of 286m.

**Drawing 3** illustrates the proposed cross section of the expansion, this drawing will illustrate the Phases in the D&O Report.

As the new final side slopes of 4:1 are achieved the application of final cover, including 150mm of topsoil or equivalent will be applied and will naturally revegetate. If erosion occurs or areas do not revegetate, they may have to be stabilized and seeded.

## 5.3 Public Consultation

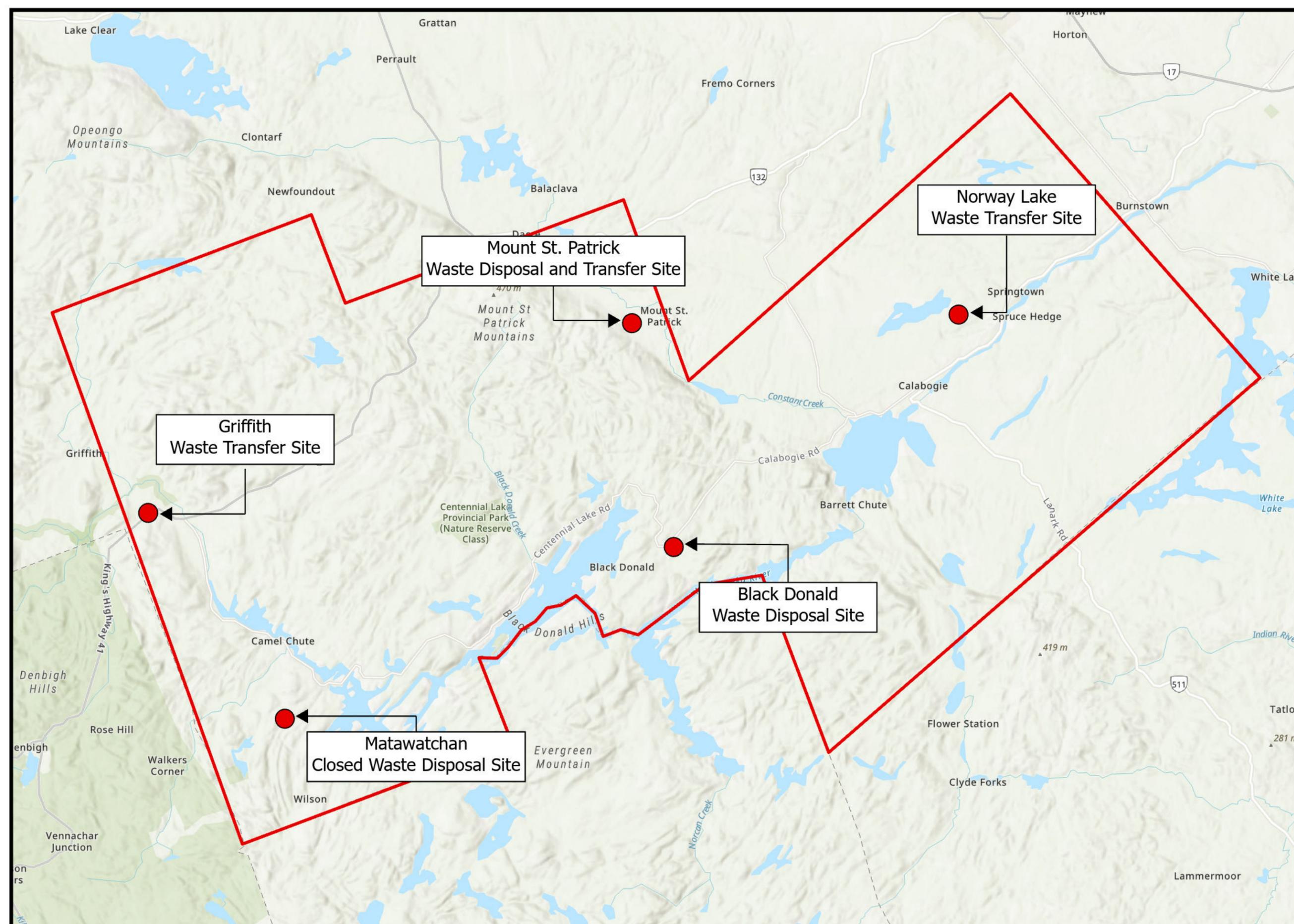
The Township of Greater Madawaska will provide notice of the application for expansion through local media including newspaper and the website, and a mailing to neighbouring landowners which includes a few privately owned properties to the west on Black Donald Road, the rest of the lands are Crown.

---

End of report.



## Figures and Drawings



**Township of  
Greater Madawaska**  
Waste Disposal Sites

**LEGEND**

- Waste Disposal Site
- Township Boundary

1:250 000

0 3,000 6,000 12,000 Meters

**Figure 1  
Regional Location Plan**

Project No. 22-6213C Greater Madawaska

Date: 8/28/2024	Drawn By: HV
	Checked By: KM

Notes:  
Map Layers Obtained from LIO  
Waste Disposal Site Locations Sourced from Greenview Environmental Management (2023)



### Legend

- Road
- Vegetation
- 30m Buffer
- MW08-6 Monitoring Wells
- SW-4 Surface Water Locations
- Contamination Attenuation Zone (CAZ)
- MW08-6 Destroyed Well

NOTES: WELL LOCATION FROM HANDHELD GPS DURING THE SPRING 2023 SAMPLING SOURCE GREENVIEW 2022 AMR FOR REFERENCE ONLY

1:4,000

TRUE NORTH

**Jp2g Consultants Inc.**  
ENGINEERS • PLANNERS • PROJECT MANAGERS

12 INTERNATIONAL DRIVE, PEMBROKE, ON Phone: (613)735-2507, Fax: (613)735-4513

1150 MORRISON DRIVE, SUITE 410, OTTAWA, ON Phone: (613)828-7800, Fax: (613)828-2600

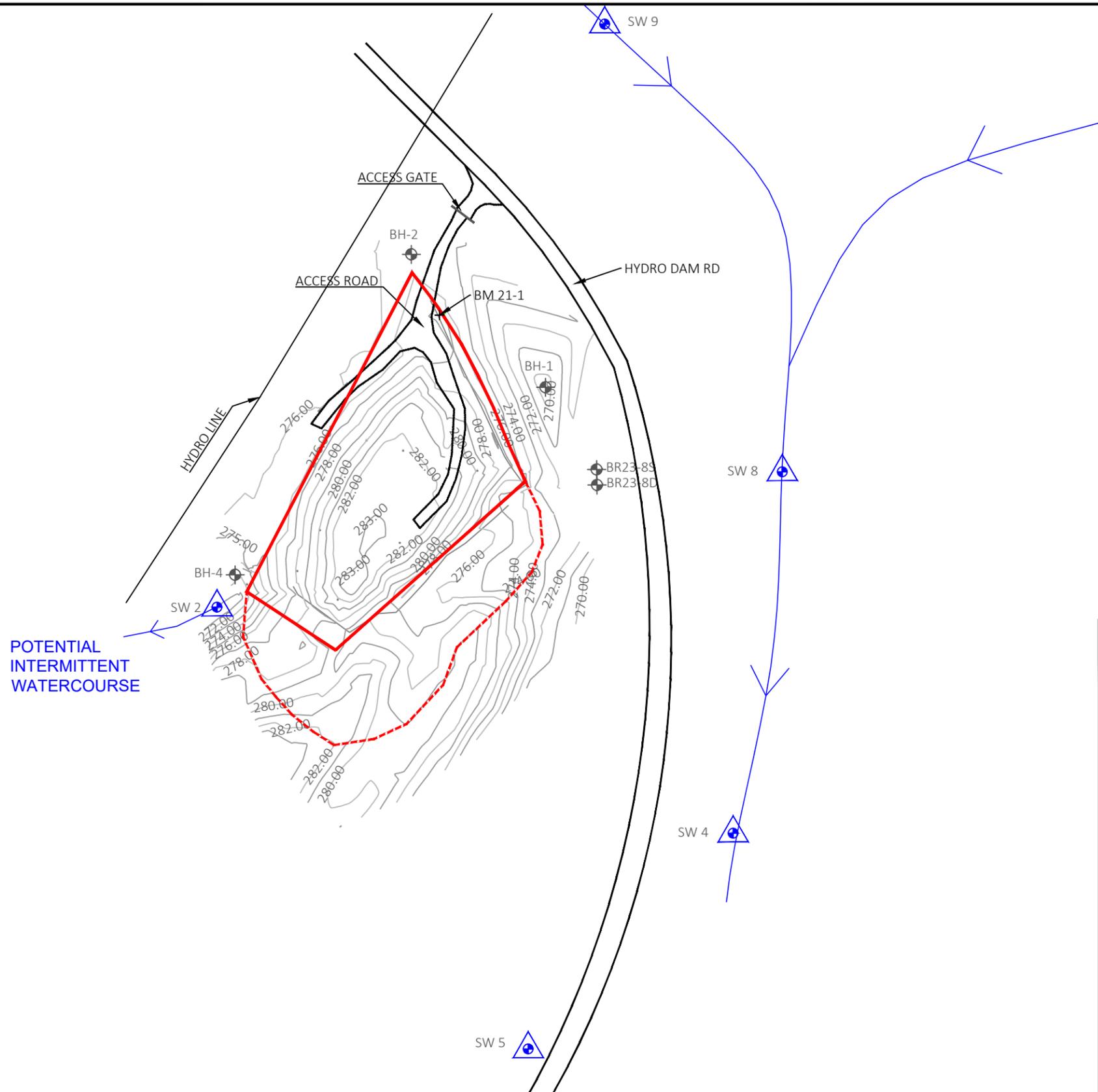
## Black Donald WDS - Greater Madawaska

~

### Historial Surface Monitoring Locations

DRAFTED: QS		PROJECT No.: 22-6213A
CHECKED: KM		REVISION DATE: 2024-07-02
CHECKED: KM	APPROVED: KM	REVISION No.: .
SCALE: Approx Scale 1: 4000		Figure : 2

DWG NAME: J:\6-ENVIRONMENTAL\ACTIVE\2022\22-6213B - GREATER MADAWASKA WDS 202305 DRAWINGS\BLACK DONALD\2023\PROPOSED SURFACE WATER LOCATIONS DWG LAYOUT: TAB.1\17 SAVED ON 2024-09-04



POTENTIAL  
INTERMITTENT  
WATERCOURSE

**BM 21-1**

EASTING: 353197.573  
 NORTHING: 5010544.812  
 ELEVATION:  
 100.818m (Assumed)  
 277.224m (Geodetic)

**Legend**

- 1.2ha Landfilling Area
- Roadway
- - - Approximate Landfilling Area with Expansion
- 2023 Ground Contours
- MW08-6
 Monitoring Wells
- +
 BM Benchmark
- ▲ SW 9 Proposed Surface Waters

**NOTES :**

WELL LOCATIONS AND CONTOURS IN THE LANDFILL AREA ARE FROM DECEMBER 20, 2023 JP2G SURVEY

CONTOURS OUTSIDE OF LANDFILL AREA ARE SOURCED GREENVIEW 2022 AMR AND APRIL 17 2023 JP2G SUVERY FOR REFERENCE ONLY

No.	DATE			2024-03-25					

PROJECT No.: 22-6213A

**BLACK DONALD WDS**  
TOWNSHIP OF GREATER MADAWASKA

---

**PROPOSED SURFACE WATER LOCATIONS**

PROJECT No.: 22-6213A
DRAFTED: QS
DESIGNED: QS
REVIEWED: KM
APPROVED: KM

NORTH

SCALE

1:2,000

SHEET# **FIGURE 3**

DWG NAME: J:\6-ENVIRONMENTAL\ACTIVE\2022\22-6213A - GREATER MADAWASKA WDS\DRAWINGS\BLACK DONALD\CAD FILES\2024\EXISTING CONDITIONS 2024 WITH EXPANSION.DWG LAYOUT.TAB: 1X1717 SAVED ON 2024-09-04

**NOTES**

- |   |   |
|---|---|
| <p>1. BASE CONTOURS IN PROPOSED EXPANSION AREA FROM JP2G SURVEY DATED APRIL 18 2023</p> <p>3. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 286m TO TIE IN. PEAK ELEVATION= 287.00m.</p> <p>4. EXPANSION DESIGN CONTOURS START AT 276M A 4:1 SLOPE TO ELEVATION 286M</p> | <p>5. EXPANSION DESIGN CAPACITY= 39400m<sup>3</sup>.</p> <p>6. ELEVATIONS BEYOND LANDFILLING AREAS ARE APPROXIMATE BASED ON JP2G (2001) DRAWINGS AND GREENVIEW DRAWINGS (2010)</p> <p>7. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.</p> |
|---|---|

**Legend**

- |   |                          |   |                                   |
|---|--------------------------|---|-----------------------------------|
|  | Expansion landing Area   |  | Vegetation                        |
|  | Existing Design Contours |  | Buffer with original 1.2ha limits |
|  | Expansion Contours       |  | Fill area                         |
|  | Roadway                  |   |                                   |



**BM 21-1**  
 EASTING: 353197.573  
 NORTHING: 5010544.812  
 ELEVATION: 277.224m (Geodetic)

No.	YYYY-MM-DD	BY	DESCRIPTION



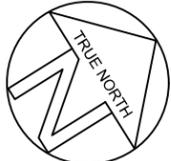
PROJECT No.: 22-6213A

**Black Donald - WDS**  
 The Township of Greater Madawaska

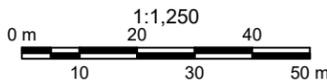
DRAWING: **EXISTING CONDITIONS AND PURPOSED EXPANSION DESIGN**

CLIENT No.:
DRAFTED: QS
DESIGNED: QS
REVIEWED: KM
APPROVED: KM

NORTH



SCALE



1:1,250

DRAWING# **1**

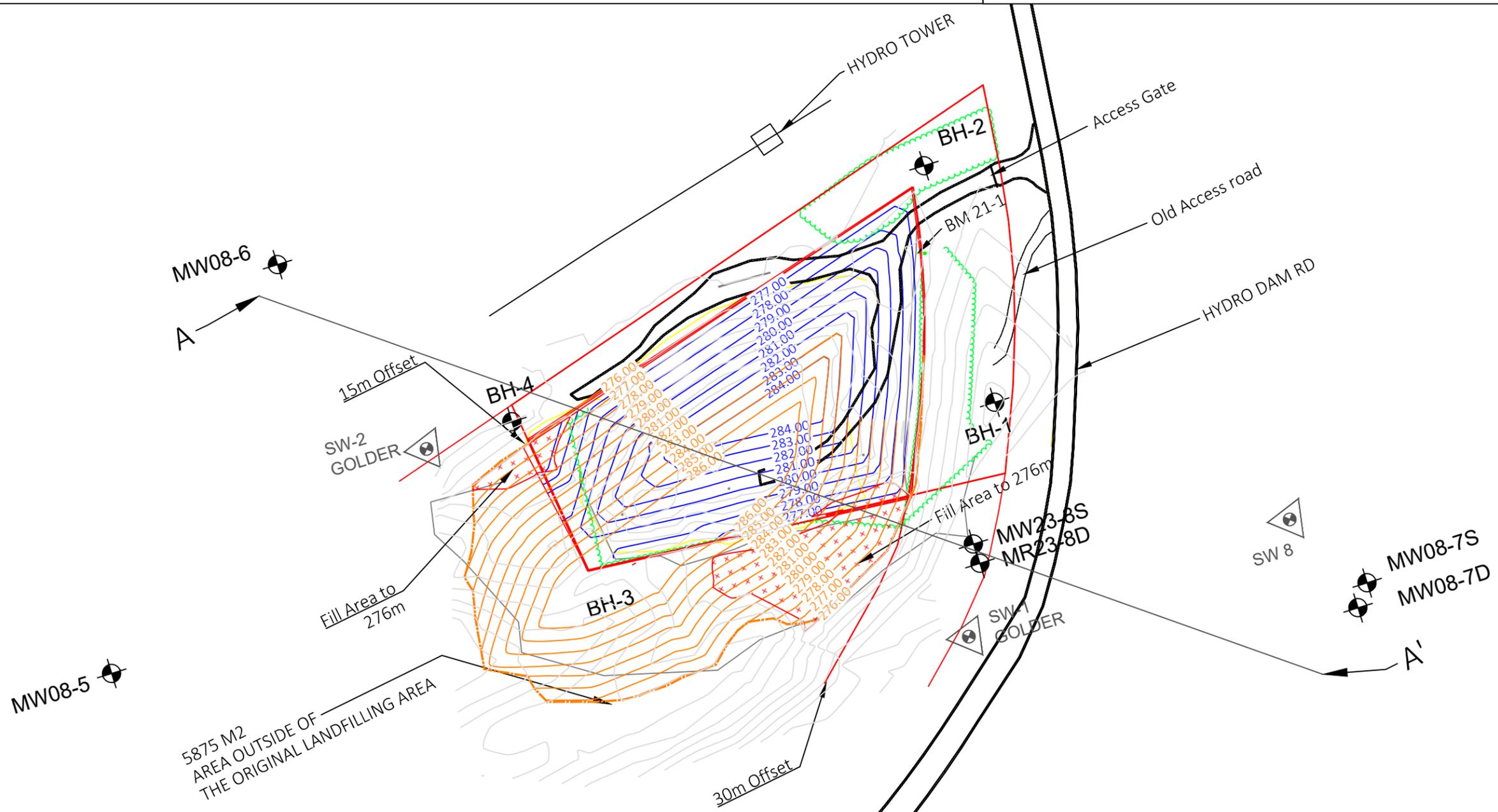
DWG NAME: J:\6-ENVIRONMENTAL\ACTIVE\2022\22-6213A - GREATER MADAWASKA WDS\DRAWINGS\BLACK DONALD\CAD FILES\2024\EXISTING CONDITIONS 2024 WITH EXPANSION.DWG LAYOUT.TAB.1\X17 SITE PLAN SAVED ON 2024-08-25

**NOTES**

1. BASE CONTOURS IN PROPOSED EXPANSION AREA FROM JP2G SURVEY DATED APRIL 18 2023
2. EXPANSION DESIGN CAPACITY= 36500m<sup>3</sup>. WHICH DOES NOT INCLUDE FINAL COVER APPLICATION OF 0.45m
3. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 286m TO TIE IN. PEAK ELEVATION= 287.00m.
4. EXPANSION DESIGN CONTOURS START AT 276M A 4:1 SLOPE TO ELEVATION 286M
5. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.
6. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.

**Legend**

- 0.9 ha Landfilling Area
- Existing 2023 Contours
- 2010 Greenview Design
- Proposed Expansion Contours
- Roadway
- Vegetation
- Buffer Area
- Fill Area
- Expansion Area



						<p>PROJECT <b>Black Donald - WDS</b></p> <p style="text-align: center;">~</p> <p style="text-align: center;"><b>The Township of Greater Madawaska</b></p>	<p>CLIENT No.:</p> <p>DRAFTED: QS</p> <p>DESIGNED: QS</p> <p>REVIEWED: KM</p> <p>APPROVED: KM</p>	<p>NORTH</p>	<p>SCALE</p> <p style="text-align: center;">1:1,500</p>
					<p>DRAWING <b>PURPOSED EXPANSION DESIGN</b></p> <p style="text-align: center;"><b>FINAL</b></p>				<p>DRAWING#</p> <p style="font-size: 24px; font-weight: bold;">2</p>
No.	YYYY-MM-DD	BY	DESCRIPTION		Jp2g PROJECT No.: 22-6213A				

DWG NAME: J:\6-ENVIRONMENTAL\ACTIVE\2022\22-6213A - GREATER MADAWASKA WDS\DRAWINGS\BLACK DONALD\CAD FILES\2024\EXISTING CONDITIONS 2024 WITH EXPANSION.DWG LAYOUT.TAB.1\X17 CROSS SECTION SAVED ON 2024-10-01

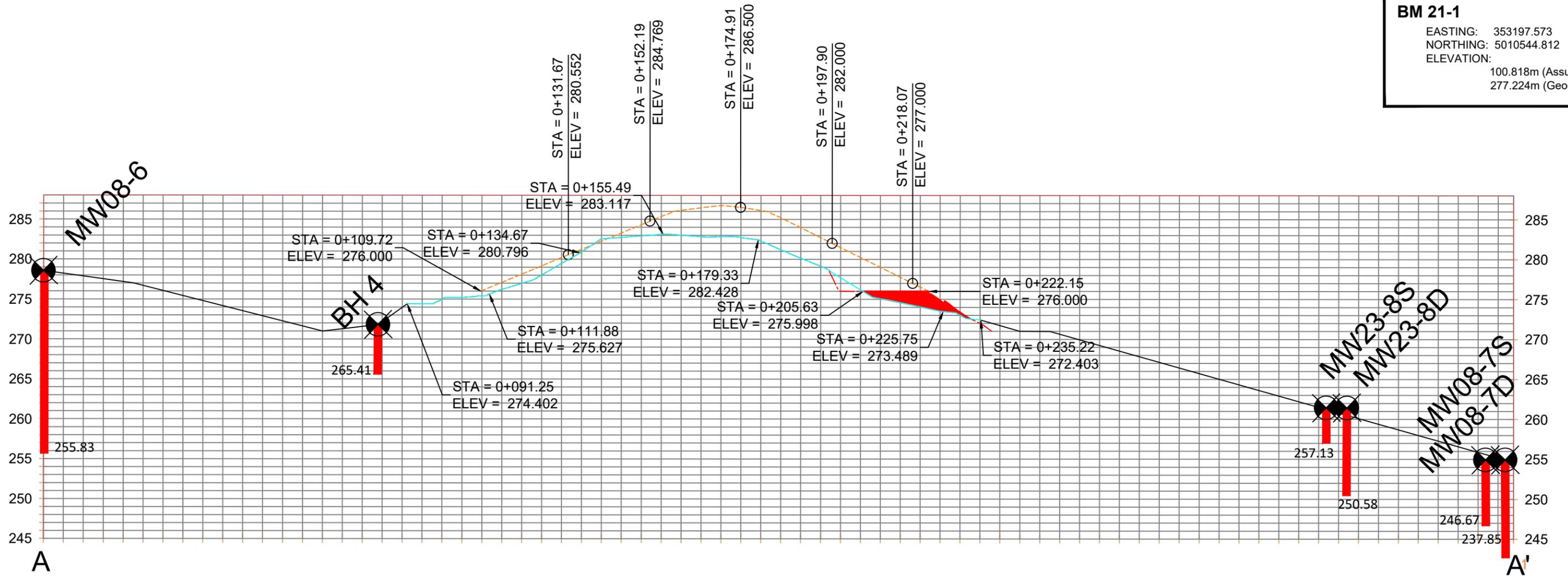
**NOTES**

1. BASE CONTOURS IN PROPOSED EXPANSION AREA FROM JP2G SURVEY DATED APRIL 18 2023
2. EXPANSION DESIGN CAPACITY= 39400m<sup>3</sup>. WHICH DOES NOT INCLUDE FINAL COVER APPLICATION 0.45m
3. EXPANSION DESIGN CONTOURS AT 12:1 SLOPE FROM ELEVATION 286m TO TIE IN. PEAK ELEVATION= 287.00m.
4. EXPANSION DESIGN CONTOURS START AT 276M A 4:1 SLOPE TO ELEVATION 286M
5. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.
6. EXPANSION DESIGN CONTOURS SHOWN ARE TO TOP OF WASTE.

**Legend**

- Expansion Fill Profile
- Expansion Contours
- 2024 Existing Ground Contours
- Monitoring Well
- Approximate terrain Outside of survey

**BM 21-1**  
 EASTING: 353197.573  
 NORTHING: 5010544.812  
 ELEVATION:  
 100.818m (Assumed)  
 277.224m (Geodetic)



No.	YYYY-MM-DD	BY	DESCRIPTION

PROJECT No.: 22-6213A

**Black Donald - WDS**  
 ~  
**The Township of Greater Madawaska**

DRAWING: **PROFILE VIEWS OF THE EXISTING AND DESIGN CONTOURS**

CLIENT No.:  
 DRAFTED: QS  
 DESIGNED: QS  
 REVIEWED: KM  
 APPROVED: KM

SCALE: 1:1,000

DRAWING# **3**

# Appendix C

## Borehole Logs

<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 21-373	<b>BOREHOLE:</b> 1	1 of 1
<b>HYDROGEOLOGICAL INVESTIGATION</b> Black Donald Landfill FOR: Township of Brougham		<b>DATE:</b> 13 July 2001 <b>GEOLOGIST</b> BJS <b>ELEVATION</b> 93.4 m	

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	SAMPLE						N VALUE				WATER CONTENT (%)						
				NUMBER	INTERVAL	TYPE	N VALUE	% WATER	% REC	% RQD										
											15	30	45	60	10	20	30	40		
1		<b>SAND</b> Reddish and medium brown fine sand, trace to some medium and coarse sand, trace fine and coarse gravel, trace silt, subtle laminations, moist, compact. -occasional cobbles observed below 0.6 m.  -heavy oxidation observed below 1.2 m.	1	SS	20	2	80													
1.5		2	SS	25	3	70														
		3	SS	37/	8	50														
2		<b>MARBLE BEDROCK</b> Light grey to whitish marble bedrock, massive, pepper appearance, some oxidation along fractures between about 1.7 m and 3.1 m. Weathered section - broken rock between about 1.7 m and 1.9 m. Open fracture with oxidation at about 2.10 m to 2.12 m. Minor oxidation along fracture at about 2.8 m.	4	HQ	0.08m		100	78												
3		5	HQ			96	100													
4		6	HQ				106	96												
5		7	HQ				100	82												
7.7	Borehole terminated at 7.69 m in marble bedrock.																			

Project No: 10392-001  
 Project: Black Donald Waste Disposal Site  
 Client: Township of Greater Madawaska  
 Location: Black Donald  
 Logged By: D.Bucholtz

**Log of Borehole: BH2**

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 98.984m						Well Equipped with lockable steel casing and weather proof lock.
0.82		Top Soil Black, organic, dry, with rootlets	-0.15	22	SS		Concrete	Stick-up = 0.82
1.64		Sand Fine, loose, dry	-0.61		HQ		0.05m dia. PVC	
2.46		Marble Bedrock Light grey to white with black specks.			HQ		Bentonite	
2.46 - 2.74		Fractures from 1.52m to 2.74m.			HQ			
2.74 - 3.35		Fractures oxidized.						
3.35 - 4.88		Mostly competent, fractures @ 3.35m, 4.88m, 6.40m.			HQ			WL October 8, 2002 = 4.18m
4.88 - 6.40					HQ		Silica Sand	
6.40 - 7.08			-7.08		HQ			
7.08		End of Borehole						

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 23, 2002

Checked by: B.Harman

Sheet: 1 of 1

185 Concession Street  
 Lakefield, ON, Canada  
 K0L 2H0

Project No: 10392-001 **Log of Borehole: BH3**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
ft -3 -2 -1 0	m -1 0	Ground Surface - 99.004m	1					Well Equipped with lockable steel casing and weather proof lock.
0		<b>Sand</b> Fine, brown, loose, dry	-0.3	50	SS			Stick-up = 0.86 Concrete
1		<b>Marble Bedrock</b> Light gray to white with black specks.				HQ		0.05m dia. PVC
2		Fractures with sand and root from 0.30m to 2.85m.				HQ		Bentonite
3		Fractures oxidized.				HQ		
4		Mostly competent, fractures @ 4.17m, 5.94m, 7.01m, 7.47m.				HQ		WL October 8, '02 = 3.53m
5						HQ		
6						HQ		
7						HQ		Silica Sand
8						HQ		
8			-8.53			HQ		Screen = 1.52m x 0.052m
29		End of Borehole						

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 25, 2002

Checked by: B.Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
K0L 2H0

Project No: 10392-001 **Log of Borehole: BH4**

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: Black Donald Logged By: D.Bucholtz

Depth	Symbol	Description	Elev.	N Value	Method	Type	Well Installation	Remarks
0		Ground Surface - 95.962m	.1					Well Equipped with lockable steel casing and weather proof lock.
0.10		<b>Sand</b> Medium, brown, dry, with rootlets in top 0.10m	-0.61	50 (0.15m)		SS	Concrete	Stick-up = 0.84
1		<b>Marble Bedrock</b> Light grey to white with black specks.		-		HQ	0.05m dia. PVC	
2		Heavily fractured from 0.61m to 3.04m.		-		HQ	Bentonite	
3		Soft, brittle, verticle fracture with sand from 3.66m to 4.27m		-		HQ		
4		Fractures oxidized.		-		HQ		
5		Mostly competent, fractures @ 4.72m, 5.64m, 6.25m.		-		HQ		Wl. October 8, 02 = 4.08m
6				-		HQ		
7			-7			HQ		
7		End of Borehole						

Drill Method: CME 75 Diamond Bit Coring

Drill Date: September 23, 2002

Checked by: B.Harman

Sheet: 1 of 1

185 Concession Street  
Lakefield, ON, Canada  
K0L 2H0



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 68 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-5

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m		Ground Surface						Stick-up = 0.89 m
-4								Concrete
-2								Bentonite Chips
0		<b>Top Soil</b> Dark brown, organic, dry, loosely compacted.	1	AS	40			
2	1	<b>Fine to Medium Sand</b> Light brown to grey, fine to medium sand, dry, loosely compacted.	2	HQ	80			
4								
6								
8		<b>Marble Bedrock</b> Light grey to white with black specks, marble bedrock.	3	HQ	100			
10	3							
12		Oxidized fractures from 1.83 m to 2.82 m, and from 11.25 m to 12.50 m.	4	HQ	90			
14		Mostly competent, fractures from 6.55 m to 11.12 m.						
16	5							
18								
20								
22	7							
24								
26								
28								
30	9							
32								
34								
36	11							
38								
40								
42	13							
44		End of Borehole						Well screen = 3.05 m x 0.05 m
								Water level June 5, 2008 = 12.85 m.

Drilled By: Lantech Drilling Ltd.

Drill Method: CME 75 Diamond Bit Coring

Drill Date: June 2, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 59 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-6

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
						0 15 30 45 60		
ft m								
4		Ground Surface					Stick-up = 0.87 m	
0		<b>Top Soil</b> Dark brown, organic, dry, loosely compacted.	1	AS	25		Concrete	
2	1	<b>Fine to Medium Sand</b> Light brown, fine to medium sand, dry, loosely compacted.	2	HQ	100		Bentonite Chips	
6		<b>Marble Bedrock</b> Light grey to white with black specks, marble bedrock.						
8		Heavily fractured from 0.05m to 1.45m.	3	HQ	100			
10	3	Oxidized fractures @ 3.81m, 4.17m, 5.28m, 5.59m, and 7.48m.						
12			4	HQ	100		Silica Sand	
14								
16	5							
18			5	HQ	95		Water level June 5, 2008 = 5.50 m	
20								
22	7							
24			6	HQ	100			
26								
28								
30	9		7	HQ	100			
32								
34			8	HQ	100			
36	11							

Drilled By: Lantech Drilling Ltd.

Drill Method: CME 75 Diamond Bit Coring

Drill Date: June 3, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-6

Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments	
Depth	Symbol	Description	No.	Type	% R	SPT N-Value			
						0 15 30 45 60			
38			9	HQ	100				
40			12						
42									
44									
46			14						
48									
50									
52			16						
54									
56									
58									
60			18						
62									
64									
66			20						
68									
70									
72	22								
74									
76		End of Borehole							

Well screen = 6.10 m x 0.05 m

Drilled By: Lantech Drilling Ltd.

Drill Method: CME 75 Diamond Bit Coring

Drill Date: June 3, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 2 of 2



# Greenview

ENVIRONMENTAL MANAGEMENT

Greenview Environmental Management Limited  
 69 Cleak Avenue, P.O. Box 100  
 Bancroft, Ontario K0L 1C0  
 t: (613) 332-0057  
 f: (613) 332-1767  
 e: solutions@greenview-environmental.ca

## Log of Monitoring Well: MW08-7

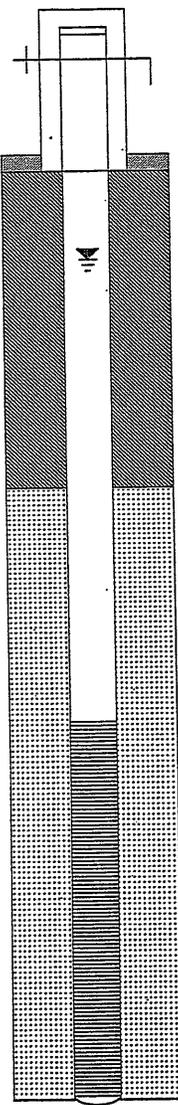
Project No.: 102.08.014

Project: Black Donald Waste Disposal Site

Client: Township of Greater Madawaska

Location: See Site Plan

SUBSURFACE STRATA PROFILE			SAMPLE				Well Completion Details	Comments
Depth	Symbol	Description	No.	Type	% R	SPT N-Value		
ft m						0 200 400 600		
4		Ground Surface						
0		Medium Sand and Gravel Brown, medium sand with small to medium gravel, wet, compacted.	1	AS				
2		Fine to Medium Sand and Gravel Light brown, fine to medium sand with small to medium gravel, wet, compacted.	2	SS	10			
4			3	SS	5			
6			4	SS	15			
8								
10	3	Fine to Medium Sand Light brown, fine to medium sand, wet, compacted, small to medium cobble at 3.05 m.	5	SS	50			
12								
14								
16	5							
18			6	SS	10			
20								
22								
24	7		7	SS	75			
26								
28		End of Borehole						



Drilled By: Lantech Drilling Ltd.

Drill Method: Hollow Stem Augers

Drill Date: June 5, 2008

Logged By: J. Bailey

Checked By: T. Peters

Sheet: 1 of 1

PROJECT No: 22-6213B

DATE: 30 Oct, 2023

X COORDINATE: -76.867887

SITE: Black Donald WDS

LOGGED BY: QS

Y COORDINATE: 45.232852

CLIENT: Township of Greater Madawaska

TOTAL DEPTH: 15.85

ELEVATION: 254.2

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
0			0.71m stick up Ground Surface				254.2
0.71			<b>TOPSOIL:</b> Dry, Brown, Medium grain sand with small and small cobble				253.3
1.0			<b>SAND:</b> Wet, Brown Medium grain sand				
3.0			<b>SAND:</b> Damp, brown, medium grain sand				250.5
4.0							
5.0							
6.0							
7.0							
8.0							
9.0							

NOTES Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: 13.02

Reviewed By: GM

FILE

**PROJECT No:** 22-6213B  
**SITE:** Black Donald WDS  
**CLIENT:** Township of Greater Madawaska

**DATE:** 30 Oct, 2023  
**LOGGED BY:** QS  
**TOTAL DEPTH:** 15.85

**X COORDINATE:** -76.867887  
**Y COORDINATE:** 45.232852  
**ELEVATION:** 254.2

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
10	<p>#2 Silica Sand</p> <p>1 1/2" Schedule 40 PVC Riser</p>		<b>BEDROCK:</b> Grey, granite				244.5
16							238.4
19							

**NOTES** Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: 13.02

Reviewed By: GM

FILE

PROJECT No: 22-6213B

DATE: October 30, 2023

X COORDINATE: -76.8692091

SITE: BLACK DONALD WDS

LOGGED BY: QS

Y COORDINATE: 45.23240962

CLIENT: Township of Greater Madawaska

TOTAL DEPTH: 19.81

ELEVATION: 270.31

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
0			STICK UP 0.77m Ground Surface				270.3
0.77			<b>TOPSOIL:</b> Wet, Dark Brown, Sandy with Roots				269.7
1.23			<b>Sand:</b> Dry, redish brown, medium grain sand with Stones and cobble				
2.00			<b>SAND:</b> Dry, redish brown, medium grain sand				
3.23			<b>BEDROCK:</b> Granite, Grey, black, red in colour				267.0
11							

NOTES Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: NA

Reviewed By: GM

FILE



PROJECT No: 22-6213B

DATE: October 30, 2023

X COORDINATE: -76.8692091

SITE: BLACK DONALD WDS

LOGGED BY: QS

Y COORDINATE: 45.23240962

CLIENT: Township of Greater Madawaska

TOTAL DEPTH: 19.81

ELEVATION: 270.31

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
12			STICK UP 0.77m				250.5
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							

NOTES Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: NA

Reviewed By: GM

FILE



PROJECT No: 22-6213B

DATE: October 30, 2023

X COORDINATE: -76.869166

SITE: BLACK DONALD WDS

LOGGED BY: QS

Y COORDINATE: 45.2325

CLIENT: Township of Greater Madawaska

TOTAL DEPTH: 13.72

ELEVATION: 270.56

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
0			0.92m STICK UP Ground Surface				270.6
0.92			<b>TOPSOIL:</b> Wet, Dark Brown, Sandy with Roots				270.0
0.92 - 3.4			<b>Sand:</b> Dry, reddish brown, medium grain sand with Stones and cobble				
3.4 - 4.0			<b>SAND:</b> Dry, reddish brown, medium grain sand				
4.0 - 13.72			<b>BEDROCK:</b> Granite, Grey, black, red in colour				

NOTES Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: NA

Reviewed By: GM

FILE

**PROJECT No:** 22-6213B  
**SITE:** BLACK DONALD WDS  
**CLIENT:** Township of Greater Madawaska

**DATE:** October 30, 2023  
**LOGGED BY:** QS  
**TOTAL DEPTH:** 13.72

**X COORDINATE:** -76.869166  
**Y COORDINATE:** 45.2325  
**ELEVATION:** 270.56

DEPTH (m)	WELL CONSTRUCTION	LEGEND	DESCRIPTION	ODOUR	PID (ppmv)	SAMPLE LABEL	ELEV. (m)
10							256.9
11							
12							
13							
14							
15							
16							
17							
18							
19							

**NOTES** Drill Method: Hollow-Stem Auger, 9" till bedrock 4" till bottom

Descriptions are based on observations and hand testing of grab samples. Mechanical Tests were not performed unless otherwise stated.

First Occurrence of Groundwater: NA

Static Groundwater Level: NA

Reviewed By: GM

FILE

Appendix D  
Photographs  
2025



BH1



BH2



BH4



MW-08-5



MW 08-6



MW 08-7S (Previously MW 08-7)



MW08-7D



BH23-8S + 8D



SW2



SW4



SW5



SW 8



SW 9

# Appendix E

## Sampling Protocol

## STANDARD SAMPLING PROTOCOL

The following is a description of the monitoring procedures and protocols used for groundwater and surface water monitoring for landfill sites.

### ***Equipment Cleaning and Calibration***

Regardless of matrix, prior to traveling to the site to be sampled, all equipment such as water level indicators and multi-parameter meters must be cleaned and calibrated as specified by the equipment manufacturer. Details of the cleaning and calibration should be recorded in the field notes.

## **GROUNDWATER**

### ***Monitoring Well Assessment***

Provide an assessment of the status of all monitoring wells at the site.

Note any changes to the well and/or protective casing and record the physical condition of the well; and

Label all observation wells clearly and accurately on both the protective casing and well pipe.

### ***Groundwater Monitoring***

Maintain and use an accurate, up-to-date list of all observation wells to be monitored.

Check all field equipment for cleanliness; and

Wear personnel protective equipment as required (i.e., gloves, protective glasses, splash guards) during all phases of work, and follow any appropriate health and safety plan procedures.

### ***Gas Detection in Wells (Prior to Measuring Water Levels)***

Turn on gas meter and prepare for sampling atmospheric condition inside monitoring well.

Remove protective casing cover and well cap avoiding introduction of foreign materials into the well.

Immediately insert the probe attached to the gas meter into the well and wait for readings to stabilize.

Record the measurement in the appropriate column on the field data sheet or field book.

### ***Water Level Measurements (Prior to Purging)***

Record water level measurements prior to purging or sampling when required.

Do not move dedicated sampling devices such as the "Waterra" inertial pump prior to measuring the water level unless the well diameter dictates removal; reference the measurement from the same location each time (marked location or lowest point on pipe).

Lower the tape/probe into the wells - record the depth to water when the indicator (audible/visual) shows the water level has been reached.

Measure the water level twice by raising and lowering the tape/probe; and

Record the measurement to the nearest cm (0.5 cm) in the appropriate column on the field data sheet or field book.

### ***Well Purging (Prior to Sampling)***

The purpose of purging is to remove the stagnant water from within a monitor (removal of all stagnant water) so that a representative water sample may be collected. The procedures for purging are as follows.

Purge the well only after water levels have been confirmed.

Lift the tubing off the bottom of the well and "pump" at a minimum all stagnant water from the well into a graduated container such as a bucket, pail or cylinder so that the purged volume can be measured and recorded.

For low-yield wells, it is expected that either "no purge sampling techniques or low flow purging will be utilized (avoid purging well dry).

Under normal circumstances purged water may be discarded on the ground, away from the well to avoid the potential of water seeping back into the well; and

Allow a sufficient recovery period before sampling (not more than 48 hours).

### ***Field Measurements***

Field measurements are to be collected and recorded as outlined in the Environmental Compliance Approval or the approved monitoring program. Typically, these include at a minimum: temperature, pH and conductivity.

### ***Well Sampling***

Collect the water sample as soon as practical (not more than 48 hours) after purging starting at the least contaminated location and proceeding to the most contaminated.

Lift tubing and check valve off bottom of well to avoid introducing unnecessary sediment into the sample and transfer some representative sample water into a clean, well rinsed container to conduct measurements of field parameters.

Lift the tubing and gently transfer a sample into a clean container and thoroughly mix to form a single representative sample.

Transfer the sample into a pre-labelled sample bottle; labelling to consist of at a minimum, the project number, well ID and the date.

For samples that require filtering, attach the disposable filter onto the end of the tubing (typically a 0.45-micron membrane filter or as otherwise specified should be used).

Attempt to keep sample agitation to a minimum during sample transfer.

Store samples in a cooler, with ice packs to keep cool.

Transport samples to laboratory within the maximum hold time established by the laboratory (typically within a 48-hour period).

### ***Volatile Organic Compound (VOC) Sampling***

Volatile Organic Compounds (VOC) can be easily lost during sample collection, storage, and transportation. The following sampling and handling protocols are adhered to.

VOC samples are to be collected in special containers provided by the laboratory. These typically include glass vials, preferably amber, with a minimum capacity of 20 ml and sealed with Septum tops.

Vials must be filled just to overflowing in such a manner that no air bubbles pass through the vial as it is being filled (this is easier to accomplish by inserting a 4' length of ¼ " poly tubing into the existing Wattera tubing and filling the vial from the ¼" tubing).

Vials must then be sealed with the cap so that no air bubbles are entrapped within it; the septum is placed with the Teflon side face down toward the inside of the bottle.

Check for the presence of air bubbles by inverting the vial and tapping on hard surface; if air bubbles are present, discard the sample and re-sample.

All VOC samples must be preserved as specified by the laboratory (typically with 1 to 2 drops of Hydrochloric Acid (HCl)) and refrigerated or stored on ice until analysed; and

VOC samples should be submitted in duplicate at a ratio specified in the approved monitoring program (typically 1:10)

### ***Surface Water Sampling (General)***

Surface water samples should be collected at the same designated location during each sample event (do not collect samples from any station which is frozen, stagnant or otherwise not representative of normal conditions).

If you must stand in the stream, position yourself downstream of the sample location to avoid contaminating the sample with sediment, debris, and other floating materials.

All equipment must be thoroughly rinsed with distilled water at the beginning of each station to avoid cross-contamination.

Wear gloves as required to handle the sample bottles.

Fill all bottles using an unpreserved transfer bottle (to avoid overflowing pre-preserved bottles).

When sampling for dissolved metals, the sample must be filtered and placed in a separate metals bottle, while sampling for total metals, the sample is placed in a common bottle for metals that is provided by the laboratory.

Label and store all samples in the same manner as for groundwater samples; and

Conduct field measurements (these typically include temperature, pH, conductivity, Dissolved Oxygen and Flow).

### ***Flow Measurements (General)***

Discharge flow measurements must be taken at designated stations.

### ***QA/QC Water Samples***

A field quality assurance and quality control program for all monitoring events will be established as follows and or as dictated in the approved monitoring program.

Where groundwater or surface water samples are collected, and if stipulated in the approved monitoring program, a field blank in which a set of sample bottles is filled with distilled water at a known site or monitoring station is submitted to the laboratory for analysis along with the samples

Where VOC samples are taken, a trip blank, in which 1 set of VOC vials are filled with distilled water (at the laboratory or office) prior to going to the field and accompanies the sample bottles until they are returned to the lab; and

Duplicate of as outlined in the approved monitoring program or 1 duplicate for every 10 samples (do not identify the sample ID number to the laboratory, but have it recorded in the field notes) use the sampling technique as for observation wells.

## ***SAMPLING***

### ***Station Sampling Order***

The stations will be sampled beginning with those wells exhibiting the lowest chemical concentrations and then moving on to wells with greater chemical concentrations.

### ***Monitoring Periods***

The monitoring periods are as recommended in either the approved monitoring program or the Environmental Compliance Approval.

### ***Analytical Parameters***

Analysis will be as recommended in either the approved monitoring program and or the Environmental Compliance Approval.

### ***Gas Detection of On-site Buildings***

Gas detection in on-site buildings is to be included as part of regular monitoring.

## Appendix F

# Historic Static Levels, Ground and Surface Water Analysis



**Groundwater Elevations  
Black Donald Waste Disposal Site**

Monitor	Ground Elevation (m) <sup>1</sup>	Top of Pipe Elevation (m) <sup>1</sup>	Stick-Up (m)	Depth of Well (m) <sup>2</sup>	Well Diameter (mm)	Water Elevation (m)																				
						24-May-16	31-Aug-16	26-Oct-16	08-May-17	18-Sep-17	25-Oct-17	02-May-18	14-Aug-18	30-Oct-18	14-May-19	20-Aug-19	16-Oct-19	23-Apr-20	19-Aug-20	27-Oct-20	19-May-21	19-Aug-21	04-Nov-21	04-May-22	18-Aug-22	27-Oct-22
BH1	93.60	94.18	0.58	8.25	50.8	87.47	87.47	87.36	90.90	88.09	88.37	90.08	88.02	87.81	89.87	88.10	87.12	89.91	89.95	88.99	89.53	88.70	88.72	89.92	89.20	88.72
BH2	98.98	99.79	0.81	7.06	50.8	95.77	95.27	95.02	96.91	95.49	95.88	96.63	95.32	95.23	96.39	94.85	94.49	96.43	93.83	95.82	96.04	95.49	95.88	96.46	96.14	95.58
BH3	99.80	100.67	0.87	8.61	50.8	97.28	96.74	97.26	97.13	96.65	96.83	97.05	96.72	96.62	96.96	96.22	95.67	96.94	97.05	96.93	96.83	96.63	-	-	-	-
BH4	95.96	96.80	0.84	6.97	50.8	93.20	92.47	92.66	94.10	93.01	93.36	93.71	92.61	92.55	93.57	92.54	92.05	93.53	93.32	93.33	93.32	92.93	93.30	93.39	91.82	93.13
MW08-5	105.03	106.06	1.03	12.52	50.5	92.62	92.56	92.55	92.64	92.56	92.56	92.56	92.57	92.56	92.56	92.56	92.56	92.57	92.57	92.57	92.56	92.57	92.55	92.56	92.66	92.55
MW08-6	102.23	103.22	0.99	22.74	50.8	97.71	97.85	97.89	97.94	97.81	97.88	97.90	97.91	97.72	97.90	97.57	97.44	97.90	97.85	97.93	97.85	97.77	97.91	97.87	97.62	97.84
MW08-7	77.785	78.717	0.93	7.70	50.8	77.86	74.73	74.88	78.08	77.40	77.34	77.98	76.33	75.33	78.00	76.47	75.39	77.95	76.27	75.63	77.83	77.03	76.72	77.90	77.44	77.14

Notes:  
 1. Elevations surveyed by SGS Lakefield Research Ltd.  
 2. Depth of well below ground surface (m).  
 All elevations are relative to a site specific benchmark elevation of 100.00 m.  
 \*- indicates water level is not available.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	BH1														5-year Trends
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	04-Nov-21	04-May-22	27-Oct-22	(sparkline)
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	780	815	773	790	733	680	703	670	613	724	722	800	602	646	
Aluminum	0.03	0.065	0.1	0.060	0.10	0.12	0.11	0.10	0.10	0.10	0.12	0.09	0.06	0.07	0.09	0.06	0.07	
Ammonia, Total (as N)	0.02	N/L	N/L	7.27	8.79	6.23	7.20	6.48	5.94	5.85	2.66	5.03	1.39	6.03	5.54	5.27	1.91	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.01559	0.01119	0.00611	0.00915	0.00150	0.00686	0.01208	0.00579	0.01407	0.00646	0.01656	0.01735	0.00646	0.00464	
Barium	0.019	0.3	1	0.142	0.170	0.213	0.196	0.152	0.144	0.121	0.131	0.111	0.088	0.121	0.122	0.116	0.076	
Boron	0.01	1.3	5	1.19	1.37	1.33	1.53	1.62	1.48	1.66	1.53	1.20	0.911	1.68	1.14	1.29	0.610	
Cadmium	0.000015	0.0013	0.005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	0.000017	< 0.000015	< 0.000028	< 0.000028	< 0.000028	< 0.000015	0.000015	
Calcium	79	N/L	N/L	186	215	288	252	225	200	203	220	196	173	214	187	175	133	
Chloride	0.8	125	250	69.0	13.3	56.4	55.0	59.2	46.4	49.7	50.5	33.5	37.5	43.4	37.7	33.8	20.6	
Chromium	0.001	0.013	0.05	< 0.002	0.002	0.001	< 0.001	< 0.002	< 0.001	< 0.001	0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	0.0004	N/L	N/L	0.0072	0.0053	0.0077	0.0050	0.0044	0.0097	0.0039	0.0072	0.0060	0.0026	0.0066	0.0054	0.0071	0.0019	
Chemical Oxygen Demand	5	N/L	N/L	62	61	62	69	66	48	58	40	45	29	63	33	32	15	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	160	1170	1106	1150	1060	1041	1001	909	913	1086	1102	1044	741	924	
Copper	0.002	0.5	1	< 0.002	< 0.002	< 0.002	0.003	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0015	< 0.002	0.0026	0.0015	
Dissolved Organic Carbon	2.1	3.6	5	16.0	17.9	17.6	21.1	18.7	17.4	22.1	17.1	16.2	9.7	18.4	18.4	14.4	7.7	
Hardness (as CaCO <sub>3</sub> )	209	357	500	592	684	886	784	705	621	644	687	614	544	672	596	550	445	
Iron	0.007	0.2	0.3	7.40	14.60	23.60	17.70	6.31	6.70	0.898	3.19	5.03	0.668	0.014	4.87	5.24	1.04	
Magnesium	2.8	N/L	N/L	30.9	35.8	40.4	37.4	34.7	29.5	33.1	33.3	30.2	27.2	33.5	31.2	27.6	27.4	
Manganese	0.001	0.03	0.05	1.80	1.97	3.68	2.10	1.15	1.25	1.06	1.10	1.07	0.190	1.27	0.917	1.17	0.315	
Nitrate (as N)	0.10	2.6	10	0.2	44.2	0.10	0.32	0.73	0.05	1.06	0.60	0.89	0.48	1.88	0.31	0.27	0.63	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	7.11	6.84	6.81	6.83	6.14	6.81	7.15	7.08	6.94	7.44	7.19	7.25	6.86	7.13	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	0.018	< 0.001	0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	
Phosphorus, Total	0.03	N/L	N/L	0.04	0.04	0.05	0.02	0.06	0.02	0.05	0.02	0.02	0.03	0.03	0.03	< 0.01	0.02	
Potassium	2.4	N/L	N/L	15.0	17.8	18.6	17.4	16.9	15.4	15.3	15.2	13.7	10.4	14.1	12.5	11.9	7.8	
Silicon	4.38	N/L	N/L	9.24	11.10	12.30	11.80	9.69	8.63	9.10	8.78	9.90	9.02	9.80	10.9	10.4	7.44	
Sodium	3	101.3	200	75.2	82.4	76.3	76.3	86.8	71.3	71.3	60.2	70.0	141	96.8	138	86.3	120	
Strontium	0.26	N/L	N/L	0.509	0.625	0.680	0.665	0.618	0.521	0.595	0.592	0.500	0.467	0.585	0.554	0.473	0.417	
Sulphate	12	256	500	31	93	24	29	40	36	42	36	42	68	62	55	49	38	
Total Dissolved Solids	231	366	500	895	946	875	909	818	806	823	773	703	872	848	857	707	715	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	10.4	13.6	8.8	8.9	8.2	7.7	7.3	3.4	5.8	1.9	6.0	5.9	5.9	2.3	
Zinc	0.005	2.5	5	< 0.005	< 0.005	< 0.005	0.007	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.005	

Notes:

1. Reasonable Use Concept (RUC) criteria.
  2. Ontario Drinking Water Standards (ODWS).
  3. Results obtained from laboratory analysis.
  4. Results obtained from field analysis.
- All results are expressed in mg/L unless otherwise stated.  
 Bold and shaded values exceed the ODWS.  
 Bold and Italic values exceed RUC limits.  
 N/L indicates No Limit.  
 \*\*\* indicates results obtained from lab analysis  
 \*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	BH2 (Background)														5-year Trends (sparkline)
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	04-Nov-21	04-May-22	27-Oct-22	
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	232	225	240	218	210	207	220	207	208	201	221	240	238	224	
Aluminum	0.03	0.065	0.1	0.02	<b>0.28</b>	<b>0.07</b>	0.05	0.05	0.03	0.05	0.06	0.05	0.02	0.03	0.06	0.03	0.05	
Ammonia, Total (as N)	0.02	N/L	N/L	< 0.01	< 0.01	< 0.01	< 0.01	0.03	0.03	0.04	0.02	0.03	0.01	0.01	0.02	0.01	< 0.01	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.00000	0.00006	0.00007	0.00008	0.00002	0.00021	0.00035	0.00035	0.00032	0.00029	0.00006	0.00010	0.00007	0.00005	
Barium	0.019	0.3	1	0.014	0.019	0.034	0.020	0.017	0.018	0.020	0.017	0.018	0.019	0.019	0.021	0.020	0.020	
Boron	0.01	1.3	5	< 0.005	0.007	< 0.005	0.019	0.009	0.005	0.055	0.010	0.010	< 0.005	0.010	0.010	0.012	0.005	
Cadmium	0.000015	0.0013	0.005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	0.000016	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000016	0.000014	
Calcium	79	N/L	N/L	77.8	88.6	111	92.1	88.0	79.0	90.3	89.7	91.1	89.7	97.8	98.3	97.4	89.5	
Chloride	0.8	125	250	< 0.5	86.8	< 0.5	0.8	< 0.5	0.7	0.8	1.1	1.1	1.1	0.9	0.7	< 0.5	0.7	
Chromium	0.001	0.013	0.05	< 0.002	< 0.002	0.0009	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	0.0004	N/L	N/L	0.0002	0.0006	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0002	0.0004	0.0003	0.0002	0.0002	0.0003	0.0002	0.0001	
Chemical Oxygen Demand	5	N/L	N/L	< 5	< 5	< 5	< 5	5	< 5	< 5	< 5	6	< 5	< 5	< 5	< 5	< 5	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	320	319	298	322	156	286	275	277	248	306	299	401	260	324	
Copper	0.002	0.5	1	0.003	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0012	0.002	0.0018	0.0009	
Dissolved Organic Carbon	2.1	3.6	5	1.3	1.3	1.5	2.7	1.5	2.3	3.2	2.1	2.6	2.0	2.1	<b>5.7</b>	2.2	0.8	
Hardness (as CaCO <sub>3</sub> )	209	357	500	205	235	293	243	232	207	242	236	241	236	257	259	258	234	
Iron	0.007	0.2	0.3	< 0.005	0.016	< 0.005	0.007	0.009	0.058	0.035	< 0.005	0.007	< 0.005	< 0.005	0.021	< 0.005	0.005	
Magnesium	2.8	N/L	N/L	2.55	3.27	3.85	3.07	2.81	2.40	3.97	2.75	3.25	2.84	3.05	3.11	3.51	2.59	
Manganese	0.001	0.03	0.05	< 0.001	0.003	0.001	< 0.001	< 0.001	0.001	<b>0.030</b>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Nitrate (as N)	0.10	2.6	10	< 0.1	0.1	< 0.05	0.12	< 0.05	< 0.05	0.18	0.14	0.12	0.06	0.11	< 0.05	0.09	0.16	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	<b>6.06</b>	7.60	7.69	7.65	6.70	7.62	7.81	7.97	7.89	8.28	7.56	7.46	7.64	7.51	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	0.005	< 0.001	< 0.001	0.006	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	
Phosphorus, Total	0.03	N/L	N/L	0.02	0.02	0.02	0.04	0.03	0.01	0.03	0.01	0.02	0.02	0.02	0.01	0.02	0.03	
Potassium	2.4	N/L	N/L	2.2	3.0	3.3	3.3	2.8	2.6	3.1	3.0	3.2	3.1	2.9	3.1	3.1	2.7	
Silicon	4.38	N/L	N/L	5.15	6.26	7.17	7.07	5.89	5.41	5.81	5.74	6.76	6.27	6.49	6.71	7.02	4.23	
Sodium	3	101.3	200	2.7	3.7	3.3	3.1	2.8	2.5	4.6	2.7	3.0	2.8	2.6	3.2	3.3	2.2	
Strontium	0.26	N/L	N/L	0.145	0.184	0.218	0.189	0.170	0.148	0.191	0.178	0.197	0.173	0.190	0.195	0.205	0.160	
Sulphate	12	256	500	12	31	11	11	12	17	12	17	13	17	13	16	15	10	
Total Dissolved Solids	231	366	500	237	256	261	245	221	230	231	229	225	234	233	242	251	235	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	< 0.1	0.3	0.1	0.2	0.2	0.2	< 0.1	0.1	< 0.1	0.1	0.1	0.1	0.2	< 0.1	
Zinc	0.005	2.5	5	0.009	< 0.005	0.006	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	

Notes:  
1. Reasonable Use Concept (RUC) criteria.  
2. Ontario Drinking Water Standards (ODWS).  
3. Results obtained from laboratory analysis.  
4. Results obtained from field analysis.  
All results are expressed in mg/L unless otherwise stated.  
Bold and shaded values exceed the ODWS.  
Bold and Italic values exceed RUC limits.  
N/L indicates No Limit.  
\*\*\* indicates results obtained from lab analysis  
\*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	BH3											5-year Trends (sparkline)
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	<b>379</b>	<b>405</b>	179	<b>452</b>	194	<b>413</b>	234	326	171	<b>407</b>	303	
Aluminum	0.03	0.065	0.1	0.04	0.05	0.04	<b>0.09</b>	0.05	<b>0.10</b>	0.05	<b>0.11</b>	0.05	0.06	0.04	
Ammonia, Total (as N)	0.02	N/L	N/L	< 0.01	0.01	< 0.01	0.04	0.01	0.02	0.02	0.02	0.02	< 0.01	0.01	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.000002	0.000013	0.000042	0.000075	0.000010	0.000026	0.000130	0.000136	0.000058	0.000055	0.000037	
Barium	0.019	0.3	1	0.077	0.107	0.035	0.116	0.029	0.091	0.037	0.092	0.033	0.135	0.083	
Boron	0.01	1.3	5	0.291	0.444	0.049	0.705	0.052	0.428	0.093	0.721	0.059	0.376	0.208	
Cadmium	0.000015	0.0013	0.005	0.00005	< 0.00002	< 0.000014	0.000030	0.000085	0.000043	< 0.000015	0.000029	< 0.000015	< 0.000028	< 0.000015	
Calcium	79	N/L	N/L	152	201	82.0	219	75.6	188	93.0	195	73.2	200	143	
Chloride	0.8	125	250	8.5	< 0.5	0.6	6.1	0.9	4.6	1.5	6.4	1.0	4.5	1.9	
Chromium	0.001	0.013	0.05	< 0.002	< 0.002	0.0005	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	
Cobalt	0.0004	N/L	N/L	0.0005	0.0019	0.0002	0.0006	< 0.0001	0.0007	0.0002	0.0008	0.0002	< 0.0002	0.0002	
Chemical Oxygen Demand	5	N/L	N/L	13	8	7	20	12	12	10	7	12	12	8	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	691	773	325	730	298	717	426	668	283	649	528	
Copper	0.002	0.5	1	0.003	< 0.002	0.004	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002	0.0021	
Dissolved Organic Carbon	2.1	3.6	5	<b>5.7</b>	<b>7.2</b>	<b>4.5</b>	<b>10.9</b>	<b>3.8</b>	<b>8.5</b>	<b>6.2</b>	<b>8.3</b>	<b>4.5</b>	<b>6.2</b>	<b>5.6</b>	
Hardness (as CaCO <sub>3</sub> )	209	357	500	<b>436</b>	<b>576</b>	230	<b>624</b>	212	<b>538</b>	265	<b>559</b>	207	<b>571</b>	<b>409</b>	
Iron	0.007	0.2	0.3	< 0.005	0.027	< 0.005	0.011	< 0.005	0.015	0.005	0.008	< 0.005	< 0.005	< 0.005	
Magnesium	2.8	N/L	N/L	13.9	18.0	6.15	18.6	5.70	16.5	7.87	17.5	5.90	17.2	12.6	
Manganese	0.001	0.03	0.05	0.007	<b>0.067</b>	0.006	<b>0.048</b>	0.003	0.024	0.001	0.023	0.005	<b>0.036</b>	0.002	
Nitrate (as N)	0.10	2.6	10	0.4	0.1	0.10	0.55	0.07	0.82	0.28	0.11	0.09	0.83	0.75	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	<b>6.01</b>	6.89	7.45	7.00	6.78	6.86	7.64	7.59	7.25	7.50	7.34	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Phosphorus, Total	0.03	N/L	N/L	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.02	
Potassium	2.4	N/L	N/L	1.8	2.3	0.9	3.3	0.8	2.3	1.0	2.1	0.9	2.0	1.8	
Silicon	4.38	N/L	N/L	3.01	3.32	2.41	4.38	2.30	3.43	2.36	3.23	2.52	3.80	3.40	
Sodium	3	101.3	200	11.6	15.2	2.8	15.7	2.3	9.5	2.7	11.7	2.1	6.4	4.0	
Strontium	0.26	N/L	N/L	0.310	0.433	0.153	0.469	0.149	0.387	0.192	0.420	0.154	0.446	0.324	
Sulphate	12	256	500	114	18	14	132	16	181	40	209	16	128	49	
Total Dissolved Solids	231	366	500	<b>531</b>	<b>607</b>	210	<b>608</b>	212	<b>590</b>	272	<b>526</b>	192	<b>547</b>	346	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	0.3	0.5	1.7	0.4	0.2	0.3	0.1	0.3	0.1	0.3	0.2	
Zinc	0.005	2.5	5	0.033	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	

Notes:

1. Reasonable Use Concept (RUC) criteria.
  2. Ontario Drinking Water Standards (ODWS).
  3. Results obtained from laboratory analysis.
  4. Results obtained from field analysis.
- All results are expressed in mg/L unless otherwise stated.  
 Bold and shaded values exceed the ODWS.  
 Bold and Italic values exceed RUC limits.  
 N/L indicates No Limit.  
 \*\*\* indicates results obtained from lab analysis  
 \*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	BH4														5-year Trends
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	04-Nov-21	04-May-22	27-Oct-22	(sparkline)
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	548	459	550	416	360	409	599	505	618	505	320	406	469	251	
Aluminum	0.03	0.065	0.1	0.05	0.04	0.11	0.09	0.08	0.09	0.11	0.13	0.12	0.08	0.05	0.09	0.08	0.14	
Ammonia, Total (as N)	0.02	N/L	N/L	0.03	< 0.01	0.49	0.05	0.02	0.06	1.00	0.57	0.63	0.20	0.01	0.03	0.11	0.12	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.00004	0.00001	0.00091	0.00007	0.00013	0.00008	0.00347	0.00202	0.00170	0.00023	0.00002	0.00008	0.00019	0.00020	
Barium	0.019	0.3	1	0.078	0.068	0.127	0.095	0.059	0.059	0.099	0.090	0.120	0.110	0.062	0.067	0.091	0.117	
Boron	0.01	1.3	5	0.731	0.280	1.42	0.460	0.480	0.327	2.21	1.57	2.96	2.22	0.384	0.245	1.25	0.373	
Cadmium	0.000015	0.0013	0.005	< 0.00002	< 0.00002	0.000020	< 0.000014	< 0.000015	< 0.000015	< 0.000029	0.000092	< 0.000015	0.000065	< 0.000015	< 0.000015	< 0.000015	0.000025	
Calcium	79	N/L	N/L	191	149	252	184	170	163	229	234	291	266	185	181	264	358	
Chloride	0.8	125	250	18.6	11.8	25.7	3.8	16.4	6.9	44.9	25.4	82.5	36.5	4.3	1.7	41.4	10.5	
Chromium	0.001	0.013	0.05	< 0.002	< 0.002	0.0005	< 0.001	< 0.002	< 0.001	< 0.001	0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	0.0004	N/L	N/L	0.0007	0.0008	0.0006	< 0.0001	< 0.0001	0.0002	0.0011	0.0013	0.0016	0.0012	0.0002	0.0001	0.0009	0.0059	
Chemical Oxygen Demand	5	N/L	N/L	23	< 5	30	18	21	< 5	65	29	87	38	7	< 5	27	45	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	851	744	966	737	623	780	887	950	971	1534	681	786	820	1218	
Copper	0.002	0.5	1	0.0050	< 0.002	0.0030	0.0040	0.0020	< 0.002	0.0040	0.0050	0.0070	0.0050	0.0024	0.002	0.0051	0.0037	
Dissolved Organic Carbon	2.1	3.6	5	9.2	3.4	11.8	7.9	6.5	7.2	24.9	15.9	22.0	15.9	6.2	7.8	13.8	12.5	
Hardness (as CaCO <sub>3</sub> )	209	357	500	552	432	729	541	493	461	673	674	860	775	529	509	766	1010	
Iron	0.007	0.2	0.3	< 0.005	< 0.005	< 0.005	0.010	< 0.005	0.007	0.005	0.005	0.005	< 0.005	< 0.005	0.011	< 0.005	0.009	
Magnesium	2.8	N/L	N/L	18.1	14.8	24.2	19.6	16.5	13.0	24.4	21.6	32.2	27.0	16.1	13.8	25.7	27.2	
Manganese	0.001	0.03	0.05	0.006	0.019	0.108	0.195	0.002	0.066	0.015	1.60	0.004	0.852	0.012	0.036	0.010	7.98	
Nitrate (as N)	0.10	2.6	10	1.9	1.8	0.73	0.23	2.37	0.39	0.42	0.14	1.15	0.18	0.51	< 0.05	0.19	0.08	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	6.94	6.91	7.09	6.87	7.67	6.88	7.35	7.31	7.26	6.83	7.01	7.17	7.02	6.98	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	0.005	< 0.001	< 0.001	0.003	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	
Phosphorus, Total	0.03	N/L	N/L	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.02	0.04	0.01	0.02	0.02	
Potassium	2.4	N/L	N/L	8.3	9.6	13.7	13.2	8.9	7.0	13.3	12.4	17.8	15.4	7.8	7.9	11.5	11.4	
Silicon	4.38	N/L	N/L	5.31	6.26	6.72	7.59	4.68	5.11	6.30	6.03	7.86	7.24	5.60	6.14	6.86	5.05	
Sodium	3	101.3	200	25.7	18.1	39.8	23.5	17.5	10.6	40.6	33.9	65.9	55.7	10.9	7.3	30.7	21.9	
Strontium	0.26	N/L	N/L	0.420	0.362	0.525	0.488	0.414	0.385	0.578	0.659	0.794	0.748	0.469	0.449	0.648	0.821	
Sulphate	12	256	500	147	206	122	113	192	101	151	145	233	156	174	95	< 1	455	
Total Dissolved Solids	231	366	500	746	530	736	551	568	518	806	665	927	727	488	470	764	956	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	0.6	0.4	1.1	0.4	0.4	0.3	2.0	1.2	2.0	1.1	0.2	0.2	0.7	1.0	
Zinc	0.005	2.5	5	0.024	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	

Notes:

1. Reasonable Use Concept (RUC) criteria.
  2. Ontario Drinking Water Standards (ODWS).
  3. Results obtained from laboratory analysis.
  4. Results obtained from field analysis.
- All results are expressed in mg/L unless otherwise stated.  
 Bold and shaded values exceed the ODWS.  
 Bold and Italic values exceed RUC limits.  
 N/L indicates No Limit.  
 \*\*\* indicates results obtained from lab analysis  
 \*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	MW08-6 (Background)														5-year Trends (sparkline)
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	04-Nov-21	04-May-22	27-Oct-22	
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	194	173	183	172	180	168	171	162	153	145	160	183	169	161	
Aluminum	0.03	0.065	0.1	0.03	0.02	0.05	0.05	0.05	0.03	0.04	0.05	0.04	<b>&lt; 0.01</b>	0.02	0.04	0.02	0.03	
Ammonia, Total (as N)	0.02	N/L	N/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.03	0.02	0.02	< 0.01	< 0.01	0.04	< 0.01	< 0.01	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.00003	0.00007	0.00013	0.00016	0.00025	0.00012	0.00086	0.00023	0.00021	0.00006	0.00010	0.00049	0.00011	0.00013	
Barium	0.019	0.3	1	0.016	0.017	0.020	0.018	0.019	0.017	0.019	0.019	0.019	0.020	0.020	0.021	0.023	0.026	
Boron	0.01	1.3	5	0.008	0.005	0.005	0.014	0.008	<b>&lt; 0.005</b>	0.012	0.011	0.008	<b>&lt; 0.005</b>	0.008	0.008	0.007	0.008	
Cadmium	0.000015	0.0013	0.005	0.00003	<b>&lt; 0.00002</b>	<b>&lt; 0.000014</b>	<b>&lt; 0.000014</b>	<b>&lt; 0.000015</b>	<b>&lt; 0.000015</b>	<b>&lt; 0.000029</b>	0.000017	<b>&lt; 0.000015</b>	0.000013					
Calcium	79	N/L	N/L	63.8	69.2	82.5	71.1	72.1	61.5	70.9	66.8	65.1	64.5	69.4	71.5	68.5	63.7	
Chloride	0.8	125	250	<b>&lt; 0.5</b>	2.3	<b>&lt; 0.5</b>	0.8	<b>&lt; 0.5</b>	0.7	1.0	1.0	0.9	0.8	0.6	<b>&lt; 0.5</b>	<b>&lt; 0.5</b>	0.5	
Chromium	0.001	0.013	0.05	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	0.0006	<b>&lt; 0.001</b>	<b>&lt; 0.002</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.002</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	
Cobalt	0.0004	N/L	N/L	0.0020	0.0007	0.0003	0.0003	0.0004	0.0005	0.0004	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0007	
Chemical Oxygen Demand	5	N/L	N/L	< 5	< 5	< 5	20	7	< 5	5	< 5	6	< 5	< 5	< 5	5	< 5	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	261	240	129	238	245	286	237	391	192	294	232	257	199	240	
Copper	0.002	0.5	1	0.003	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	0.002	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	<b>&lt; 0.002</b>	0.0019	0.003	0.0022	0.0018	
Dissolved Organic Carbon	2.1	3.6	5	2.0	2.1	2.1	3.3	2.0	2.8	<b>3.9</b>	2.7	3.4	<b>5.5</b>	2.5	<b>9.4</b>	3.1	2.5	
Hardness (as CaCO <sub>3</sub> )	209	357	500	170	184	219	189	192	164	189	178	174	172	186	191	183	170	
Iron	0.007	0.2	0.3	0.063	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	0.016	<b>&lt; 0.005</b>	0.005	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	0.006	0.018	<b>&lt; 0.005</b>	0.009	<b>&lt; 0.005</b>	0.014	
Magnesium	2.8	N/L	N/L	2.58	2.76	3.03	2.76	2.88	2.47	2.90	2.73	2.80	2.62	3.09	2.96	2.91	2.63	
Manganese	0.001	0.03	0.05	<b>0.031</b>	0.002	0.001	0.001	<b>&lt; 0.001</b>	0.001	<b>&lt; 0.001</b>	0.001	0.002	0.002	<b>&lt; 0.001</b>	0.001	<b>&lt; 0.001</b>	0.002	
Nitrate (as N)	0.10	2.6	10	0.4	0.2	0.19	0.07	<b>&lt; 0.05</b>	0.19	0.38	0.30	0.16	0.09	0.14	0.19	0.11	0.13	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	7.27	7.64	7.94	7.98	8.19	7.87	8.28	7.80	7.82	7.59	7.75	7.89	7.79	7.90	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	0.003	< 0.001	< 0.001	0.003	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	
Phosphorus, Total	0.03	N/L	N/L	0.03	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.02	0.03	0.01	0.01	< 0.01	
Potassium	2.4	N/L	N/L	1.9	1.8	2.2	2.0	1.9	1.5	1.7	2.0	1.8	2.0	1.8	1.7	1.7	2.0	
Silicon	4.38	N/L	N/L	3.35	3.60	4.15	3.86	3.29	3.12	3.38	3.13	3.46	3.32	3.44	3.40	3.52	2.41	
Sodium	3	101.3	200	3.0	2.8	2.8	2.5	2.4	2.0	1.9	2.1	2.0	2.0	2.1	1.9	2.1	2.1	
Strontium	0.26	N/L	N/L	0.326	0.355	0.411	0.357	0.362	0.302	0.330	0.332	0.319	0.313	0.372	0.306	0.345	0.299	
Sulphate	12	256	500	11	36	10	7	10	9	9	8	7	8	7	8	8	9	
Total Dissolved Solids	231	366	500	201	196	205	191	191	186	184	170	164	170	168	183	177	171	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	0.1	0.2	0.2	0.2	0.2	0.2	< 0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	
Zinc	0.005	2.5	5	0.009	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	<b>&lt; 0.005</b>	0.005	

Notes:

1. Reasonable Use Concept (RUC) criteria.
  2. Ontario Drinking Water Standards (ODWS).
  3. Results obtained from laboratory analysis.
  4. Results obtained from field analysis.
- All results are expressed in mg/L unless otherwise stated.  
 Bold and shaded values exceed the ODWS.  
 Bold and Italic values exceed RUC limits.  
 N/L indicates No Limit.  
 \*\*\* indicates results obtained from lab analysis  
 \*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	Background (median)	RUC <sup>1</sup>	ODWS <sup>2</sup>	MW08-7														5-year Trends
				24-May-16	26-Oct-16	08-May-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	16-Oct-19	23-Apr-20	27-Oct-20	18-May-21	04-Nov-21	04-May-22	27-Oct-22	(sparkline)
Alkalinity (as CaCO <sub>3</sub> )	202	353	30 - 500	188	182	180	210	189	176	182	176	178	170	185	237	207	220	
Aluminum	0.03	0.065	0.1	0.02	0.03	0.05	0.05	0.04	0.04	<b>0.14</b>	0.05	0.05	0.01	0.02	0.05	0.02	0.03	
Ammonia, Total (as N)	0.02	N/L	N/L	< 0.01	< 0.01	< 0.01	0.01	0.01	0.02	0.02	0.02	0.02	< 0.01	0.02	< 0.01	< 0.01	< 0.01	
Ammonia, Un-ionized <sup>3</sup>	0.00022	N/L	N/L	0.00001	0.00012	0.00005	0.00023	0.00001	0.00024	0.00019	0.00041	0.00003	0.00051	0.00007	0.00024	0.00008	0.00010	
Barium	0.019	0.3	1	0.033	0.036	0.049	0.048	0.040	0.036	0.045	0.041	0.047	0.040	0.042	0.048	0.047	0.056	
Boron	0.01	1.3	5	< 0.005	< 0.005	< 0.005	0.011	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	
Cadmium	0.000015	0.0013	0.005	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000010	
Calcium	79	N/L	N/L	57.7	61.4	82.7	71.9	72.2	56.9	79.9	67.6	74.5	64.6	73.3	78.5	81.1	76.5	
Chloride	0.8	125	250	39.1	< 0.5	47.0	31.7	39.7	33.4	57.6	49.9	46.7	32.6	31.4	36.2	51.9	47.3	
Chromium	0.001	0.013	0.05	< 0.002	< 0.002	0.0004	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	
Cobalt	0.0004	N/L	N/L	< 0.0001	0.0003	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0006	0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Chemical Oxygen Demand	5	N/L	N/L	50	25	< 5	12	21	< 5	10	15	26	11	< 5	< 5	< 5	9	
Conductivity (µS/cm) <sup>4</sup>	284	N/L	N/L	306	301	321	378	282	291	308	323	269	303	284	402	296	396	
Copper	0.002	0.5	1	< 0.002	< 0.002	0.003	0.002	0.002	< 0.002	< 0.002	< 0.002	0.003	< 0.002	0.0014	0.002	0.0027	0.0021	
Dissolved Organic Carbon	2.1	3.6	5	2.3	2.2	2.5	3.5	2.3	2.6	<b>3.8</b>	2.7	3.2	3.2	2.9	<b>5.2</b>	2.6	1.5	
Hardness (as CaCO <sub>3</sub> )	209	357	500	175	186	246	214	215	169	243	202	223	192	220	233	241	225	
Iron	0.007	0.2	0.3	< 0.005	0.026	< 0.005	< 0.005	< 0.005	0.009	<b>0.350</b>	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	
Magnesium	2.8	N/L	N/L	7.43	7.79	9.67	8.25	8.40	6.58	10.6	7.94	9.02	7.37	8.92	8.90	9.26	8.14	
Manganese	0.001	0.03	0.05	< 0.001	0.002	< 0.001	< 0.001	< 0.001	0.001	0.023	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	
Nitrate (as N)	0.10	2.6	10	0.1	0.2	0.09	< 0.05	0.06	< 0.05	0.21	0.09	0.13	< 0.05	0.17	0.07	0.16	0.11	
pH (units) <sup>4</sup>	7.65	6.5 - 8.5	6.5 - 8.5	6.90	7.97	7.67	8.07	6.85	7.94	7.97	8.13	7.16	8.30	7.80	7.87	7.82	7.81	
Phenols	0.002	N/L	N/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.002	< 0.002	0.003	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	
Phosphorus, Total	0.03	N/L	N/L	2.73	0.80	0.15	0.12	1.23	0.21	0.37	0.62	1.20	1.12	0.12	0.10	0.12	0.07	
Potassium	2.4	N/L	N/L	1.1	1.2	1.5	1.9	1.3	1.3	1.3	1.5	1.5	1.6	1.5	1.7	1.6	1.7	
Silicon	4.38	N/L	N/L	3.08	3.74	4.13	5.08	3.58	3.41	3.38	3.47	3.80	3.73	3.78	4.45	3.93	2.94	
Sodium	3	101.3	200	23.2	29.7	28.2	36.1	22.0	23.9	20.1	28.5	26.5	26.0	22.5	32.7	25.1	30.4	
Strontium	0.26	N/L	N/L	0.103	0.117	0.142	0.135	0.123	0.103	0.142	0.128	0.137	0.112	0.132	0.143	0.141	0.128	
Sulphate	12	256	500	10	10	12	2	7	5	10	5	12	6	9	4	9	3	
Total Dissolved Solids	231	366	500	252	268	305	289	252	245	291	256	267	242	242	285	291	297	
Total Kjeldahl Nitrogen	0.2	N/L	N/L	0.3	0.2	0.8	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	
Zinc	0.005	2.5	5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	

Notes:

1. Reasonable Use Concept (RUC) criteria.
  2. Ontario Drinking Water Standards (ODWS).
  3. Results obtained from laboratory analysis.
  4. Results obtained from field analysis.
- All results are expressed in mg/L unless otherwise stated.  
 Bold and shaded values exceed the ODWS.  
 Bold and Italic values exceed RUC limits.  
 N/L indicates No Limit.  
 \*\*\* indicates results obtained from lab analysis  
 \*\* indicates parameter not analyzed.

**Groundwater Quality  
Black Donald Waste Disposal Site**

Parameter	ODWS <sup>1</sup>	BH4		BH1			
		29-Apr-09	3-May-10	16-May-11	16-Apr-12	08-May-17	04-May-22
Acetone	N/L	-	-	-	-	0.008	0.03
Benzene	0.001	< 0.001	0.00066	< 0.0005	0.0008	< 0.0005	< 0.0005
Bromobenzene	N/L	-	-	-	-	< 0.0001	< 0.0004
Bromodichloromethane	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.002
Bromoform	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.005
Bromomethane	N/L	< 0.0009	< 0.0005	< 0.0015	< 0.0005	< 0.0003	< 0.0005
Carbon Tetrachloride	0.002	< 0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Monochlorobenzene (Chlorobenzene)	0.08	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005
Chloroethane	N/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.003
Chloroform	N/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0003	< 0.001
Chloromethane	N/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0003	< 0.002
Chlorotoluene,2-	N/L	-	-	-	-	< 0.0002	< 0.0002
Chlorotoluene,4-	N/L	-	-	-	-	< 0.0002	< 0.0002
Dibromo-3-Chloropropane, 1,2-	N/L	-	-	-	-	< 0.001	< 0.0006
Dibromochloromethane	N/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.002
Dibromoethane,1,2- (Ethylene Dibromide)	N/L	< 0.001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0002
Dibromomethane	N/L	-	-	-	-	< 0.001	< 0.0001
Dichlorobenzene,1,2-	0.2	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichlorobenzene,1,3-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichlorobenzene,1,4-	0.005	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005
Dichlorodifluoromethane	N/L	-	-	-	-	< 0.001	< 0.002
Dichloroethane,1,1-	N/L	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloroethane,1,2-	0.005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloroethene, cis-1,2-	N/L	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloroethene, trans-1,2-	N/L	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloroethene,1,1-	0.014	< 0.00066	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloromethane (Methylene Chloride)	0.05	< 0.005	< 0.002	< 0.0005	< 0.0005	< 0.0003	< 0.005
Dichloropropane,1,2-	N/L	< 0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloropropane,1,3-	N/L	-	-	-	-	< 0.0002	< 0.0002
Dichloropropane,2,2-	N/L	-	-	-	-	< 0.0002	< 0.0002
Dichloropropene, cis-1,3-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloropropene, trans-1,3-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Dichloropropene,1,1-	N/L	-	-	-	-	< 0.0002	< 0.0002
Ethylbenzene	0.0024	< 0.001	0.0014	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Hexachlorobutadiene	N/L	-	-	-	-	< 0.001	< 0.0006
Hexane	N/L	-	-	-	-	< 0.001	< 0.005
Isopropylbenzene	N/L	-	-	-	-	< 0.0002	< 0.0002
Isopropyltoluene,4-	N/L	-	-	-	-	< 0.0004	< 0.0002
Methyl Butyl Ketone	N/L	-	-	-	-	< 0.01	< 0.005
Methyl Ethyl Ketone	N/L	-	-	-	-	0.002	< 0.02
Methyl Isobutyl Ketone	N/L	-	-	-	-	< 0.001	< 0.02
Methyl-t-butyl Ether	N/L	-	-	-	-	0.001	< 0.002
Naphthalene	N/L	-	-	-	-	< 0.0007	< 0.0004
n-Butylbenzene	N/L	-	-	-	-	< 0.0007	< 0.0004
n-Propylbenzene	N/L	-	-	-	-	< 0.0004	< 0.0001
sec-Butylbenzene	N/L	-	-	-	-	< 0.0005	< 0.0001
Styrene	N/L	< 0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
tert-Butylbenzene	N/L	-	-	-	-	< 0.0001	< 0.0001
Tetrachloroethane 1,1,1,2-	N/L	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Tetrachloroethane 1,1,2,2-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0004	< 0.0005
Tetrachloroethene	0.03	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005
Toluene	0.024	< 0.0008	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Trichlorobenzene,1,2,3-	N/L	-	-	-	-	< 0.0002	< 0.0005
Trichlorobenzene,1,2,4-	N/L	-	-	-	-	< 0.0002	< 0.0005
Trichloroethane,1,1,1-	N/L	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Trichloroethane,1,1,2-	N/L	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Trichloroethylene	0.005	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005
Trichlorofluoromethane	N/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.0001	< 0.005
Trichloropropane,1,2,3-	N/L	-	-	-	-	< 0.0002	< 0.0005
Trimethylbenzene,1,2,4-	N/L	-	-	-	-	< 0.002	< 0.001
Trimethylbenzene,1,3,5-	N/L	-	-	-	-	< 0.0006	< 0.0001
Vinyl Chloride	0.001	< 0.0005	< 0.0005	< 0.0002	0.00022	< 0.0002	< 0.0002
Xylene (Total)	0.3	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Xylene, m,p-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0004	< 0.001
Xylene, o-	N/L	< 0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0001	< 0.0005

Notes:  
1. Ontario Drinking Water Standards (ODWS).

**Surface Water Quality  
Black Donald Waste Disposal Site**

Parameter	Background (75th Percentile)	PWOO <sup>1</sup>	SW-3															5-year Trends (sparkline)
			24-May-16	08-May-17	18-Sep-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	23-Apr-20	19-Aug-20	27-Oct-20	18-May-21	19-Aug-21	04-Nov-21	04-May-22	27-Oct-22	
Alkalinity (as CaCO <sub>3</sub> )	228	25% Decrease	126	62	185	143	78	155	78	81	154	134	121	228	120	94	158	
Ammonia, Total (as N)	0.1	NL	< 0.01	< 0.01	0.02	0.02	< 0.01	0.04	0.04	0.02	< 0.01	0.01	< 0.01	0.12	0.02	< 0.01	0.03	
Ammonia, Un-ionized (as N) <sup>2</sup>	0.00145	0.02	0.00001	0.00011	0.00004	0.00036	0.00038	0.00010	0.00023	0.00010	0.00003	0.00003	0.00006	0.00703	0.00010	0.00004	0.00005	
Barium	0.065	NL	0.024	0.008	0.036	0.019	0.008	0.034	0.013	0.012	0.025	0.018	0.020	0.035	0.022	0.016	0.086	
Boron	0.006	0.2	0.007	< 0.005	0.006	0.006	0.006	< 0.005	< 0.005	< 0.005	0.009	0.008	0.006	0.006	0.005	0.006	< 0.005	
Biological Oxygen Demand	4	NL	< 3	< 2	< 2	< 2	< 2	< 3	< 3	< 3	20	< 3	< 3	< 3	< 3	< 3	< 3	
Cadmium	0.0000155	0.0002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000015	< 0.000015	0.000032	0.000018	0.000058	
Calcium	89	NL	45.8	22.4	66.4	44.3	22.7	66.0	30.5	32.8	63.4	51.2	43.1	79.7	41.6	31.6	56.4	
Chromium	0.001	0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Chloride	73	NL	< 0.5	< 0.5	0.5	1.0	< 0.5	0.8	0.7	0.9	1.4	1.2	0.7	1.1	0.7	< 0.5	0.8	
Chemical Oxygen Demand	21	NL	8	10	20	12	12	9	40	13	19	13	10	21	15	8	26	
Conductivity (µS/cm) <sup>3</sup>	591	NL	261	136	370	278	169	-	169	-	-	283	-	-	-	-	-	
Conductivity (µS/cm) <sup>4</sup>	501	NL	193	78	273	203	115	181	104	92	244	228	174	283	161	164	226	
Copper	0.001	0.005	0.0006	0.0006	0.0001	0.0002	0.0005	0.0005	0.0006	0.0005	0.0007	0.0004	0.0010	0.0003	0.0008	0.0013	0.0015	
Disolved Oxygen <sup>4</sup>	9.44	5	9.00	12.34	7.50	<b>4.62</b>	9.06	<b>4.16</b>	8.42	10.48	5.09	8.75	6.30	9.90	7.27	9.81	5.73	
Dissolved Organic Carbon	8.5	NL	4.3	5.4	6.2	7.1	3.9	6.2	5.1	4.2	5.9	6.2	5.8	8.8	5.7	5.2	8.0	
Hardness (as CaCO <sub>3</sub> )	263	NL	136	67	202	134	68	201	90	97	184	152	127	235	125	94	168	
Iron	0.087	0.3	0.291	0.051	0.118	0.044	0.008	0.100	0.055	0.015	0.016	0.073	0.098	<b>0.309</b>	<b>0.456</b>	0.178	<b>3.76</b>	
Magnesium	11	NL	5.26	2.66	8.75	5.54	2.73	8.65	3.45	3.54	6.16	5.79	4.62	8.68	5.13	3.57	6.47	
Manganese	0.034	NL	0.250	0.003	0.235	0.074	0.001	0.079	0.016	0.001	0.034	0.046	0.026	0.912	0.550	0.134	4.45	
Nitrate (as N)	0.06	NL	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	0.19	< 0.05	0.18	0.06	< 0.05	< 0.05	0.11	0.09	< 0.05	0.10	
Nitrite (as N)	0.06	NL	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) <sup>4</sup>	7.81	6.5 - 8.5	6.78	7.98	6.89	7.97	8.44	7.32	7.61	7.70	7.11	7.39	7.52	8.29	7.64	7.41	7.05	
Phenols	0.002	0.001	< 0.001	<b>0.001</b>	< 0.001	< 0.001	< 0.001	<b>0.002</b>	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Phosphorus, Total	0.024	0.03	< 0.01	0.01	<b>0.03</b>	0.02	0.01	< 0.01	<b>0.05</b>	< 0.01	0.01	0.01	<b>0.03</b>	<b>0.05</b>	<b>0.04</b>	0.02	<b>0.13</b>	
Potassium	1.91	NL	0.8	0.3	0.8	1.0	0.7	0.4	0.5	0.5	0.4	0.9	0.8	1.4	0.9	0.6	1.5	
Sodium	37	NL	1.3	0.5	5.8	1.2	0.9	2.7	1.1	1.3	1.2	1.5	1.5	1.6	1.5	1.4	1.6	
Strontium	0.18	NL	0.076	0.035	0.149	0.076	0.035	0.133	0.047	0.047	0.087	0.075	0.067	0.127	0.065	0.050	0.091	
Sulphate	7.15	NL	7	5	< 1	2	4	4	5	6	9	4	7	< 1	3	6	1	
Total Dissolved Solids	355	NL	136	75	204	153	86	163	86	92	176	145	121	225	124	97	162	
Total Kjeldahl Nitrogen	0.5	NL	0.19	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.3	0.2	0.2	0.5	0.5	0.2	0.7	
Total Suspended Solids	4	NL	< 3	< 3	< 3	< 3	< 3	< 3	< 3	3	< 3	< 3	29	4	< 3	< 3	66.0	
Zinc	0.007	0.02	< 0.005	0.012	<b>0.038</b>	<b>0.042</b>	< 0.005	0.012	0.006	< 0.005	< 0.005	0.005	<b>0.026</b>	0.014	0.010	< 0.005	0.013	

Notes:  
1. Provincial Water Quality Objectives (PWQO).  
2. Calculated using Total Ammonia and field analysis.  
3. Results obtained from laboratory analysis.  
4. Results obtained from field analysis.  
All results are expressed in mg/L, unless otherwise stated.  
Shaded area with bold text indicates PWQO exceedance.  
NL indicates No Limit.  
\*\*\* indicates results obtained from lab analysis

**Surface Water Quality  
Black Donald Waste Disposal Site**

Parameter	Background (75th Percentile)	PWQO <sup>1</sup>	SW-4 (Background)														5-year Trends (sparkline)		
			24-May-16	08-May-17	18-Sep-17	25-Oct-17	02-May-18	30-Oct-18	14-May-19	23-Apr-20	19-Aug-20	27-Oct-20	18-May-21	19-Aug-21	04-Nov-21	04-May-22		18-Aug-22	
Alkalinity (as CaCO <sub>3</sub> )	228	25% Decrease	196	133	246	216	138	226	145	144	214	220	202	243	227	170	233		
Ammonia, Total (as N)	0.1	NL	< 0.01	< 0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.02	0.16	0.05	0.02	0.01	0.04	
Ammonia, Un-ionized (as N) <sup>2</sup>	0.00145	0.02	0.00016	0.00011	0.00012	0.00023	0.00029	0.00009	0.00019	0.00006	0.00020	0.00002	0.00252	0.00338	0.00010	0.00008	0.00038		
Barium	0.065	NL	0.052	0.028	0.065	0.051	0.036	0.067	0.045	0.034	0.078	0.067	0.049	0.069	0.052	0.042	0.060		
Boron	0.006	0.2	0.006	< 0.005	< 0.005	0.006	0.005	< 0.005	< 0.005	< 0.005	0.092	0.007	0.006	0.007	0.005	0.005	0.007		
Biological Oxygen Demand	4	NL	< 3	< 2	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3		
Cadmium	0.0000155	0.0002	0.00003	< 0.000014	0.000017	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	0.000018	< 0.000015	< 0.000015	< 0.000015	< 0.000015		
Calcium	89	NL	71.1	45.2	86.6	74.2	52.1	101	62.0	56.2	93.9	104	71.3	88.1	86.7	59.2	80.8		
Chromium	0.001	0.001	< 0.002	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Chloride	73	NL	47.1	23.8	55.8	60.2	37.2	72.7	56.5	35.5	46.6	80.8	37.4	56.0	78.6	45.1	60.7		
Chemical Oxygen Demand	21	NL	15	11	24	13	12	19	16	12	26	18	12	27	10	6	28		
Conductivity (µS/cm) <sup>3</sup>	591	NL	542	361	345	640	388	-	473	-	-	683	-	-	-	-	-		
Conductivity (µS/cm) <sup>4</sup>	501	NL	436	213	515	464	263	396	298	209	429	546	345	421	457	267	528		
Copper	0.001	0.005	0.0007	0.0006	0.0006	0.0003	0.0008	0.0003	0.0011	0.0008	0.0015	0.0006	0.0010	0.0010	0.0005	0.0007	0.0004		
Disolved Oxygen <sup>4</sup>	9.44	5	9.56	14.37	<b>4.05</b>	6.32	9.30	<b>3.40</b>	10.28	11.37	5.12	9.40	7.99	<b>2.90</b>	8.36	8.06	<b>4.11</b>		
Dissolved Organic Carbon	8.5	NL	5.9	5.5	9.4	8.9	4.6	8.4	5.9	4.4	11.7	5.2	5.9	9.3	7.1	5.3	8.4		
Hardness (as CaCO <sub>3</sub> )	263	NL	212	135	260	221	153	304	183	166	277	302	210	259	257	175	239		
Iron	0.087	0.3	0.022	0.017	0.124	0.085	0.009	0.088	0.025	0.021	0.085	0.069	0.032	0.131	0.065	0.024	0.173		
Magnesium	11	NL	8.31	5.32	10.7	8.68	5.62	12.60	6.83	6.15	10.2	10.3	7.71	9.52	9.82	6.64	8.86		
Manganese	0.034	NL	0.018	0.001	0.054	0.052	0.002	0.042	0.002	0.002	0.031	0.020	0.008	0.056	0.023	0.001	0.037		
Nitrate (as N)	0.06	NL	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	< 0.05	< 0.05		
Nitrite (as N)	0.06	NL	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.10	< 0.05	< 0.05	< 0.05	< 0.05		
pH (units) <sup>4</sup>	7.81	6.5 - 8.5	7.82	7.95	7.36	7.78	8.28	7.55	7.80	7.74	7.58	7.14	7.93	8.29	7.62	7.67	7.48		
Phenols	0.002	0.001	< 0.001	<b>0.002</b>	< 0.001	< 0.001	< 0.001	<b>0.003</b>	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Phosphorus, Total	0.024	0.03	<b>0.03</b>	0.01	<b>0.03</b>	0.02	0.01	< 0.01	0.02	< 0.01	0.01	< 0.01	<b>0.08</b>	0.02	<b>0.03</b>	<b>0.08</b>	<b>0.03</b>		
Potassium	1.91	NL	1.6	0.8	1.5	1.4	1.3	1.5	1.5	1.2	1.6	1.9	1.8	2.1	2.0	1.5	1.9		
Sodium	37	NL	32.3	16.6	36.6	36.6	19.6	32.7	30.4	22.5	29.6	38.4	28.8	36.9	41.7	26.0	34.3		
Strontium	0.18	NL	0.138	0.085	0.187	0.144	0.095	0.210	0.111	0.099	0.181	0.168	0.131	0.169	0.156	0.113	0.161		
Sulphate	7.15	NL	7	5	< 1	1	6	6	7	7	10	2	8	< 1	< 1	8	1		
Total Dissolved Solids	355	NL	285	199	190	352	200	355	245	211	309	355	261	338	351	238	319		
Total Kjeldahl Nitrogen	0.5	NL	0.29	0.2	0.3	0.3	0.2	0.3	0.2	0.1	0.4	0.3	0.7	0.4	0.3	0.8	0.4		
Total Suspended Solids	4	NL	5	< 3	< 3	4	< 3	3	< 3	4	< 3	< 3	5	6	< 3	< 3	270		
Zinc	0.007	0.02	< 0.005	< 0.005	< 0.005	<b>0.043</b>	< 0.005	0.011	0.008	< 0.005	<b>0.030</b>	< 0.005	<b>0.021</b>	0.012	0.007	< 0.005	< 0.005		

Notes:  
1. Provincial Water Quality Objectives (PWQO).  
2. Calculated using Total Ammonia and field analysis.  
3. Results obtained from laboratory analysis.  
4. Results obtained from field analysis.  
All results are expressed in mg/L, unless otherwise stated.  
Shaded area with bold text indicates PWQO exceedance.  
NL indicates No Limit.  
\*\*\* indicates results obtained from lab analysis

Surface Water Quality  
Black Donald Waste Disposal Site

Parameter	Background (75th Percentile)	PWQO <sup>1</sup>	SW-6																		5-year Trends (sparkline)	
			19-Oct-15	08-May-17	18-Sep-17	25-Oct-17	02-May-18	14-Aug-18	30-Oct-18	14-May-19	20-Aug-19	16-Oct-19	23-Apr-20	19-Aug-20	27-Oct-20	18-May-21	19-Aug-21	04-Nov-21	04-May-22	18-Aug-22		27-Oct-22
Alkalinity (as CaCO <sub>3</sub> )	228	25% Decrease	160	132	180	138	105	189	165	111	154	147	145	143	148	144	184	136	129	173	180	
Ammonia, Total (as N)	0.1	NL	< 0.1	< 0.01	0.03	0.02	< 0.01	0.04	0.03	0.02	0.08	0.04	0.01	0.01	0.02	0.02	0.03	0.02	0.01	0.03	0.02	
Ammonia, Un-ionized (as N) <sup>2</sup>	0.00145	0.02	0.00018	0.00008	0.00010	0.00032	0.00014	0.00032	0.00020	0.00017	0.00132	0.00038	0.00008	0.00025	0.00005	0.00012	0.000216	0.00010	0.00005	0.00077	0.00012	
Barium	0.065	NL	0.0396	0.028	0.052	0.040	0.029	0.056	0.059	0.037	0.048	0.042	0.032	0.061	0.048	0.042	0.058	0.039	0.034	0.052	0.049	
Boron	0.006	0.2	0.0106	< 0.005	0.023	0.011	0.014	0.018	0.008	0.012	0.016	0.025	0.014	0.110	0.017	0.021	0.021	0.015	0.018	0.014	0.015	
Biological Oxygen Demand	4	NL	< 4	< 2	< 2	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	
Cadmium	0.0000155	0.0002	< 0.000003	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	
Calcium	89	NL	56.0	46.8	60.0	43.1	35.3	60.4	67.0	44.4	55.6	52.0	44.7	64.4	58.8	49.2	64.0	50.3	41.9	63.2	64.0	
Chromium	0.001	0.001	0.00004	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Chloride	73	NL	13	14.9	5.0	2.6	6.0	8.0	9.0	7.6	5.9	6.8	5.6	9.9	8.5	4.5	9.9	5.6	6.8	4.7	5.4	
Chemical Oxygen Demand	21	NL	19	10	27	24	26	29	26	20	32	34	16	36	33	23	32	25	18	36	20	
Conductivity (µS/cm) <sup>3</sup>	591	NL	-	330	660	278	227	388	-	256	-	-	-	-	338	-	-	-	-	-	-	
Conductivity (µS/cm) <sup>4</sup>	501	NL	240	202	300	217	156	352	227	171	230	361	150	259	272	232	268	202	169	321	256	
Copper	0.001	0.005	0.00042	0.0004	< 0.0001	0.0001	0.0004	0.0003	0.0004	0.0005	0.0005	0.0006	0.0007	0.0003	0.0004	0.0005	0.0003	0.0003	0.0006	0.0004	0.0003	
Disolved Oxygen <sup>4</sup>	9.44	5	5.88	7.70	<b>4.69</b>	8.89	8.72	<b>2.80</b>	5.20	8.71	<b>2.97</b>	<b>4.57</b>	11.30	8.17	5.63	5.43	<b>3.88</b>	<b>4.67</b>	6.34	6.03	6.97	
Dissolved Organic Carbon	8.5	NL	8.4	6.4	12.1	13.7	5.7	12.4	11.9	8.0	12.0	11.1	6.6	16.2	12.2	11.1	13.1	12.5	8.8	16.8	11.4	
Hardness (as CaCO <sub>3</sub> )	263	NL	171	148	186	134	107	183	208	134	168	160	136	194	177	150	193	154	128	191	193	
Iron	0.087	0.3	0.165	0.029	0.228	0.079	0.034	<b>0.797</b>	<b>0.380</b>	0.051	<b>0.329</b>	0.244	0.030	0.267	0.158	0.049	<b>0.424</b>	0.122	0.087	0.216	0.125	
Magnesium	11	NL	7.60	7.50	8.86	6.41	4.62	7.90	9.93	5.64	7.15	7.23	5.80	8.00	7.31	6.47	8.07	6.92	5.62	7.99	8.09	
Manganese	0.034	NL	0.0122	0.017	0.037	0.012	0.002	0.146	0.077	0.003	0.052	0.022	0.002	0.032	0.025	0.034	0.086	0.013	0.004	0.019	0.022	
Nitrate (as N)	0.06	NL	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.18	0.06	< 0.05	0.06	< 0.05	< 0.05	0.08	0.09	< 0.05	0.08	< 0.05	0.11	
Nitrite (as N)	0.06	NL	< 0.03	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) <sup>4</sup>	7.81	6.5 - 8.5	7.15	7.78	7.03	7.89	7.91	7.31	7.70	7.68	7.60	7.74	7.74	7.84	7.33	7.28	8.26	7.59	7.36	7.77	7.54	
Phenols	0.002	0.001	<b>0.001</b>	<b>0.004</b>	< 0.001	< 0.001	< 0.001	< 0.002	<b>0.004</b>	< 0.002	<b>0.003</b>	<b>0.005</b>	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Phosphorus, Total	0.024	0.03	0.027	0.02	0.01	0.01	0.01	<b>0.06</b>	< 0.01	0.02	<b>0.05</b>	<b>0.03</b>	< 0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	< 0.01	
Potassium	1.91	NL	0.860	1.3	0.5	1.3	0.8	0.9	2.0	0.8	0.5	1.0	0.8	0.6	2.3	1.0	0.7	1.1	0.8	0.9	1.3	
Sodium	37	NL	5.41	5.9	4.4	2.1	4.0	5.4	6.4	5.1	4.1	4.3	4.5	7.0	4.9	4.4	6.6	3.7	5.2	5.0	5.0	
Strontium	0.18	NL	0.0974	0.087	0.134	0.084	0.065	0.128	0.156	0.079	0.110	0.102	0.078	0.132	0.103	0.094	0.124	0.094	0.079	0.119	0.118	
Sulphate	7.15	NL	5	6	< 1	2	3	1	3	5	24	5	6	3	4	1	3	5	2	2	2	
Total Dissolved Solids	355	NL	226	182	363	153	118	200	192	131	170	165	131	173	174	148	206	152	139	170	190	
Total Kjeldahl Nitrogen	0.5	NL	< 0.5	0.3	0.4	0.3	0.2	0.5	0.5	0.3	0.6	0.6	0.2	0.5	0.5	0.3	0.4	0.5	0.3	0.6	0.4	
Total Suspended Solids	4	NL	2	< 3	< 3	< 3	< 3	6	< 3	3	11	5	< 3	< 3	5	< 3	4	< 3	< 3	3	< 3	
Zinc	0.007	0.02	< 0.002	< 0.005	0.005	<b>1.60</b>	< 0.005	0.017	0.018	0.005	< 0.005	< 0.005	< 0.005	<b>0.027</b>	< 0.005	0.019	0.011	0.009	0.010	0.016	<b>0.023</b>	

Notes:  
1. Provincial Water Quality Objectives (PWQO).  
2. Calculated using Total Ammonia and field analysis.  
3. Results obtained from laboratory analysis.  
4. Results obtained from field analysis.  
All results are expressed in mg/L, unless otherwise stated.  
Shaded area with bold text indicates PWQO exceedance.  
NL indicates No Limit.  
\*\*\* indicates results obtained from lab analysis

Surface Water Quality  
Black Donald Waste Disposal Site

Parameter	Background (75th Percentile)	PWQO <sup>1</sup>	SW-6																				5-year Trends (sparkline)	
			24-May-16	31-Aug-16	26-Oct-16	08-May-17	16-Sep-17	25-Oct-17	02-May-18	14-Aug-18	30-Oct-18	14-May-19	20-Aug-19	16-Oct-19	23-Apr-20	19-Aug-20	27-Oct-20	18-May-21	19-Aug-21	04-Nov-21	04-May-22	18-Aug-22		27-Oct-22
Alkalinity (as CaCO <sub>3</sub> )	228	25% Decrease	174	213	198	99	184	176	109	225	177	121	215	188	124	159	170	150	196	178	136	197	189	
Ammonia, Total (as N)	0.1	NL	< 0.01	0.08	< 0.01	< 0.01	0.02	0.02	< 0.01	0.02	0.02	0.02	0.05	0.03	0.01	< 0.01	0.01	0.01	0.03	0.01	< 0.01	0.02	< 0.01	
Ammonia, Un-ionized (as N) <sup>2</sup>	0.00145	0.02	0.00013	0.00216	0.00005	0.00007	0.00005	0.00024	0.00018	0.00038	0.00018	0.00023	0.00097	0.00028	0.00009	0.00017	0.00002	0.00005	0.00429	0.00007	0.00007	0.00041	0.00007	
Barium	0.065	NL	0.0450	0.053	0.045	0.021	0.058	0.035	0.026	0.058	0.052	0.031	0.057	0.045	0.030	0.054	0.040	0.038	0.052	0.036	0.030	0.046	0.038	
Boron	0.006	0.2	0.0070	0.015	< 0.005	0.008	0.016	0.010	0.011	0.015	< 0.005	0.006	0.009	0.010	0.010	0.0095	0.012	0.018	0.014	0.010	0.012	0.007	0.010	
Biological Oxygen Demand	4	NL	< 3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	
Cadmium	0.0000155	0.0002	< 0.00002	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	< 0.000015	
Calcium	89	NL	62.9	78.2	84.6	37.2	68.2	55.8	39.1	77.5	72.9	46.4	83.4	71.5	52.4	70.5	71.2	53.0	74.6	67.4	46.7	69.9	63.2	
Chromium	0.001	0.001	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Chloride	73	NL	11	29.1	32.1	10.0	15.4	13.4	10.5	20.8	29.1	16.3	23.9	23.7	13.2	20.0	30.2	8.7	25.6	27.8	16.8	16.9	17.8	
Chemical Oxygen Demand	21	NL	16	17	7	16	28	19	20	29	18	19	22	15	19	29	16	20	24	13	14	35	40	
Conductivity (µS/cm) <sup>3</sup>	591	NL	385	511	-	243	361	390	256	499	-	304	-	-	-	446	-	-	-	-	-	-	-	
Conductivity (µS/cm) <sup>4</sup>	501	NL	320	427	305	151	321	283	173	417	280	195	344	527	157	299	360	236	300	285	186	362	296	
Copper	0.001	0.005	0.0020	0.0004	0.0002	0.0005	0.0003	0.0002	0.0004	0.0003	0.0003	0.0005	0.0002	0.0004	0.0004	0.0007	0.0005	0.0006	0.0004	0.0003	0.0014	0.0003	0.0003	
Disolved Oxygen <sup>4</sup>	9.44	5	12.80	9.2	7.78	13.93	8.83	10.57	10.65	7.86	10.65	11.50	6.75	6.25	14.85	8.82	13.69	8.23	6.98	12.9	8.21	8.03	10.06	
Dissolved Organic Carbon	8.5	NL	7.2	6.6	6.4	7.9	10.8	11.0	5.9	12.0	7.3	7.5	9.3	6.2	6.1	13.7	7.5	11.0	9.0	8.1	8.1	13.4	9.4	
Hardness (as CaCO <sub>3</sub> )	263	NL	189	236	256	112	209	169	117	237	226	139	249	218	156	210	212	158	222	203	140	208	190	
Iron	0.087	0.3	0.065	<b>0.510</b>	0.112	0.022	0.221	0.122	0.024	<b>0.323</b>	0.161	0.048	<b>0.991</b>	<b>1.34</b>	0.036	0.266	0.139	0.235	0.211	0.110	0.036	0.154	0.086	
Magnesium	11	NL	7.80	9.93	10.9	4.64	9.46	7.22	4.63	10.5	10.7	5.49	9.96	9.55	6.02	8.14	8.31	6.32	8.75	8.47	5.57	8.19	7.73	
Manganese	0.034	NL	0.0280	0.085	0.017	0.002	0.052	0.021	0.002	0.500	0.028	0.005	0.370	0.181	0.006	0.041	0.025	0.049	0.038	0.018	0.003	0.018	0.015	
Nitrate (as N)	0.06	NL	< 0.1	0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.17	0.06	< 0.05	0.07	< 0.05	< 0.05	0.10	0.11	< 0.05	0.08	< 0.05	
Nitrite (as N)	0.06	NL	< 0.1	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) <sup>4</sup>	7.81	6.5 - 8.5	7.60	7.86	7.69	7.72	6.98	7.79	8.06	7.77	7.89	7.85	7.87	7.80	7.87	7.75	7.33	<b>8.65</b>	7.82	7.54	7.78	7.61	7.61	
Phenols	0.002	0.001	< 0.001	< 0.001	< 0.001	<b>0.006</b>	< 0.001	< 0.001	< 0.001	< 0.002	<b>0.004</b>	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Phosphorus, Total	0.024	0.03	< 0.01	< 0.01	0.01	0.02	0.02	<b>0.03</b>	< 0.01	<b>0.03</b>	< 0.01	0.02	<b>0.04</b>	<b>0.03</b>	< 0.01	0.02	< 0.01	<b>0.03</b>	0.01	< 0.01	< 0.01	< 0.01	0.01	
Potassium	1.91	NL	1.00	1.5	1.6	0.6	0.9	1.3	0.9	1.6	1.6	0.9	0.9	2.9	0.8	0.9	1.5	0.9	1.2	1.3	1.0	1.1	1.5	
Sodium	37	NL	8.3	13.8	15.9	7.8	13.3	9.6	6.6	13.2	16.0	9.6	12.5	11.1	8.7	11.9	16.8	7.1	15.7	16.4	9.7	11.4	11.4	
Strontium	0.18	NL	0.123	0.172	0.186	0.070	0.184	0.114	0.072	0.182	0.181	0.087	0.164	0.149	0.090	0.149	0.136	0.104	0.157	0.133	0.090	0.140	0.123	
Sulphate	7.15	NL	6	10	14	4	1	3	4	1	6	6	2	7	6	6	7	6	2	6	7	2	3	
Total Dissolved Solids	355	NL	201	271	278	134	199	215	131	258	236	156	253	241	154	206	230	161	245	228	161	213	218	
Total Kjeldahl Nitrogen	0.5	NL	0.2	0.4	0.2	0.3	0.4	0.3	0.2	0.5	0.3	0.2	0.3	0.4	0.2	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.3	
Total Suspended Solids	4	NL	< 3	< 3	4	< 3	3	< 3	< 3	< 3	< 3	4	< 3	5	11	3	3	< 3	7	< 3	< 3	3	< 3	
Zinc	0.007	0.02	< 0.005	< 0.005	< 0.005	< 0.005	<b>0.065</b>	0.016	< 0.005	<b>0.021</b>	0.012	0.007	< 0.005	< 0.005	< 0.005	<b>0.025</b>	< 0.005	0.013	0.009	0.006	< 0.005	< 0.005	< 0.005	

Notes:  
1. Provincial Water Quality Objectives (PWQO).  
2. Calculated using Total Ammonia and field analysis.  
3. Results obtained from laboratory analysis.  
4. Results obtained from field analysis.  
All results are expressed in mg/L, unless otherwise stated.  
Shaded area with bold text indicates PWQO exceedance.  
NL indicates No Limit.  
\*\*\* indicates results obtained from lab analysis

Appendix G  
Groundwater Elevations  
2023-2025

**Groundwater Elevations 2025**  
**Black Donald WDS**

Monitor	Top of Pipe Elevation (Assumed Datum)	Ground Elevation (Assumed Datum)	Depth of Well Bottom (M)	Jun-23		Nov-23		Apr-24		Nov-24		Apr-25		Oct-25	
				Water Level	Elevation										
BH 1	94.18	93.60	8.83	5.21	88.97	7.10	87.08	4.00	90.18	6.22	87.96	3.85	90.33	7.33	86.85
BH 2	99.79	98.98	7.91	4.43	95.36	5.08	94.71	3.13	96.66	4.45	95.34	3.23	96.56	5.48	94.31
BH 3	100.67	99.80	8.61	--	--	--	--	--	--	--	--	--	--	--	--
BH 4	96.80	95.96	7.80	3.70	93.10	4.67	92.13	3.23	93.57	4.19	92.61	3.11	93.69	4.94	91.86
MW-08-5	106.06	105.03	13.56	13.51	92.55	Dry	--	13.42	92.64	13.47	92.59	13.45	92.61	Dry	--
MW 08-6	103.22	102.23	23.80	5.50	97.72	5.68	97.54	5.28	97.94	5.54	97.68	5.31	97.91	5.77	97.45
MW 08-7S (Previously MW 08-7)	78.72	77.79	8.46	1.20	77.52	3.30	75.42	0.81	77.91	2.72	76.00	0.81	77.91	3.58	75.14
MW 23-7D (Previously MW 08-7D)	78.00	hold	16.56	--	--	3.38	74.62	0.78	77.22	3.38	74.62	1.04	76.96	4.13	73.87
BH 23-8S	93.60	93.60	14.35	--	--	Dry	--								
BH 23-8D	93.60	93.60	20.50	--	--	Dry	--								

- Note: 1. Well depths based on Jp2g measurements in 2023  
2. Elevations based on SGS Lakefield Research Ltd.  
3. Elevations are assumed  
4. MW 08-7D Installed Nov 2023  
5. BH 23-8 D/S Installed Nov 2023

Appendix H  
Laboratory Certificates of Analysis  
2025

**C.O.C.: G 111310**

**REPORT No: 25-010164 - Rev. 0**

**Report To:**

Jp2g Consultants Inc  
 1150 Morrison Dr.  
 Ottawa, ON K2H 8S9

**CADUCEON Environmental Laboratories**

2378 Holly Lane  
 Ottawa, ON K1V 7P1

**Attention: Nick Weston**

DATE RECEIVED: 2025-Apr-17  
 DATE REPORTED: 2025-May-02  
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Black Donald 22-6213D  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	7	OTTAWA	PCURIEL	2025-Apr-22	A-IC-01	SM 4110B
COD (Liquid)	7	KINGSTON	YLIEN	2025-May-01	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	7	OTTAWA	SBOUDREAU	2025-Apr-21	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	7	OTTAWA	SLOZO	2025-Apr-30	C-OC-01	EPA 415.2
ICP/MS (Liquid)	7	OTTAWA	TPRICE	2025-Apr-23	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	7	OTTAWA	AOZKAYMAK	2025-Apr-23	D-ICP-01	SM 3120B
Mercury (Liquid)	7	OTTAWA	TBENNETT	2025-Apr-24	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	7	KINGSTON	DCASSIDY	2025-Apr-30	NH3-001	SM 4500NH3
Phenols (Liquid)	7	KINGSTON	EHINCH	2025-Apr-28	PHEN-01	MECP E3179
TP & TKN (Liquid)	7	KINGSTON	YLIEN	2025-May-01	TPTKN-001	MECP E3516.2

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



**Michelle Dubien**  
**Data Specialist**

**CADUCEON Environmental Laboratories Certificate of Analysis**

**Final Report**  
**REPORT No: 25-010164 - Rev. 0**

Parameter	Units	R.L.	Client I.D.	MW08-6	MW08-7S	MW08-7D	BH-1	BH-4
			Sample I.D.	25-010164-1	25-010164-2	25-010164-3	25-010164-4	25-010164-5
			Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		197	217	395	287	765
TDS (Calc. from Cond.)	mg/L	3		206	337	430	291	1170
Conductivity @25°C	uS/cm	1		400	649	817	562	2120
pH @25°C	pH units	-		7.79	8.01	7.73	7.91	7.35
Chloride	mg/L	0.5		0.8	71.2	13.5	3.1	37.8
Nitrate (N)	mg/L	0.05		0.07	0.12	0.34	0.25	0.54
Nitrite (N)	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	1		10	5	24	8	447
Phosphorus (Total)	mg/L	0.01		0.01	0.92	1.24	1.25	0.01
Total Kjeldahl Nitrogen	mg/L	0.1		0.1	0.2	0.4	0.4	1.1
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	<0.05	<0.05	0.18	0.22
Dissolved Organic Carbon	mg/L	0.8		1.8	2.0	5.7	2.0	19.7
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		6	24	47	21	80
Hardness (as CaCO3)	mg/L	0.02		197	261	399	264	1110
Aluminum	mg/L	0.01		0.02	0.02	0.05	0.02	0.10
Barium	mg/L	0.001		0.024	0.056	0.087	0.018	0.108
Boron	mg/L	0.005		0.017	0.010	0.585	0.070	2.68
Calcium	mg/L	0.02		72.7	86.0	135	77.6	377
Iron	mg/L	0.005		0.010	<0.005	0.019	0.077	<0.005
Magnesium	mg/L	0.02		3.60	11.1	14.7	16.9	41.6



**Michelle Dubien**  
**Data Specialist**

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Final Report  
REPORT No: 25-010164 - Rev. 0

Parameter	Units	R.L.	Client I.D.	MW08-6	MW08-7S	MW08-7D	BH-1	BH-4
			Sample I.D.	25-010164-1	25-010164-2	25-010164-3	25-010164-4	25-010164-5
			Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16	2025-04-16
				-	-	-	-	-
Manganese	mg/L	0.001		<0.001	<0.001	0.022	0.045	0.009
Potassium	mg/L	0.1		2.1	1.9	1.9	1.2	14.5
Silicon	mg/L	0.01		3.93	4.14	4.19	8.81	7.32
Sodium	mg/L	0.2		2.5	27.8	15.8	17.4	75.5
Strontium	mg/L	0.001		0.411	0.177	0.344	0.220	1.02
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	mg/L	0.0001		0.0002	<0.0001	0.0001	0.0003	0.0008
Cadmium	mg/L	0.000015		<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		0.026	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0006	0.0001	0.0007	0.0009	0.0023
Copper	mg/L	0.0001		0.0012	0.0017	0.0028	0.0018	0.0072
Lead	mg/L	0.00002		<0.00002	<0.00002	0.00004	<0.00002	<0.00002
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
pH (Client Data)	pH units	-		7.6	7.3	7.0	7.6	7.9
Temperature (Client Data)	°C	-		7.5	6.0	6.6	7.0	6.4



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Final Report  
REPORT No: 25-010164 - Rev. 0

Parameter	Units	R.L.	Client I.D.	Dup #1	
			BH-2		
			Sample I.D.	25-010164-6	25-010164-7
			Date Collected	2025-04-16	2025-04-16
			-	-	
Alkalinity(CaCO3) to pH4.5	mg/L	5	239	196	
TDS (Calc. from Cond.)	mg/L	3	255	205	
Conductivity @25°C	uS/cm	1	493	398	
pH @25°C	pH units	-	7.88	7.98	
Chloride	mg/L	0.5	1.1	0.8	
Nitrate (N)	mg/L	0.05	0.05	0.08	
Nitrite (N)	mg/L	0.05	<0.05	<0.05	
Sulphate	mg/L	1	17	10	
Phosphorus (Total)	mg/L	0.01	0.02	0.02	
Total Kjeldahl Nitrogen	mg/L	0.1	<0.1	0.1	
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	<0.05	
Dissolved Organic Carbon	mg/L	0.8	1.7	2.0	
Phenolics	mg/L	0.001	<0.001	<0.001	
COD	mg/L	5	8	6	
Hardness (as CaCO3)	mg/L	0.02	241	194	
Aluminum	mg/L	0.01	0.03	0.02	
Barium	mg/L	0.001	0.018	0.024	
Boron	mg/L	0.005	0.017	0.016	
Calcium	mg/L	0.02	90.4	71.7	
Iron	mg/L	0.005	<0.005	<0.005	
Magnesium	mg/L	0.02	3.56	3.62	



**Michelle Dubien**  
Data Specialist

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Parameter	Units	R.L.	Client I.D.	Dup #1	
			BH-2		
			Sample I.D.	25-010164-6	25-010164-7
			Date Collected	2025-04-16	2025-04-16
			-	-	
Manganese	mg/L	0.001	<0.001	<0.001	
Potassium	mg/L	0.1	3.3	2.1	
Silicon	mg/L	0.01	6.74	3.94	
Sodium	mg/L	0.2	3.4	2.5	
Strontium	mg/L	0.001	0.214	0.416	
Zinc	mg/L	0.005	<0.005	<0.005	
Arsenic	mg/L	0.0001	0.0001	0.0002	
Cadmium	mg/L	0.000015	<0.000015	<0.000015	
Chromium	mg/L	0.001	<0.001	<0.001	
Cobalt	mg/L	0.0001	0.0002	0.0006	
Copper	mg/L	0.0001	0.0021	0.0131	
Lead	mg/L	0.00002	<0.00002	<0.00002	
Mercury	mg/L	0.00002	<0.00002	<0.00002	
pH (Client Data)	pH units	-	6.7		
Temperature (Client Data)	°C	-	7.5		



**Michelle Dubien**  
**Data Specialist**

**C.O.C.: G 138123**

**REPORT No: 25-010163 - Rev. 0**

**Report To:**

Jp2g Consultants Inc  
 1150 Morrison Dr.  
 Ottawa, ON K2H 8S9

**CADUCEON Environmental Laboratories**

2378 Holly Lane  
 Ottawa, ON K1V 7P1

**Attention: Nick Weston**

DATE RECEIVED: 2025-Apr-17  
 DATE REPORTED: 2025-May-06  
 SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Black Donald 22-6213D  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	4	OTTAWA	PCURIEL	2025-Apr-21	A-IC-01	SM 4110B
BOD5 (Liquid)	4	KINGSTON	DCASSIDY	2025-Apr-23	BOD-001	SM 5210B
COD (Liquid)	4	KINGSTON	YLIEN	2025-May-01	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	4	OTTAWA	SBOUDREAU	2025-Apr-21	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	4	OTTAWA	SLOZO	2025-Apr-30	C-OC-01	EPA 415.2
ICP/MS Total (Liquid)	4	OTTAWA	AOZKAYMAK	2025-Apr-21	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	4	OTTAWA	AOZKAYMAK	2025-Apr-22	D-ICP-01	SM 3120B
Mercury (Liquid)	4	OTTAWA	TBENNETT	2025-Apr-24	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	4	KINGSTON	DCASSIDY	2025-Apr-30	NH3-001	SM 4500NH3
Phenols (Liquid)	4	KINGSTON	EHINCH	2025-Apr-28	PHEN-01	MECP E3179
TP & TKN (Liquid)	4	KINGSTON	YLIEN	2025-May-05	TPTKN-001	MECP E3516.2
TSS (Liquid)	4	KINGSTON	MCLOSS	2025-Apr-25	TSS-001	SM 2540D

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



**Michelle Dubien**  
**Data Specialist**

**CADUCEON Environmental Laboratories Certificate of Analysis**

Final Report  
REPORT No: 25-010163 - Rev. 0

Parameter	Units	R.L.	Client I.D.	SW5	SW8	SW4	SW9
			Sample I.D.	25-010163-1	25-010163-2	25-010163-3	25-010163-4
			Date Collected	2025-04-16	2025-04-16	2025-04-16	2025-04-16
				-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	119	188	186	154	
TDS (Calc. from Cond.)	mg/L	3	135	246	247	151	
Conductivity @25°C	uS/cm	1	264	475	478	295	
pH @25°C	pH units	-	7.97	8.11	8.14	8.02	
Chloride	mg/L	0.5	7.9	34.9	36.5	<0.5	
Nitrate (N)	mg/L	0.05	<0.05	0.25	0.21	<0.05	
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	
Sulphate	mg/L	1	5	11	11	2	
BOD5	mg/L	3	<3	<3	<3	<3	
Total Suspended Solids	mg/L	3	<3	<3	5	4	
Phosphorus (Total)	mg/L	0.01	<0.01	<0.01	<0.01	0.03	
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	0.2	0.2	0.5	
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	0.06	<0.05	<0.05	
Dissolved Organic Carbon	mg/L	0.8	7.5	4.8	4.6	10.3	
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
COD	mg/L	5	26	12	14	23	
Hardness (as CaCO3)	mg/L	0.02	120	185	195	153	
Aluminum (Total)	mg/L	0.01	0.04	0.03	0.03	0.03	
Barium (Total)	mg/L	0.001	0.026	0.039	0.038	0.024	
Boron (Total)	mg/L	0.005	0.016	0.079	0.080	<0.005	
Calcium (Total)	mg/L	0.02	39.6	62.0	65.7	43.8	



**Michelle Dubien**  
**Data Specialist**

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Final Report  
REPORT No: 25-010163 - Rev. 0

Parameter	Client I.D.		SW5	SW8	SW4	SW9
	Sample I.D.		25-010163-1	25-010163-2	25-010163-3	25-010163-4
	Date Collected		2025-04-16	2025-04-16	2025-04-16	2025-04-16
	Units	R.L.	-	-	-	-
Iron (Total)	mg/L	0.005	0.024	0.010	0.020	0.017
Magnesium (Total)	mg/L	0.02	5.03	7.18	7.56	10.7
Manganese (Total)	mg/L	0.001	<0.001	<0.001	0.149	0.021
Potassium (Total)	mg/L	0.1	0.6	1.6	1.8	0.5
Silicon (Total)	mg/L	0.01	2.99	3.02	3.12	1.81
Sodium (Total)	mg/L	0.2	4.5	19.8	20.5	0.7
Strontium (Total)	mg/L	0.001	0.064	0.108	0.114	0.050
Zinc (Total)	mg/L	0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (Total)	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001
Cadmium (Total)	mg/L	0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)	mg/L	0.0001	<0.0001	0.0001	0.0001	<0.0001
Copper (Total)	mg/L	0.0001	0.0005	0.0017	0.0015	0.0010
Lead (Total)	mg/L	0.00002	<0.00002	<0.00002	<0.00002	0.00002
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	<0.00002
pH (Client Data)	pH units	-	7.6	7.3	7.5	7.4
Temperature (Client Data)	°C	-	3.0	3.1	2.6	2.4



**Michelle Dubien**  
**Data Specialist**

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**C.O.C.: G 136725**

**REPORT No: 25-021974 - Rev. 0**

**Report To:**

Jp2g Consultants Inc  
 1150 Morrison Dr.  
 Ottawa, ON K2H 8S9

**CADUCEON Environmental Laboratories**

2378 Holly Lane  
 Ottawa, ON K1V 7P1

**Attention: Nick Weston**

DATE RECEIVED: 2025-Jul-24  
 DATE REPORTED: 2025-Aug-06  
 SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Black Donald 22-6213D  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	3	OTTAWA	PCURIEL	2025-Jul-25	A-IC-01	SM 4110B
BOD5 (Liquid)	3	KINGSTON	JWOLFE2	2025-Jul-28	BOD-001	SM 5210B
COD (Liquid)	3	KINGSTON	MWILSON	2025-Jul-29	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	3	OTTAWA	SBOUDREAU	2025-Jul-25	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	3	OTTAWA	LMACGREGOR	2025-Jul-25	C-OC-01	EPA 415.2
ICP/MS Total (Liquid)	3	OTTAWA	AOZKAYMAK	2025-Jul-25	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	3	OTTAWA	SGORMAN	2025-Jul-28	D-ICP-01	SM 3120B
Mercury (Liquid)	3	OTTAWA	TBENNETT	2025-Jul-25	D-HG-02	SM 3112B
Ammonia & o-Phosphate (Liquid)	3	KINGSTON	DCASSIDY	2025-Aug-06	NH3-001	SM 4500NH3
Phenols (Liquid)	3	KINGSTON	MCLOSS	2025-Jul-29	PHEN-01	MECP E3179
TP & TKN (Liquid)	3	KINGSTON	YLIEN	2025-Aug-05	TPTKN-001	MECP E3516.2
TSS (Liquid)	3	KINGSTON	KYUILL	2025-Aug-05	TSS-001	SM 2540D

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



**Michelle Dubien**  
**Data Specialist**

**CADUCEON Environmental Laboratories Certificate of Analysis**

Final Report  
REPORT No: 25-021974 - Rev. 0

Parameter	Units	R.L.	Client I.D.	SW5	SW4	Dup#1
			Sample I.D.	25-021974-1	25-021974-2	25-021974-3
			Date Collected	2025-07-23	2025-07-23	2025-07-23
				-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	196	265	197	
TDS (Calc. from Cond.)	mg/L	3	209	310	212	
Conductivity @25°C	uS/cm	1	405	598	411	
pH @25°C	pH units	-	8.14	8.11	8.11	
Chloride	mg/L	0.5	10.9	30.0	11.0	
Nitrate (N)	mg/L	0.05	<0.05	<0.05	<0.05	
Nitrite (N)	mg/L	0.05	<0.05	<0.05	<0.05	
Sulphate	mg/L	1	2	9	3	
BOD5	mg/L	3	<3	<3	<3	
Total Suspended Solids	mg/L	3	3	3	3	
Phosphorus (Total)	mg/L	0.01	0.02	0.03	0.02	
Total Kjeldahl Nitrogen	mg/L	0.1	0.5	0.2	0.5	
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	0.09	0.07	0.08	
Dissolved Organic Carbon	mg/L	0.8	12.0	4.9	12.1	
Phenolics	mg/L	0.001	<0.001	<0.001	<0.001	
COD	mg/L	5	17	<5	22	
Hardness (as CaCO3)	mg/L	0.02	186	263	192	
Aluminum (Total)	mg/L	0.01	0.03	0.07	0.04	
Barium (Total)	mg/L	0.001	0.051	0.057	0.052	
Boron (Total)	mg/L	0.005	0.017	0.123	0.017	
Calcium (Total)	mg/L	0.02	61.0	89.7	62.9	



**Michelle Dubien**  
Data Specialist

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Final Report  
REPORT No: 25-021974 - Rev. 0

Parameter	Units	R.L.	Client I.D.	SW5	SW4	Dup#1
			Sample I.D.	25-021974-1	25-021974-2	25-021974-3
			Date Collected	2025-07-23	2025-07-23	2025-07-23
				-	-	-
Iron (Total)	mg/L	0.005	0.295	0.060	0.306	
Magnesium (Total)	mg/L	0.02	8.24	9.37	8.47	
Manganese (Total)	mg/L	0.001	0.033	0.053	0.035	
Potassium (Total)	mg/L	0.1	1.8	2.8	1.7	
Silicon (Total)	mg/L	0.01	5.98	4.02	6.05	
Sodium (Total)	mg/L	0.2	8.6	23.4	8.6	
Strontium (Total)	mg/L	0.001	0.129	0.196	0.133	
Zinc (Total)	mg/L	0.005	0.021	0.020	0.019	
Arsenic (Total)	mg/L	0.0001	0.0002	<0.0001	0.0002	
Cadmium (Total)	mg/L	0.000015	<0.000015	<0.000015	0.000020	
Chromium (Total)	mg/L	0.001	<0.001	<0.001	<0.001	
Cobalt (Total)	mg/L	0.0001	0.0001	0.0002	0.0002	
Copper (Total)	mg/L	0.0001	0.0003	0.0008	0.0003	
Lead (Total)	mg/L	0.00002	0.00005	0.00004	0.00004	
Mercury	mg/L	0.00002	<0.00002	<0.00002	<0.00002	
pH (Client Data)	pH units	-	7.40	7.30		
Temperature (Client Data)	°C	-	17.2	13.2		



**Michelle Dubien**  
**Data Specialist**

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**C.O.C.: G 136889**

**REPORT No: 25-033014 - Rev. 0**

**Report To:**

Jp2g Consultants Inc  
 1150 Morrison Dr.  
 Ottawa, ON K2H 8S9

**CADUCEON Environmental Laboratories**

2378 Holly Lane  
 Ottawa, ON K1V 7P1

**Attention: Nick Weston**

DATE RECEIVED: 2025-Oct-24  
 DATE REPORTED: 2025-Nov-06  
 SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Black Donald 22-6213D  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	7	OTTAWA	PCURIEL	2025-Oct-27	A-IC-01	SM 4110B
COD (Liquid)	7	KINGSTON	MWILSON	2025-Oct-30	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	7	OTTAWA	SBOUDREAU	2025-Oct-30	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	7	OTTAWA	MMACMILLAN	2025-Oct-31	C-OC-01	EPA 415.2
ICP/MS (Liquid)	7	OTTAWA	GFENTON	2025-Oct-30	D-ICPMS-01	EPA 200.8
ICP/OES (Liquid)	7	OTTAWA	SGORMAN	2025-Oct-28	D-ICP-01	SM 3120B
Mercury (Liquid)	7	OTTAWA	TBENNETT	2025-Oct-28	D-HG-02	SM 3112B
Ammonia (Liquid)	7	KINGSTON	DCASSIDY	2025-Oct-31	NH3-001	SM 4500NH3
Phenols (Liquid)	7	KINGSTON	EHINCH	2025-Nov-04	PHEN-01	MECP E3179
TP & TKN (Liquid)	7	KINGSTON	YLIEN	2025-Nov-04	TPTKN-001	MECP E3516.2

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



**Michelle Dubien**  
**Data Specialist**

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Final Report

REPORT No: 25-033014 - Rev. 0

Parameter	Units	R.L.	Client I.D.	MW08-6	MW08-7D	MW08-7S	BH1	BH4
			Sample I.D.	25-033014-1	25-033014-2	25-033014-3	25-033014-4	25-033014-5
			Date Collected	2025-10-23	2025-10-23	2025-10-23	2025-10-23	2025-10-23
				-	-	-	-	-
Alkalinity(CaCO3) to pH4.5	mg/L	5		177	380	190	504	794
TDS (Calc. from Cond.) (Calculated)	mg/L	3		184	425	256	507	1110
Conductivity @25°C	uS/cm	1		357	808	495	953	2010
pH @25°C	pH units	-		7.94	7.91	8.17	7.86	7.49
Chloride	mg/L	0.5		2.6	26.1	38.0	8.5	51.0
Nitrate (N)	mg/L	0.05		0.12	0.13	0.06	0.33	<0.40
Nitrite (N)	mg/L	0.05		0.09	0.09	0.09	0.09	<0.40
Sulphate	mg/L	1		9	27	6	16	361
Phosphorus (Total)	mg/L	0.01		0.02	1.06	0.69	0.05	0.07
Total Kjeldahl Nitrogen	mg/L	0.1		0.1	0.8	0.2	1.0	2.3
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05		<0.05	0.07	<0.05	0.75	1.21
Dissolved Organic Carbon	mg/L	0.8		3.5	9.3	4.0	7.2	23.2
Phenolics	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
COD	mg/L	5		<5	61	20	15	84
Hardness (as CaCO3)	mg/L	0.02		194	432	197	499	1010
Aluminum	mg/L	0.01		0.04	0.10	0.04	0.10	0.16
Barium	mg/L	0.001		0.022	0.091	0.042	0.051	0.097
Boron	mg/L	0.005		0.009	0.668	0.006	0.261	3.87
Calcium	mg/L	0.02		72.3	148	66.5	153	344
Iron	mg/L	0.005		0.006	<0.005	0.009	0.564	2.19
Magnesium	mg/L	0.02		3.25	15.0	7.54	28.3	36.8



**Michelle Dubien**  
Data Specialist

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Final Report  
REPORT No: 25-033014 - Rev. 0

Parameter	Units	R.L.	Client I.D.	MW08-6	MW08-7D	MW08-7S	BH1	BH4
			Sample I.D.	25-033014-1	25-033014-2	25-033014-3	25-033014-4	25-033014-5
			Date Collected	2025-10-23	2025-10-23	2025-10-23	2025-10-23	2025-10-23
				-	-	-	-	-
Manganese	mg/L	0.001		<0.001	0.119	<0.001	0.248	0.861
Potassium	mg/L	0.1		1.7	1.9	1.6	3.5	17.1
Silicon	mg/L	0.01		3.73	4.14	4.09	9.79	7.79
Sodium	mg/L	0.2		2.1	22.3	30.0	24.5	87.2
Strontium	mg/L	0.001		0.379	0.336	0.125	0.396	1.02
Zinc	mg/L	0.005		<0.005	<0.005	<0.005	0.005	<0.005
Arsenic	mg/L	0.0001		0.0002	0.0001	<0.0001	0.0003	0.0006
Cadmium	mg/L	0.000015		<0.000015	0.000017	<0.000015	<0.000015	<0.000015
Chromium	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.0001		0.0006	0.0010	0.0001	0.0046	0.0027
Copper	mg/L	0.0001		0.0023	0.0017	0.0026	0.0010	0.0010
Lead	mg/L	0.00002		0.00003	0.00004	0.00006	<0.00002	0.00003
Mercury	mg/L	0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
pH (Client Data)	pH units	-		7.60	6.60	7.00	6.90	6.80
Temperature (Client Data)	°C	-		7.50	7.00	6.90	10.3	10.3



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Final Report  
REPORT No: 25-033014 - Rev. 0

Parameter	Units	R.L.	Client I.D.	Dup#1
			Sample I.D.	25-033014-7
			Date Collected	2025-10-23
				-
Alkalinity(CaCO3) to pH4.5	mg/L	5	224	179
TDS (Calc. from Cond.) (Calculated)	mg/L	3	238	185
Conductivity @25°C	uS/cm	1	461	360
pH @25°C	pH units	-	8.04	8.01
Chloride	mg/L	0.5	2.3	1.9
Nitrate (N)	mg/L	0.05	0.06	0.08
Nitrite (N)	mg/L	0.05	0.11	<0.05
Sulphate	mg/L	1	19	9
Phosphorus (Total)	mg/L	0.01	0.04	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	0.2	0.2
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05	<0.05
Dissolved Organic Carbon	mg/L	0.8	2.8	3.4
Phenolics	mg/L	0.001	<0.001	<0.001
COD	mg/L	5	13	5
Hardness (as CaCO3)	mg/L	0.02	247	191
Aluminum	mg/L	0.01	0.07	0.05
Barium	mg/L	0.001	0.017	0.021
Boron	mg/L	0.005	0.012	0.011
Calcium	mg/L	0.02	93.8	71.0
Iron	mg/L	0.005	<0.005	<0.005
Magnesium	mg/L	0.02	3.05	3.18



**Michelle Dubien**  
Data Specialist

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Parameter	Units	R.L.	Client I.D.	Dup#1	
			Sample I.D.	25-033014-6	25-033014-7
			Date Collected	2025-10-23	2025-10-23
				-	-
Manganese	mg/L	0.001	<0.001	<0.001	
Potassium	mg/L	0.1	3.1	1.7	
Silicon	mg/L	0.01	6.50	3.69	
Sodium	mg/L	0.2	3.0	2.1	
Strontium	mg/L	0.001	0.190	0.371	
Zinc	mg/L	0.005	<0.005	<0.005	
Arsenic	mg/L	0.0001	0.0001	0.0002	
Cadmium	mg/L	0.000015	<0.000015	<0.000015	
Chromium	mg/L	0.001	<0.001	<0.001	
Cobalt	mg/L	0.0001	0.0003	0.0006	
Copper	mg/L	0.0001	0.0004	0.0011	
Lead	mg/L	0.00002	<0.00002	<0.00002	
Mercury	mg/L	0.00002	<0.00002	<0.00002	
pH (Client Data)	pH units	-	7.50		
Temperature (Client Data)	°C	-	7.50		

Elevated RLs due to sample matrix interferences



**Michelle Dubien**  
**Data Specialist**

**C.O.C.: G 136664**

**REPORT No: 25-033015 - Rev. 0**

**Report To:**

Jp2g Consultants Inc  
 1150 Morrison Dr.  
 Ottawa, ON K2H 8S9

**CADUCEON Environmental Laboratories**

2378 Holly Lane  
 Ottawa, ON K1V 7P1

**Attention: Nick Weston**

DATE RECEIVED: 2025-Oct-24  
 DATE REPORTED: 2025-Nov-05  
 SAMPLE MATRIX: Surface Water

CUSTOMER PROJECT: Black Donald 22-6213D  
 P.O. NUMBER:

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	LMACGREGOR	2025-Oct-30	A-IC-01	SM 4110B
BOD5 (Liquid)	1	KINGSTON	JWOLFE2	2025-Oct-30	BOD-001	SM 5210B
COD (Liquid)	1	KINGSTON	MWILSON	2025-Oct-29	COD-001	SM 5220D
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2025-Oct-30	COND-02/PH-02/A LK-02	SM 2510B/4500H/ 2320B
DOC (Liquid)	1	OTTAWA	MMACMILLAN	2025-Oct-29	C-OC-01	EPA 415.2
ICP/MS Total (Liquid)	1	OTTAWA	TPRICE	2025-Oct-27	D-ICPMS-01	EPA 6020
ICP/OES Total (Liquid)	1	OTTAWA	SGORMAN	2025-Oct-27	D-ICP-01	SM 3120B
Mercury (Liquid)	1	OTTAWA	TBENNETT	2025-Oct-27	D-HG-02	SM 3112B
Ammonia (Liquid)	1	KINGSTON	DCASSIDY	2025-Oct-31	NH3-001	SM 4500NH3
Phenols (Liquid)	1	KINGSTON	EHINCH	2025-Nov-04	PHEN-01	MECP E3179
TP & TKN (Liquid)	1	KINGSTON	YLIEN	2025-Nov-04	TPTKN-001	MECP E3516.2
TSS (Liquid)	1	KINGSTON	DCHAUDHARI	2025-Oct-28	TSS-001	SM 2540D

R.L. = Reporting Limit

NC = Not Calculated

Test methods may be modified from specified reference method unless indicated by an \*



**Michelle Dubien**  
**Data Specialist**

**CADUCEON Environmental Laboratories Certificate of Analysis**

Final Report  
REPORT No: 25-033015 - Rev. 0

Parameter	Units	R.L.	Client I.D.
			SW5
			Sample I.D.
			25-033015-1
			Date Collected
			2025-10-23
Alkalinity(CaCO3) to pH4.5	mg/L	5	190
TDS (Calc. from Cond.) (Calculated)	mg/L	3	254
Conductivity @25°C	uS/cm	1	491
pH @25°C	pH units	-	8.08
Chloride	mg/L	0.5	33.3
Nitrate (N)	mg/L	0.05	<0.05
Nitrite (N)	mg/L	0.05	<0.05
Sulphate	mg/L	1	21
BOD5	mg/L	3	<3
Total Suspended Solids	mg/L	3	4
Phosphorus (Total)	mg/L	0.01	0.04
Total Kjeldahl Nitrogen	mg/L	0.1	0.6
Ammonia (N)-Total (NH3+NH4)	mg/L	0.05	<0.05
Dissolved Organic Carbon	mg/L	0.8	10.1
Phenolics	mg/L	0.001	<0.001
COD	mg/L	5	27
Hardness (as CaCO3)	mg/L	0.02	202
Aluminum (Total)	mg/L	0.01	0.04
Barium (Total)	mg/L	0.001	0.059
Boron (Total)	mg/L	0.005	0.037
Calcium (Total)	mg/L	0.02	64.6



**Michelle Dubien**  
**Data Specialist**

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Parameter	Units	R.L.	Client I.D.
			SW5
			Sample I.D.
			25-033015-1
			Date Collected
			2025-10-23
Parameter	Units	R.L.	
Iron (Total)	mg/L	0.005	0.190
Magnesium (Total)	mg/L	0.02	9.84
Manganese (Total)	mg/L	0.001	0.041
Potassium (Total)	mg/L	0.1	3.0
Silicon (Total)	mg/L	0.01	4.00
Sodium (Total)	mg/L	0.2	17.0
Strontium (Total)	mg/L	0.001	0.133
Zinc (Total)	mg/L	0.005	0.005
Arsenic (Total)	mg/L	0.0001	0.0002
Cadmium (Total)	mg/L	0.000015	<0.000015
Chromium (Total)	mg/L	0.001	<0.001
Cobalt (Total)	mg/L	0.0001	0.0001
Copper (Total)	mg/L	0.0001	0.0017
Lead (Total)	mg/L	0.00002	0.00004
Mercury	mg/L	0.00002	<0.00002
pH (Client Data)	pH units	-	6.9
Temperature (Client Data)	°C	-	8.5



**Michelle Dubien**  
**Data Specialist**

Appendix I  
Chemistry Analysais  
2023-2025

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BH 1					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>									
Alkalinity(CaCO3) to pH4.5	30-500	226	363	503	509	359	559	287	504
TDS (Calc. from Cond.)								291	507
pH @25°C	6.5 - 8.5			7.71			7.72	7.91	7.86
Conductivity @25°C				969			1060	562	953
Chloride	250	0.8	125	18.1	13.8	3.8	5	3.1	8.5
Nitrate (N)	10	0.11	2.6	0.38	0.29	0.17	0.91	0.25	0.33
Nitrite (N)	1		0.25	<0.05		<0.05		<0.05	0.09
Sulphate	500	14.00	257	26	24	11	15	8	16
Phosphorus (Total)		0.03		0.03	0.02	0.04	0.04	1.25	0.05
Total Kjeldahl Nitrogen		0.20		2.1	1.9	0.6	1.3	0.4	1
Ammonia (N)-Total (NH3+NH4)		0.08		2.1	1.46	0.44	1.27	0.18	0.75
Dissolved Organic Carbon	5	2.60	3.6	8	11.7	5.8	8	2	7.2
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				20	24	10	22	21	15
Hardness (as CaCO3)	500	209	355	394	510	281	600	264	499
Aluminum	0.1	0.03	0.065	0.06	0.06	0.02	0.05	0.02	0.1
Barium	1	0.02	0.3	0.055	0.099	0.021	0.061	0.018	0.051
Boron	5	0.01	1.26	0.655	0.715	0.136	0.437	0.07	0.261
Calcium		79		121	163	79.9	180	77.6	153
Iron	0.3	0.01	0.16	<0.005	3.6	0.194	0.624	0.077	0.564
Magnesium		2.78		22.3	24.9	19.8	36.5	16.9	28.3
Manganese	0.05	0.001	0.03	0.52	0.866	0.074	0.307	0.045	0.248
Potassium		2.4		5.1	7.6	1.8	4.4	1.2	3.5
Silicon		4.38		9.55	9.83	9.06	10.8	8.81	9.79
Sodium	200	2.8	101	50.5	51.5	30.9	47.9	17.4	24.5
Strontium		0.26		0.352	0.41	0.265	0.489	0.22	0.396
Zinc	5	0.005	2.5	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Arsenic	0.01		0.005	0.0002				0.0003	0.0003
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015	<0.000015	0.000021	<0.000015	<0.000015
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt		0.0004		0.0025	0.0088	0.0024	0.007	0.0009	0.0046
Copper	1	0.002	0.5	0.0031	0.0016	0.0023	0.0026	0.0018	0.001
Lead	0.010			0.00004				<0.00002	<0.00002
Mercury	0.001			<0.00002				<0.00002	<0.00002
Anion Sum				11.1	11.1	7.53			
Cation Sum				10.4	12.9	7.03			
% Difference				3.48	7.4	3.46			
Ion Ratio				1.07	0.862	1.07			
Sodium Adsorption Ratio				1.11	0.993	0.803			
TDS (Ion Sum Calc)	500	231	366	549	596	364			
TDS(calc.)/EC(actual)				0.567	0.603	0.545			
Conductivity Calc				935	1030	641			
Conductivity Calc / Conductivity				0.965	1.04	0.96			
Langelier Index(25°C)				1.02	1.3	0.965			
Saturation pH (25°C)				6.69	6.55	6.99			
Benzene				<0.5					
Dichlorobenzene,1,4-				<0.5					
Dichloromethane				<5					
Toluene				<0.5					
Vinyl Chloride				<0.2					
<b>Field Measured</b>									
Water Temp. (°C)				11.2	9.7	9.0	11.3	7.6	10.3
Conductivity (microS/cm)				800	1090	740	1140	630	1100
pH (pH units)	6.5-8.5			6.2	7.4	6.3	7.00	7	6.9

## Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BH 2					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>									
Alkalinity(CaCO3) to pH4.5	30-500	226	363	244	228	228	214	239	224
TDS (Calc. from Cond.)								255	238
pH @25°C	6.5 - 8.5			7.81			7.91	7.88	8.04
Conductivity @25°C				456			446	493	461
Chloride	250	0.8	125	0.7	0.7	1.8	0.8	1.1	2.3
Nitrate (N)	10	0.11	2.6	<0.05	0.11	<0.05	0.14	0.05	0.06
Nitrite (N)	1		0.25	<0.05		<0.05		<0.05	0.11
Sulphate	500	14.00	257	12	16	13	14	17	19
Phosphorus (Total)		0.03		0.04	0.02	0.03	0.02	0.02	0.04
Total Kjeldahl Nitrogen		0.20		0.2	0.2	0.2	<0.1	<0.1	0.2
Ammonia (N)-Total (NH3+NH4)		0.08		<0.05	<0.05	<0.05	0.09	<0.05	<0.05
Dissolved Organic Carbon	5	2.60	3.6	0.8	2.6	2.8	2.2	1.7	2.8
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				6	<5	22	<5	8	13
Hardness (as CaCO3)	500	209	355	227	235	216	258	241	247
Aluminum	0.1	0.03	0.065	0.05	0.03	0.02	0.04	0.03	0.07
Barium	1	0.02	0.3	0.031	0.02	0.015	0.018	0.018	0.017
Boron	5	0.01	1.26	0.009	0.006	0.007	0.009	0.017	0.012
Calcium		79		86.5	89.6	81.8	98.6	90.4	93.8
Iron	0.3	0.01	0.16	0.015	<0.005	0.007	<0.005	<0.005	<0.005
Magnesium		2.78		2.66	2.68	2.76	2.93	3.56	3.05
Manganese	0.05	0.001	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Potassium		2.4		2.7	2.7	2.8	3.2	3.3	3.1
Silicon		4.38		5.7	6.01	6.02	6.22	6.74	6.5
Sodium	200	2.8	101	2.3	2.8	2.6	2.8	3.4	3
Strontium		0.26		0.175	0.165	0.174	0.183	0.214	0.19
Zinc	5	0.005	2.5	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.01		0.005	0.0001				0.0001	0.0001
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt		0.0004		0.0003	0.0002	0.0002	0.0002	0.0002	0.0003
Copper	1	0.002	0.5	0.0038	0.0012	0.0013	0.0014	0.0021	0.0004
Lead	0.010			0.00011				<0.00002	<0.00002
Mercury	0.001			<0.00002				<0.00002	<0.00002
Anion Sum				5.13	4.92	4.89			
Cation Sum				4.71	4.88	4.5			
% Difference				4.26	0.386	4.15			
Ion Ratio				1.09	1.01	1.09			
Sodium Adsorption Ratio				0.0676	0.0781	0.0781			
TDS (Ion Sum Calc)	500	231	366	253	252	242			
TDS(calc.)/EC(actual)				0.554	0.554	0.529			
Conductivity Calc				455	459	438			
Conductivity Calc / Conductivity				0.999	1.01	0.956			
Langelier Index(25°C)				0.701	0.998	0.839			
Saturation pH (25°C)				7.11	7.12	7.16			
Benzene				<0.5					
Dichlorobenzene,1,4-				<0.5					
Dichloromethane				<5					
Toluene				<0.5					
Vinyl Chloride				<0.2					
<b>Field Measured</b>									
Water Temp. (°C)				9.9	8.8	8.1	10.5	6.7	7.5
Conductivity (microS/cm)				510	550	530	510	560	570
pH (pH units)	6.5-8.5			7.5	7.8	6.9	7.6	7.5	7.5

Notes:

All values reported in mg/L unless otherwise noted

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Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BH 3				
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25
<b>Parameters mg/L</b>				NS	NS	NS	NS	NS
Alkalinity(CaCO3) to pH4.5	30-500	226	363					
TDS (Calc. from Cond.)								
pH @25°C	6.5 - 8.5							
Conductivity @25°C								
Chloride	250	0.8	125					
Nitrate (N)	10	0.11	2.6					
Nitrite (N)	1		0.25					
Sulphate	500	14.00	257					
Phosphorus (Total)		0.03						
Total Kjeldahl Nitrogen		0.20						
Ammonia (N)-Total (NH3+NH4)		0.08						
Dissolved Organic Carbon	5	2.60	3.6					
Phenolics		0.002						
COD								
Hardness (as CaCO3)	500	209	355					
Aluminum	0.1	0.03	0.065					
Barium	1	0.02	0.3					
Boron	5	0.01	1.26					
Calcium		79						
Iron	0.3	0.01	0.16					
Magnesium		2.78						
Manganese	0.05	0.001	0.03					
Potassium		2.4						
Silicon		4.38						
Sodium	200	2.8	101					
Strontium		0.26						
Zinc	5	0.005	2.5					
Arsenic	0.01		0.005					
Cadmium	0.005	0.000015	0.0013					
Chromium	0.050	0.001	0.013					
Cobalt		0.0004						
Copper	1	0.002	0.5					
Lead	0.010							
Mercury	0.001							
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)	500	231	366					
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
Benzene								
Dichlorobenzene,1,4-								
Dichloromethane								
Toluene								
Vinyl Chloride								
<b>Field Measured</b>								
Water Temp. (°C)								
Conductivity (microS/cm)								
pH (pH units)	6.5-8.5							

Notes:

All values reported in mg/L unless otherwise noted

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Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BH 4					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>									
Alkalinity(CaCO3) to pH4.5	30-500	226	363	623	533	577	501	765	794
TDS (Calc. from Cond.)								1170	1110
pH @25°C	6.5 - 8.5			7.62			7.36	7.35	7.49
Conductivity @25°C				1640			1990	2120	2010
Chloride	250	0.8	125	45.5	20.2	12.1	6	37.8	51
Nitrate (N)	10	0.11	2.6	0.47	0.06	0.5	<0.05	0.54	<0.40
Nitrite (N)	1		0.25	<0.05		<0.05		<0.05	<0.40
Sulphate	500	14.00	257	295	228	352	675	447	361
Phosphorus (Total)		0.03		0.03	0.02	0.08	0.05	0.01	0.07
Total Kjeldahl Nitrogen		0.20		1.4	0.9	1.6	1	1.1	2.3
Ammonia (N)-Total (NH3+NH4)		0.08		0.63	0.33	0.29	0.4	0.22	1.21
Dissolved Organic Carbon	5	2.60	3.6	5.6	13.4	27.8	14.5	19.7	23.2
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				70	42	92	37	80	84
Hardness (as CaCO3)	500	209	355	794	756	799	1090	1110	1010
Aluminum	0.1	0.03	0.065	0.11	0.08	0.11	0.1	0.1	0.16
Barium	1	0.02	0.3	0.101	0.099	0.263	0.137	0.108	0.097
Boron	5	0.01	1.26	2.11	0.862	0.782	0.434	2.58	3.87
Calcium		79		277	273	276	392	377	344
Iron	0.3	0.01	0.16	0.007	0.012	0.392	2.54	<0.005	2.19
Magnesium		2.78		24.7	17.8	26.2	27.8	41.6	36.8
Manganese	0.05	0.001	0.03	0.532	1.06	30.2	8.22	0.009	0.861
Potassium		2.4		11.1	8.2	14.7	19.8	14.05	17.12
Silicon		4.38		6	5.71	7.66	7.25	7.32	7.79
Sodium	200	2.8	101	48.3	25.60	96.10	97.50	75.5	87.2
Strontium		0.26		0.686	0.616	0.843	1.03	1.02	1.02
Zinc	5	0.005	2.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.01		0.005	0.0008				0.0008	0.0006
Cadmium	0.005	0.000015	0.0013	0.000042	0.00	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt		0.0004		0.0018	0.0013	0.0053	0.0079	0.0023	0.0027
Copper	1	0.002	0.5	0.0045	0.0047	0.0011	0.0022	0.0072	0.001
Lead	0.010			0.00004				<0.00002	0.00003
Mercury	0.001			<0.00002				<0.00002	<0.00002
Anion Sum				20.1	16	19.2			
Cation Sum				18.3	16.5	21.6			
% Difference				4.83	1.53	5.86			
Ion Ratio				1.1	0.97	0.889			
Sodium Adsorption Ratio				0.746	0.405	1.48			
TDS (Ion Sum Calc)	500	231	366	1090	894	1160			
TDS(calc.)/EC(actual)				0.665	0.651	0.665			
Conductivity Calc				1610	1380	1620			
Conductivity Calc / Conductivity				0.982	1.01	0.934			
Langelier Index(25°C)				1.34	1.32	1.52			
Saturation pH (25°C)				6.28	6.33	6.31			
Benzene				<0.5					
Dichlorobenzene,1,4-				<0.5					
Dichloromethane				<5					
Toluene				<0.5					
Vinyl Chloride				<0.2					
<b>Field Measured</b>									
Water Temp. (°C)				10.2	9.6	8.9	10.9	7.9	10.3
Conductivity (microS/cm)				1770	1480	1710	2230	2230	2190
pH (pH units)	6.5-8.5			6.2	7.2	6.8	6.7	6.4	6.8

Notes:

All values reported in mg/L unless otherwise noted

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Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	MW-08-5					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>				NS	NS	NS	NS	NS	NS
Alkalinity(CaCO3) to pH4.5	30-500	226	363						
TDS (Calc. from Cond.)									
pH @25°C	6.5 - 8.5								
Conductivity @25°C									
Chloride	250	0.8	125						
Nitrate (N)	10	0.11	2.6						
Nitrite (N)	1		0.25						
Sulphate	500	14.00	257						
Phosphorus (Total)		0.03							
Total Kjeldahl Nitrogen		0.20							
Ammonia (N)-Total (NH3+NH4)		0.08							
Dissolved Organic Carbon	5	2.60	3.6						
Phenolics		0.002							
COD									
Hardness (as CaCO3)	500	209	355						
Aluminum	0.1	0.03	0.065						
Barium	1	0.02	0.3						
Boron	5	0.01	1.26						
Calcium		79							
Iron	0.3	0.01	0.16						
Magnesium		2.78							
Manganese	0.05	0.001	0.03						
Potassium		2.4							
Silicon		4.38							
Sodium	200	2.8	101						
Strontium		0.26							
Zinc	5	0.005	2.5						
Arsenic	0.01		0.005						
Cadmium	0.005	0.000015	0.0013						
Chromium	0.050	0.001	0.013						
Cobalt		0.0004							
Copper	1	0.002	0.5						
Lead	0.010								
Mercury	0.001								
Anion Sum									
Cation Sum									
% Difference									
Ion Ratio									
Sodium Adsorption Ratio									
TDS (Ion Sum Calc)	500	231	366						
TDS(calc.)/EC(actual)									
Conductivity Calc									
Conductivity Calc / Conductivity									
Langelier Index(25°C)									
Saturation pH (25°C)									
Benzene									
Dichlorobenzene,1,4-									
Dichloromethane									
Toluene									
Vinyl Chloride									
<b>Field Measured</b>									
Water Temp. (°C)									
Conductivity (microS/cm)									
pH (pH units)	6.5-8.5								

Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	MW 08-6					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Apr-25
<b>Parameters mg/L</b>									Dup#1
Alkalinity(CaCO3) to pH4.5	30-500	226	363	192	169	182	176	197	196
TDS (Calc. from Cond.)								206	205
pH @25°C	6.5 - 8.5			8.07			8.03	7.79	7.98
Conductivity @25°C				364			362.00	400	398
Chloride	250	0.8	125	0.8	<0.5	1.7	0.7	0.8	0.8
Nitrate (N)	10	0.11	2.6	0.09	0.08	<0.05	<0.05	0.07	0.08
Nitrite (N)	1		0.25	<0.05		<0.05		<0.05	<0.05
Sulphate	500	14.00	257	12	8	10	8	10	10
Phosphorus (Total)		0.03		<0.01	<0.01	0.03	0.02	0.01	0.02
Total Kjeldahl Nitrogen		0.20		0.2	0.1	0.2	0.1	0.1	0.1
Ammonia (N)-Total (NH3+NH4)		0.08		<0.05	<0.05	<0.05	0.08	<0.05	<0.05
Dissolved Organic Carbon	5	2.60	3.6	2.1	4.4	4.9	3	1.8	2
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				6	<5	<5	<5	6	6
Hardness (as CaCO3)	500	209	355	179	174	164	207	197	194
Aluminum	0.1	0.03	0.065	0.05	0.02	0.07	0.02	0.02	0.02
Barium	1	0.02	0.3	0.035	0.024	0.02	0.023	0.024	0.024
Boron	5	0.01	1.26	0.01	<0.005	0.009	0.014	0.017	0.016
Calcium		79		67	65.3	60.7	77.3	72.7	71.7
Iron	0.3	0.01	0.16	0.011	<0.005	0.172	<0.005	0.01	<0.005
Magnesium		2.78		2.78	2.59	2.85	3.35	3.6	3.62
Manganese	0.05	0.001	0.03	<0.001	0.001	0.002	<0.001	<0.001	<0.001
Potassium		2.4		2.1	1.6	2	1.9	2.1	2.1
Silicon		4.38		3.37	3.14	3.57	3.5	3.93	3.94
Sodium	200	2.8	101	2.1	1.7	2.1	2.2	2.5	2.5
Strontium		0.26		0.299	0.258	0.288	0.361	0.411	0.416
Zinc	5	0.005	2.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.01		0.005	0.0002				0.0002	0.0002
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	0.026	<0.001
Cobalt		0.0004		0.0008	0.0005	0.0009	0.0006	0.0006	0.0006
Copper	1	0.002	0.5	0.003	0.001	0.0016	0.0059	0.0012	0.0131
Lead	0.010			0.00003				<0.00002	<0.00002
Mercury	0.001			<0.00002				<0.00002	<0.00002
Anion Sum				4.11	3.56	3.9			
Cation Sum				3.73	3.59	3.42			
% Difference				4.91	0.43	6.56			
Ion Ratio				1.1	0.991	1.14			
Sodium Adsorption Ratio				0.0683	0.0561	0.0709			
TDS (Ion Sum Calc)	500	231	366	202	182	189			
TDS(calc.)/EC(actual)				0.555	0.54	0.537			
Conductivity Calc				368	339	345			
Conductivity Calc / Conductivity				1.01	1.01	0.977			
Langelier Index(25°C)				0.747	0.73	0.621			
Saturation pH (25°C)				7.32	7.37	7.38			
Benzene				<0.5					
Dichlorobenzene,1,4-				<0.5					
Dichloromethane				<5					
Toluene				<0.5					
Vinyl Chloride				<0.2					
<b>Field Measured</b>									
Water Temp. (°C)				11.0	7.6	8.8	9.5	7.5	
Conductivity (microS/cm)				420	410	420	420	460	
pH (pH units)	6.5-8.5			7.8	6.8	5.8	7.4	7.6	

Notes:

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Values exceed ODWS

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**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	MW 08-6						
				Oct-25	Oct-25					
<u>Parameters mg/L</u>					Dup#1					
Alkalinity(CaCO3) to pH4.5	30-500	226	363	177	179					
TDS (Calc. from Cond.)				184	185					
pH @25°C	6.5 - 8.5			7.94	8.01					
Conductivity @25°C				357	360					
Chloride	250	0.8	125	2.6	1.9					
Nitrate (N)	10	0.11	2.6	0.12	0.08					
Nitrite (N)	1		0.25	0.09	<0.05					
Sulphate	500	14.00	257	9	9					
Phosphorus (Total)		0.03		0.02	0.02					
Total Kjeldahl Nitrogen		0.20		0.1	0.2					
Ammonia (N)-Total (NH3+NH4)		0.08		<0.05	<0.05					
Dissolved Organic Carbon	5	2.60	3.6	3.5	3.4					
Phenolics		0.002		<0.001	<0.001					
COD				<5	5					
Hardness (as CaCO3)	500	209	355	194	191					
Aluminum	0.1	0.03	0.065	0.04	0.05					
Barium	1	0.02	0.3	0.022	0.021					
Boron	5	0.01	1.26	0.009	0.011					
Calcium		79		72.3	71					
Iron	0.3	0.01	0.16	0.006	<0.005					
Magnesium		2.78		3.25	3.18					
Manganese	0.05	0.001	0.03	<0.001	<0.001					
Potassium		2.4		1.7	1.7					
Silicon		4.38		3.73	3.69					
Sodium	200	2.8	101	2.1	2.1					
Strontium		0.26		0.379	0.371					
Zinc	5	0.005	2.5	<0.005	<0.005					
Arsenic	0.01		0.005	0.0002	0.0002					
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015					
Chromium	0.050	0.001	0.013	<0.001	<0.001					
Cobalt		0.0004		0.0006	0.0006					
Copper	1	0.002	0.5	0.0023	0.0011					
Lead	0.010			0.00003	<0.00002					
Mercury	0.001			<0.00002	<0.00002					
Anion Sum										
Cation Sum										
% Difference										
Ion Ratio										
Sodium Adsorption Ratio										
TDS (Ion Sum Calc)	500	231	366							
TDS(calc.)/EC(actual)										
Conductivity Calc										
Conductivity Calc / Conductivity										
Langelier Index(25°C)										
Saturation pH (25°C)										
Benzene										
Dichlorobenzene,1,4-										
Dichloromethane										
Toluene										
Vinyl Chloride										
<u>Field Measured</u>										
Water Temp. (°C)				7.5						
Conductivity (microS/cm)				460						
pH (pH units)	6.5-8.5			7.6						

Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	MW 08-7S (Previously MW 08-7)					
				Jun-23	Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>									
Alkalinity(CaCO3) to pH4.5	30-500	226	363	176	203	202	225	217	190
TDS (Calc. from Cond.)								337	256
pH @25°C	6.5 - 8.5			7.97			8.11	8.01	8.17
Conductivity @25°C				427			593	649	495
Chloride	250	0.8	125	31	38.3	62.1	48.20	71.2	38
Nitrate (N)	10	0.11	2.6	<0.05	0.07	<0.05	<0.05	0.12	0.06
Nitrite (N)	1		0.25	<0.05		<0.05		<0.05	0.09
Sulphate	500	14.00	257	7	4	14	4	5	6
Phosphorus (Total)		0.03			0.77	0.24	0.93	0.92	0.69
Total Kjeldahl Nitrogen		0.20		0.1	0.2	0.2	0.20	0.2	0.2
Ammonia (N)-Total (NH3+NH4)		0.08		<0.05	<0.05	<0.05	0.09	<0.05	<0.05
Dissolved Organic Carbon	5	2.60	3.6	2	3.3	3.9	3.70	2	4
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				18	10	<5	30	24	20
Hardness (as CaCO3)	500	209	355	170	199	225	255.00	261	197
Aluminum	0.1	0.03	0.065	0.04	0.02	0.02	0.03	0.02	0.04
Barium	1	0.02	0.3	0.034	0.048	0.044	0.06	0.056	0.042
Boron	5	0.01	1.26	<0.005	<0.005	0.013	0.01	0.01	0.006
Calcium		79		57	67.9	74	86.30	86	66.5
Iron	0.3	0.01	0.16	0.007	<0.005	0.011	<0.005	<0.005	0.009
Magnesium		2.78		6.61	7.12	9.6	9.67	11.1	7.54
Manganese	0.05	0.001	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Potassium		2.4		1.2	1.4	1.6	2.10	1.9	1.6
Silicon		4.38		3.16	3.72	3.72	4.52	4.14	4.09
Sodium	200	2.8	101	20.9	26.1	25.3	37.00	27.8	30
Strontium		0.26		0.102	0.113	0.151	0.16	0.177	0.125
Zinc	5	0.005	2.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.01		0.005	<0.0001				<0.0001	<0.0001
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt		0.0004		0.0001	0.0001	0.0001	0.00	0.0001	0.0001
Copper	1	0.002	0.5	0.0012	0.0015	0.0015	0.00	0.0017	0.0026
Lead	0.010			0.00002				<0.00002	0.00006
Mercury	0.001			<0.00002				<0.00002	<0.00002
Anion Sum				4.54	5.22	6.09			
Cation Sum				4.33	5.15	5.63			
% Difference				2.34	0.722	3.94			
Ion Ratio				1.05	1.01	1.08			
Sodium Adsorption Ratio				0.698	0.805	0.734			
TDS (Ion Sum Calc)	500	231	366	229	267	308			
TDS(calc.)/EC(actual)				0.537	0.532	0.514			
Conductivity Calc				432	503	581			
Conductivity Calc / Conductivity				1.01	1	0.968			
Langelier Index(25°C)				0.54	0.916	0.693			
Saturation pH (25°C)				7.43	7.29	7.27			
Benzene				<0.5					
Dichlorobenzene,1,4-				<0.5					
Dichloromethane				<5					
Toluene				<0.5					
Vinyl Chloride				<0.2					
<b>Field Measured</b>									
Water Temp. (°C)				7.8	6.8	6.8	10.6	6.0	6.9
Conductivity (microS/cm)				520	590	680	680	730	620
pH (pH units)	6.5-8.5			6.3	8	6.7	7.8	7.3	7

## Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	MW 23-7D (Well Installed Nov 2023) (MW08-7D)					
				Nov-23	Apr-24	DUP #1	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>									
Alkalinity(CaCO3) to pH4.5	30-500	226	363	320	374	379	320	395	380
TDS (Calc. from Cond.)								430	425
pH @25°C	6.5 - 8.5						7.69	7.73	7.91
Conductivity @25°C							802	817	808
Chloride	250	0.8	125	37.1	22.7	22.8	45.7	13.5	26.1
Nitrate (N)	10	0.11	2.6	0.12	0.14	0.13	<0.05	0.34	0.13
Nitrite (N)	1		0.25		<0.05	<0.05		<0.05	0.09
Sulphate	500	14.00	257	23	21	21	27	24	27
Phosphorus (Total)		0.03		5.19	3.76	2.82	2.11	1.24	1.06
Total Kjeldahl Nitrogen		0.20		1.7	2.1	2.1	0.70	0.4	0.8
Ammonia (N)-Total (NH3+NH4)		0.08		0.06	<0.05	<0.05	0.19	<0.05	0.07
Dissolved Organic Carbon	5	2.60	3.6	6.4	9.4	9.7	7.20	5.7	9.3
Phenolics		0.002		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD				130	70	69	69	47	61
Hardness (as CaCO3)	500	209	355	336	369	370	397	399	432
Aluminum	0.1	0.03	0.065	0.05	0.05	0.04	0.05	0.05	0.1
Barium	1	0.02	0.3	0.094	0.076	0.077	0.09	0.087	0.091
Boron	5	0.01	1.26	0.371	0.471	0.476	0.55	0.585	0.668
Calcium		79		116	125	126	135	135	148
Iron	0.3	0.01	0.16	0.005	<0.005	<0.005	<0.005	0.019	<0.005
Magnesium		2.78		11.2	13.6	13.6	14.3	14.7	15
Manganese	0.05	0.001	0.03	0.009	0.015	0.017	0.13	0.022	0.119
Potassium		2.4		1.8	1.9	1.9	2.50	1.9	1.9
Silicon		4.38		3.74	4	3.96	4.18	4.19	4.14
Sodium	200	2.8	101	24.7	17.5	17.4	17.4	15.8	22.3
Strontium		0.26		0.248	0.303	0.306	0.29	0.344	0.336
Zinc	5	0.005	2.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.01		0.005					0.0001	0.0001
Cadmium	0.005	0.000015	0.0013	<0.000015	<0.000015	<0.000015	0.000026	<0.000015	0.000017
Chromium	0.050	0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt		0.0004		0.0007	0.0007	0.0007	0.0009	0.0007	0.001
Copper	1	0.002	0.5	0.0021	0.0016	0.0015	0.0029	0.0028	0.0017
Lead	0.010							0.00004	0.00004
Mercury	0.001							<0.00002	<0.00002
Anion Sum				7.94	8.54	8.65			
Cation Sum				7.84	8.18	8.2			
% Difference				0.64	2.18	2.69			
Ion Ratio				1.01	1.04	1.06			
Sodium Adsorption Ratio				0.586	0.396	0.394			
TDS (Ion Sum Calc)	500	231	366	407	426	430			
TDS(calc.)/EC(actual)				0.545	0.539	0.531			
Conductivity Calc				732	756	761			
Conductivity Calc / Conductivity				0.981	0.957	0.939			
Langelier Index(25°C)				1.06	1.1	0.975			
Saturation pH (25°C)				6.89	6.79	6.79			
Benzene									
Dichlorobenzene,1,4-									
Dichloromethane									
Toluene									
Vinyl Chloride									
<b>Field Measured</b>									
Water Temp. (°C)				6.2	7.4	7.4	8.6	7.0	7.0
Conductivity (microS/cm)				7.4	880	880	880	920	920
pH (pH units)	6.5-8.5			8.4	7.4	7.4	7.1	6.6	6.6

Notes:

All values reported in mg/L unless otherwise noted

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Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BR 23-8S				
				Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<b>Parameters mg/L</b>				Dry	Dry	Dry	Dry	Dry
Alkalinity(CaCO3) to pH4.5	30-500	226	363					
TDS (Calc. from Cond.)								
pH @25°C	6.5 - 8.5							
Conductivity @25°C								
Chloride	250	0.8	125					
Nitrate (N)	10	0.11	2.6					
Nitrite (N)	1		0.25					
Sulphate	500	14.00	257					
Phosphorus (Total)		0.03						
Total Kjeldahl Nitrogen		0.20						
Ammonia (N)-Total (NH3+NH4)		0.08						
Dissolved Organic Carbon	5	2.60	3.6					
Phenolics		0.002						
COD								
Hardness (as CaCO3)	500	209	355					
Aluminum	0.1	0.03	0.065					
Barium	1	0.02	0.3					
Boron	5	0.01	1.26					
Calcium		79						
Iron	0.3	0.01	0.16					
Magnesium		2.78						
Manganese	0.05	0.001	0.03					
Potassium		2.4						
Silicon		4.38						
Sodium	200	2.8	101					
Strontium		0.26						
Zinc	5	0.005	2.5					
Arsenic	0.01		0.005					
Cadmium	0.005	0.000015	0.0013					
Chromium	0.050	0.001	0.013					
Cobalt		0.0004						
Copper	1	0.002	0.5					
Lead	0.010							
Mercury	0.001							
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)	500	231	366					
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
Benzene								
Dichlorobenzene,1,4-								
Dichloromethane								
Toluene								
Vinyl Chloride								
<b>Field Measured</b>								
Water Temp. (°C)								
Conductivity (microS/cm)								
pH (pH units)	6.5-8.5							

Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Groundwater Quality**  
**Project Name: Black Donald**

Monitor Number->	ODWS	Background Median	RUC Callow	BR 23-8D				
				Nov-23	Apr-24	Nov-24	Apr-25	Oct-25
<u>Parameters mg/L</u>				Dry	Dry	Dry	Dry	Dry
Alkalinity(CaCO3) to pH4.5	30-500	226	363					
TDS (Calc. from Cond.)								
pH @25°C	6.5 - 8.5							
Conductivity @25°C								
Chloride	250	0.8	125					
Nitrate (N)	10	0.11	2.6					
Nitrite (N)	1		0.25					
Sulphate	500	14.00	257					
Phosphorus (Total)		0.03						
Total Kjeldahl Nitrogen		0.20						
Ammonia (N)-Total (NH3+NH4)		0.08						
Dissolved Organic Carbon	5	2.60	3.6					
Phenolics		0.002						
COD								
Hardness (as CaCO3)	500	209	355					
Aluminum	0.1	0.03	0.065					
Barium	1	0.02	0.3					
Boron	5	0.01	1.26					
Calcium		79						
Iron	0.3	0.01	0.16					
Magnesium		2.78						
Manganese	0.05	0.001	0.03					
Potassium		2.4						
Silicon		4.38						
Sodium	200	2.8	101					
Strontium		0.26						
Zinc	5	0.005	2.5					
Arsenic	0.01		0.005					
Cadmium	0.005	0.000015	0.0013					
Chromium	0.050	0.001	0.013					
Cobalt		0.0004						
Copper	1	0.002	0.5					
Lead	0.010							
Mercury	0.001							
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)	500	231	366					
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
Benzene								
Dichlorobenzene,1,4-								
Dichloromethane								
Toluene								
Vinyl Chloride								
<u>Field Measured</u>								
Water Temp. (°C)								
Conductivity (microS/cm)								
pH (pH units)	6.5-8.5							

Notes:

All values reported in mg/L unless otherwise noted

ODWS = Ontario Drinking Water Standards

Values exceed ODWS

NS = No Sample

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->				SW 2					
Parameters	Limit	PWQO	CWQG	Apr-25	Jul-25	Oct-25			
				Alkalinity(CaCO3) to pH4.5	IPWQO	a		Dry	Dry
pH @25°C									
Conductivity @25°C									
TDS (Calc. from Cond.)									
Chloride			120						
Nitrate (N)			3						
Nitrite (N)			0.6						
Sulphate									
BOD5									
Total Suspended Solids									
Phosphorus (Total)	IPWQO	0.03							
Total Kjeldahl Nitrogen									
Ammonia (N)-Total (NH3+NH4)									
Dissolved Organic Carbon									
Phenolics									
COD									
Hardness (as CaCO3)									
Aluminum (Total)									
Barium (Total)									
Boron (Total)	IPWQO	0.2	1.5						
Calcium (Total)									
Iron (Total)	PWQO	0.3	0.3						
Magnesium (Total)									
Manganese (Total)									
Potassium (Total)									
Silicon (Total)									
Silica (Total)									
Sodium (Total)									
Strontium (Total)									
Zinc (Total)	PWQO IPWQO	0.03 0.02	0.007						
Arsenic (Total)									
Cadmium (Total)	PWQO	0.0002	0.00009						
Chromium (Total)	PWQO	0.001	0.001						
Cobalt (Total)									
Copper (Total)	PWQO IPWQO	0.005 d	Max 0.004 min 0.002 (based on hardness)						
Lead (Total)	PWQO	0.005	0.001						
Mercury	PWQO	0.0002	0.000026						
Anion Sum									
Cation Sum									
% Difference									
Ion Ratio									
Sodium Adsorption Ratio									
TDS (Ion Sum Calc)									
TDS(calc.)/EC(actual)									
Conductivity Calc									
Conductivity Calc / Conductivity									
Langelier Index(25°C)									
Saturation pH (25°C)									
<b>Field Measured</b>									
Water Temp. (°C)									
Conductivity (microS/cm)									
pH (pH units)		6.5 - 8.5	6.5 - 9						
DO									
FLOW L/S									

Notes:

All values reported in mg/L unless otherwise noted

PWQO- Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines

Shaded values exceed PWQO

NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 4					
Parameters	Limit	PWQO	Jun-23	Aug-23	Nov-23	Apr-24	Jul-24	Nov-24
			Alkalinity(CaCO3) to pH4.5	IPWQO	a	222	DRY	DRY
pH @25°C			8.01					
Conductivity @25°C			554					
TDS (Calc. from Cond.)			287					
Chloride			49.6			36	60	
Nitrate (N)			0.11			<0.05	<0.05	
Nitrite (N)			<0.05			<0.05	<0.05	
Sulphate			<1			9	<1	
BOD5			<3			<3	<3	
Total Suspended Solids			4			<3	4	
Phosphorus (Total)	IPWQO	0.03	0.02			0.02	0.04	
Total Kjeldahl Nitrogen			0.4			0.2	0.6	
Ammonia (N)-Total (NH3+NH4)			<0.05			<0.05	<0.05	
Dissolved Organic Carbon						9.8	11	
Phenolics			<0.001			<0.001	<0.001	
COD			17			14	25	
Hardness (as CaCO3)			232			167	257	
Aluminum (Total)						0.01	0.03	
Barium (Total)			0.062			0.036	0.076	
Boron (Total)	IPWQO	0.2	0.008			<0.005	<0.005	
Calcium (Total)			79			55.5	86.2	
Iron (Total)	PWQO	0.3	0.239			0.021	0.312	
Magnesium (Total)			8.38			6.95	10	
Manganese (Total)						0.008	0.165	
Potassium (Total)						1.6	2.4	
Silicon (Total)						25.5	5.36	
Silica (Total)						3.2		
Sodium (Total)						6.85	40.2	
Strontium (Total)			0.158			0.108	0.178	
Zinc (Total)	PWQO IPWQO	0.03 0.02	0.005			0.006	0.01	
Arsenic (Total)			0.0002					
Cadmium (Total)	PWQO	0.0002	<0.000015			<0.000015	<0.000015	
Chromium (Total)	PWQO	0.001	<0.001			<0.001	<0.001	
Cobalt (Total)						0.0001	0.0005	
Copper (Total)	PWQO IPWQO	0.005 d	0.0003			0.0008	0.0005	
Lead (Total)	PWQO	0.005	0.00004					
Mercury	PWQO	0.0002	<0.00002					
Anion Sum			5.84			4.7	6.71	
Cation Sum			6.09			4.49	6.96	
% Difference			2.14			2.25	1.86	
Ion Ratio			0.958			1.05	0.963	
Sodium Adsorption Ratio			0.915			0.856	1.09	
TDS (Ion Sum Calc)			305			240	350	
TDS(calc.)/EC(actual)			0.551			0.531	0.517	
Conductivity Calc			578			451	658	
Conductivity Calc / Conductivity			1.04			1	0.972	
Langelier Index(25°C)			0.811			0.695	0.381	
Saturation pH (25°C)			7.2			7.44	7.12	
<b>Field Measured</b>								
Water Temp. (°C)			6.1			6	18.4	
Conductivity (microS/cm)			630			520	700	
pH (pH units)		6.5 - 8.5	7.4			5.6	7.3	
DO			5			7.2	2.2	
FLOW L/S			36			NA	NA	

Notes:

All values reported in mg/L unless otherwise noted

PWQO- Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines

Shaded values exceed PWQO

NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 4					
Parameters	Limit	PWQO	Apr-25	Jul-25	Oct-25			
			Alkalinity(CaCO3) to pH4.5	IPWQO	a	186	265	Dry
pH @25°C			8.14	8.11				
Conductivity @25°C			478	598				
TDS (Calc. from Cond.)			247	310				
Chloride			36.5	30				
Nitrate (N)			0.21	<0.05				
Nitrite (N)			<0.05	<0.05				
Sulphate			11	9				
BOD5			<3	<3				
Total Suspended Solids			5	3				
Phosphorus (Total)	IPWQO	0.03	<0.01	0.03				
Total Kjeldahl Nitrogen			0.2	0.2				
Ammonia (N)-Total (NH3+NH4)			<0.05	0.07				
Dissolved Organic Carbon			4.6	4.9				
Phenolics			<0.001	<0.001				
COD			14	<5				
Hardness (as CaCO3)			195	263				
Aluminum (Total)			0.03	0.07				
Barium (Total)			0.038	0.057				
Boron (Total)	IPWQO	0.2	0.08	0.123				
Calcium (Total)			65.7	89.7				
Iron (Total)	PWQO	0.3	0.02	0.06				
Magnesium (Total)			7.56	9.37				
Manganese (Total)			0.149	0.053				
Potassium (Total)			1.8	2.80				
Silicon (Total)			3.12	4.02				
Silica (Total)								
Sodium (Total)			20.5	23.40				
Strontium (Total)			0.114	0.196				
Zinc (Total)	PWQO IPWQO	0.03 0.02	<0.005	0.02				
Arsenic (Total)			<0.0001	<0.0001				
Cadmium (Total)	PWQO	0.0002	<0.000015	<0.000015				
Chromium (Total)	PWQO	0.001	<0.001	<0.001				
Cobalt (Total)			0.0001	0.0002				
Copper (Total)	PWQO IPWQO	0.005 d	0.0015	0.0008				
Lead (Total)	PWQO	0.005	<0.00002	0.00004				
Mercury	PWQO	0.0002	<0.00002	<0.00002				
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)								
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
<b>Field Measured</b>								
Water Temp. (°C)			2.6	13.2				
Conductivity (microS/cm)			550	700				
pH (pH units)		6.5 - 8.5	7.5	7.30				
DO			10.5	5.3				
FLOW L/S								

Notes:

All values reported in mg/L unless otherwise noted

PWQO- Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines

Shaded values exceed PWQO

NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 5					
Parameters	Limit	PWQO		Dup #1		Dup #1		Dup #1
			Jun-23	Jun-23	Aug-23	Aug-23	Nov-23	Nov-23
Alkalinity(CaCO3) to pH4.5	IPWQO	a	188	192	251	248	187	180
pH @25°C			8.04	7.93				
Conductivity @25°C			355	360				
TDS (Calc. from Cond.)			183	185	255	259		
Chloride			5.7	5.7	9.7	9.6	11.2	10.9
Nitrate (N)			<0.05	0.08	0.06	0.08	0.05	0.06
Nitrite (N)			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate			1	1	<1	<1	9	9
BOD5			<3	<3	<3	<3	<3	<3
Total Suspended Solids			<3	3	11	10	6	<3
Phosphorus (Total)	IPWQO	0.03	0.01	0.01	0.04	0.09	0.02	0.02
Total Kjeldahl Nitrogen			0.5	0.5	0.7	0.8	0.5	0.5
Ammonia (N)-Total (NH3+NH4)			<0.05	<0.05	0.14	0.14	<0.05	<0.05
Dissolved Organic Carbon					16.7	16.7	11	10.6
Phenolics			<0.001	<0.001	<0.001	<0.001	0.001	0.002
COD			34	24	39	36	22	24
Hardness (as CaCO3)			173	187	258	244	195	184
Aluminum (Total)							0.04	0.05
Barium (Total)			0.053	0.057	0.082	0.078	0.051	0.049
Boron (Total)	IPWQO	0.2	0.021	0.022	0.018	0.017	0.014	0.014
Calcium (Total)			58.3	63	85.4	80.9	63.4	60
Iron (Total)	PWQO	0.3	0.192	0.205	1.93	1.83	0.238	0.232
Magnesium (Total)			6.61	7.18	10.9	10.20	8.92	8.36
Manganese (Total)					0.297	0.28	0.02	0.023
Potassium (Total)					1.1	1.00	1.80	1.7
Silicon (Total)								
Silica (Total)								
Sodium (Total)					6.4	6.00	6.40	6
Strontium (Total)			0.113	0.123	0.17	0.16	0.125	0.117
Zinc (Total)	PWQO IPWQO	0.03 0.02	0.005	0.006	<0.005	<0.005	0.009	0.006
Arsenic (Total)			0.0002	0.0002				
Cadmium (Total)	PWQO	0.0002	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	PWQO	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)								
Copper (Total)	PWQO IPWQO	0.005 d	0.0003	0.0003	0.0002	0.0002	0.0006	0.0005
Lead (Total)	PWQO	0.005	0.00004	0.00004				
Mercury	PWQO	0.0002	<0.00002	<0.00002				
Anion Sum			3.94	4.04	5.31	5.25	4.24	4.1
Cation Sum			3.67	3.97	5.58	5.28	4.24	4
% Difference			3.5	0.865	2.52	0.225	0.0941	1.24
Ion Ratio			1.07	1.02	0.951	0.996	1	1.03
Sodium Adsorption Ratio			0.139	0.147	0.173	0.168	0.198	0.191
TDS (Ion Sum Calc)			190	199	267	260	213	205
TDS(calc.)/EC(actual)			0.535	0.553	0.542	0.52	0.54	0.518
Conductivity Calc			355	374	497	481	402	385
Conductivity Calc / Conductivity			1	1.04	1.01	0.962	1.02	0.975
Langelier Index(25°C)			0.656	0.591	0.368	0.39	0.461	0.461
Saturation pH (25°C)			7.38	7.34	7.1	7.13	7.36	7.4
<b>Field Measured</b>								
Water Temp. (°C)			19.5		17.5		3.2	
Conductivity (microS/cm)			420		580		470	
pH (pH units)		6.5 - 8.5	7.4		7.30		8.6	
DO			3.4		NA		8.1	
FLOW L/S			16.59		4.39		20.5	

Notes:  
 All values reported in mg/L unless otherwise noted  
 PWQO- Provincial Water Quality Objectives  
 CWQG - Canadian Water Quality Guidelines  
 Shaded values exceed PWQO  
 NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 5					
Parameters	Limit	PWQO		Dup #1		Dup #1		Dup #1
			Apr-24	Apr-24	Jul-24	Jul-24	Nov-24	Nov-24
Alkalinity(CaCO3) to pH4.5	IPWQO	a	118	117	195	188	171	171
pH @25°C							7.99	8
Conductivity @25°C							364	366
TDS (Calc. from Cond.)								
Chloride			8	7.8	6.9	6.7	9.4	9.4
Nitrate (N)			<0.05	<0.05	<0.05	<0.05	0.11	0.07
Nitrite (N)			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate			7	7	2	2	3	3
BOD5			<3	<3	<3	<3	<3	<3
Total Suspended Solids			<3	3	<3	<3	8	<3
Phosphorus (Total)	IPWQO	0.03	0.02	0.02	0.01	<0.01	0.04	0.04
Total Kjeldahl Nitrogen			0.3	0.3	0.6	0.6	0.4	0.5
Ammonia (N)-Total (NH3+NH4)			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved Organic Carbon			11.3	12.1	14.3	12.6	11.1	10.3
Phenolics			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
COD			20	21	30	34	15	18
Hardness (as CaCO3)			111	120	189	194	182	189
Aluminum (Total)			0.01	0.02	0.02	0.02	0.02	0.02
Barium (Total)			0.026	0.029	0.06	0.062	0.048	0.049
Boron (Total)	IPWQO	0.2	0.016	0.016	0.023	0.024	0.015	0.014
Calcium (Total)			35.6	38.7	61.7	63.3	59.4	61.7
Iron (Total)	PWQO	0.3	0.032	0.043	0.292	0.298	0.226	0.234
Magnesium (Total)			5.27	5.59	8.51	8.7	8.17	8.51
Manganese (Total)			0.003	0.002	0.078	0.049	0.033	0.034
Potassium (Total)			1.10	1.10	0.90	0.9	1.30	1.3
Silicon (Total)			4.60	4.90	6.62	6.73	5.10	5.3
Silica (Total)			3.37	3.57			4.79	4.97
Sodium (Total)			7.22	7.64	6.10	6.2		
Strontium (Total)			0.07	0.074	0.129	0.132	0.115	0.12
Zinc (Total)	PWQO IPWQO	0.03 0.02	<0.005	0.006	0.009	0.012	<0.005	<0.005
Arsenic (Total)								
Cadmium (Total)	PWQO	0.0002	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Chromium (Total)	PWQO	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)			<0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
Copper (Total)	PWQO IPWQO	0.005 d	0.0005	0.0005	0.0003	0.0003	0.0003	0.0003
Lead (Total)	PWQO	0.005						
Mercury	PWQO	0.0002						
Anion Sum			2.72	2.7	4.14	3.99		
Cation Sum			2.44	2.64	4.09	4.19		
% Difference			5.51	1.26	0.614	2.35		
Ion Ratio			1.12	1.03	1.01	0.954		
Sodium Adsorption Ratio			0.189	0.194	0.192	0.192		
TDS (Ion Sum Calc)			132	135	204	201		
TDS(calc.)/EC(actual)			0.517	0.537	0.539	0.528		
Conductivity Calc			251	260	384	383		
Conductivity Calc / Conductivity			0.984	1.03	1.02	1.01		
Langelier Index(25°C)			-0.0197	0.0747	-0.0813	0.0934		
Saturation pH (25°C)			7.76	7.74	7.35	7.36		
<b>Field Measured</b>								
Water Temp. (°C)			6		22.2		6.6	
Conductivity (microS/cm)			600		460		420	
pH (pH units)		6.5 - 8.5	5.5		6.9		7.6	
DO			6.6		4.8		5.8	
FLOW L/S			195		3.77		11	

Notes:

All values reported in mg/L unless otherwise noted

PWQO- Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines

Shaded values exceed PWQO

NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 5			
Parameters	Limit	PWQO	Apr-25	Jul-25	Dup #1	Oct-25
					Jul-25	
Alkalinity(CaCO3) to pH4.5	IPWQO	a	119	196	197	190
pH @25°C			7.97	8.14	8.11	8.08
Conductivity @25°C			264	405	411	491
TDS (Calc. from Cond.)			135	209	212	254
Chloride			7.9	10.9	11	33.3
Nitrate (N)			<0.05	<0.05	<0.05	<0.05
Nitrite (N)			<0.05	<0.05	<0.05	<0.05
Sulphate			5	2	3	21
BOD5			<3	<3	<3	<3
Total Suspended Solids			<3	3	3	4
Phosphorus (Total)	IPWQO	0.03	<0.01	0.02	0.02	0.04
Total Kjeldahl Nitrogen			0.2	0.5	0.5	0.6
Ammonia (N)-Total (NH3+NH4)			<0.05	0.09	0.08	<0.05
Dissolved Organic Carbon			7.5	12	12.1	10.1
Phenolics			<0.001	<0.001	<0.001	<0.001
COD			26	17	22	27
Hardness (as CaCO3)			120	186	192	202
Aluminum (Total)			0.04	0.03	0.04	0.04
Barium (Total)			0.026	0.051	0.052	0.059
Boron (Total)	IPWQO	0.2	0.016	0.017	0.017	0.037
Calcium (Total)			39.6	61	62.9	64.6
Iron (Total)	PWQO	0.3	0.024	0.295	0.306	0.19
Magnesium (Total)			5.03	8.24	8.47	9.84
Manganese (Total)			<0.001	0.033	0.035	0.041
Potassium (Total)			0.60	1.80	1.70	3
Silicon (Total)			2.99	5.98	6.05	4
Silica (Total)						
Sodium (Total)			4.50	8.60	8.60	17
Strontium (Total)			0.064	0.129	0.133	0.133
Zinc (Total)	PWQO IPWQO	0.03 0.02	<0.005	0.021	0.019	0.005
Arsenic (Total)			<0.0001	0.0002	0.0002	0.0002
Cadmium (Total)	PWQO	0.0002	<0.000015	<0.000015	0.00002	<0.000015
Chromium (Total)	PWQO	0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Total)			<0.0001	0.0001	0.0002	0.0001
Copper (Total)	PWQO IPWQO	0.005 d	0.0005	0.0003	0.0003	0.0017
Lead (Total)	PWQO	0.005	<0.00002	0.00005	0.00004	0.00004
Mercury	PWQO	0.0002	<0.00002	<0.00002	<0.00002	<0.00002
Anion Sum						
Cation Sum						
% Difference						
Ion Ratio						
Sodium Adsorption Ratio						
TDS (Ion Sum Calc)						
TDS(calc.)/EC(actual)						
Conductivity Calc						
Conductivity Calc / Conductivity						
Langelier Index(25°C)						
Saturation pH (25°C)						
<b>Field Measured</b>						
Water Temp. (°C)			3	17.2		8.5
Conductivity (microS/cm)			300	480		600
pH (pH units)		6.5 - 8.5	7.6	7.40		6.90
DO			10.3	7		7.4
FLOW L/S						N/A

Notes:

All values reported in mg/L unless otherwise noted

PWQO- Provincial Water Quality Objectives

CWQG - Canadian Water Quality Guidelines

Shaded values exceed PWQO

NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 8					
Parameters	Limit	PWQO	Apr-25	Jul-25	Oct-25			
			Alkalinity(CaCO3) to pH4.5	IPWQO	a	188	Dry	Dry
pH @25°C			8.11					
Conductivity @25°C			475					
TDS (Calc. from Cond.)			246					
Chloride			34.9					
Nitrate (N)			0.25					
Nitrite (N)			<0.05					
Sulphate			11					
BOD5			<3					
Total Suspended Solids			<3					
Phosphorus (Total)	IPWQO	0.03	<0.01					
Total Kjeldahl Nitrogen			0.2					
Ammonia (N)-Total (NH3+NH4)			0.06					
Dissolved Organic Carbon			4.8					
Phenolics			<0.001					
COD			12					
Hardness (as CaCO3)			185					
Aluminum (Total)			0.03					
Barium (Total)			0.039					
Boron (Total)	IPWQO	0.2	0.079					
Calcium (Total)			62					
Iron (Total)	PWQO	0.3	0.01					
Magnesium (Total)			7.18					
Manganese (Total)			<0.001					
Potassium (Total)			1.60					
Silicon (Total)			3.02					
Silica (Total)								
Sodium (Total)			19.80					
Strontium (Total)			0.108					
Zinc (Total)	PWQO IPWQO	0.03 0.02	<0.005					
Arsenic (Total)			<0.0001					
Cadmium (Total)	PWQO	0.0002	<0.000015					
Chromium (Total)	PWQO	0.001	<0.001					
Cobalt (Total)			0.0001					
Copper (Total)	PWQO IPWQO	0.005 d	0.0017					
Lead (Total)	PWQO	0.005	<0.00002					
Mercury	PWQO	0.0002	<0.00002					
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)								
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
<b>Field Measured</b>								
Water Temp. (°C)			3.1					
Conductivity (microS/cm)			540					
pH (pH units)		6.5 - 8.5	7.3					
DO			9.7					
FLOW L/S			82					

Notes:  
 All values reported in mg/L unless otherwise noted  
 PWQO- Provincial Water Quality Objectives  
 CWQG - Canadian Water Quality Guidelines  
 Shaded values exceed PWQO  
 NS - No Sample Taken

**Surface Water Quality**  
**Project Name: Black Donald**

Monitor Number ->			SW 9					
Parameters	Limit	PWQO	Apr-25	Jul-25	Oct-25			
			Alkalinity(CaCO3) to pH4.5	IPWQO	a	154	Dry	Dry
pH @25°C			8.02					
Conductivity @25°C			295					
TDS (Calc. from Cond.)			151					
Chloride			<0.5					
Nitrate (N)			<0.05					
Nitrite (N)			<0.05					
Sulphate			2					
BOD5			<3					
Total Suspended Solids			4					
Phosphorus (Total)	IPWQO	0.03	0.03					
Total Kjeldahl Nitrogen			0.5					
Ammonia (N)-Total (NH3+NH4)			<0.05					
Dissolved Organic Carbon			10.3					
Phenolics			<0.001					
COD			23					
Hardness (as CaCO3)			153					
Aluminum (Total)			0.03					
Barium (Total)			0.024					
Boron (Total)	IPWQO	0.2	<0.005					
Calcium (Total)			43.8					
Iron (Total)	PWQO	0.3	0.017					
Magnesium (Total)			10.70					
Manganese (Total)			0.021					
Potassium (Total)			0.50					
Silicon (Total)			1.81					
Silica (Total)								
Sodium (Total)			0.70					
Strontium (Total)			0.05					
Zinc (Total)	PWQO IPWQO	0.03 0.02	<0.005					
Arsenic (Total)			0.0001					
Cadmium (Total)	PWQO	0.0002	<0.000015					
Chromium (Total)	PWQO	0.001	<0.001					
Cobalt (Total)			<0.0001					
Copper (Total)	PWQO IPWQO	0.005 d	0.001					
Lead (Total)	PWQO	0.005	0.00002					
Mercury	PWQO	0.0002	<0.00002					
Anion Sum								
Cation Sum								
% Difference								
Ion Ratio								
Sodium Adsorption Ratio								
TDS (Ion Sum Calc)								
TDS(calc.)/EC(actual)								
Conductivity Calc								
Conductivity Calc / Conductivity								
Langelier Index(25°C)								
Saturation pH (25°C)								
<b>Field Measured</b>								
Water Temp. (°C)			2.4					
Conductivity (microS/cm)			350					
pH (pH units)		6.5 - 8.5	7.4					
DO			--					
FLOW L/S			82					

Notes:  
 All values reported in mg/L unless otherwise noted  
 PWQO- Provincial Water Quality Objectives  
 CWQG - Canadian Water Quality Guidelines  
 Shaded values exceed PWQO  
 NS - No Sample Taken

Appendix J  
Monitoring and Screening Checklist  
2025

# Appendix D-Monitoring and Screening Checklist

## General Information and Instructions

**General Information: The checklist is to be completed, and submitted with the Monitoring Report.**

**Instructions:** A complete checklist consists of:

- (a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
- (b) completed contact information for the Competent Environmental Practitioner (CEP)
- (c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

**Definition of Groundwater CEP:**

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

**Definition of Surface water CEP:**

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

<b>Monitoring Report and Site Information</b>	
<b>Waste Disposal Site Name</b>	Black Donald Landfill
<b>Location (e.g. street address, lot, concession)</b>	Part of Lot 9, Concession 2 and 3, within the geographic Township of Brougham, Township of Greater Madawaska
<b>GPS Location (taken within the property boundary at front gate/ front entry)</b>	NAD 83, UTM Zone 18, 353188E 5010581N
<b>Municipality</b>	Township of Greater Madawaska
<b>Client and/or Site Owner</b>	Township of Greater Madawaska
<b>Monitoring Period (Year)</b>	2025
This Monitoring Report is being submitted under the following:	
<b>Environmental Compliance Approval Number:</b>	ECA # A411902
<b>Director's Order No.:</b>	NA
<b>Provincial Officer's Order No.:</b>	NA
<b>Other:</b>	NA

<b>Report Submission Frequency</b>	<input checked="" type="radio"/> <b>Annual</b> <input type="radio"/> <b>Other</b>		
<b>The site is:</b> <b>(Operation Status)</b>	<input checked="" type="radio"/> <b>Open</b> <input type="radio"/> <b>Inactive</b> <input type="radio"/> <b>Closed</b>		
<b>Does your Site have a Total Approved Capacity?</b>	<input checked="" type="radio"/> <b>Yes</b> <input type="radio"/> <b>No</b>		
<b>If yes, please specify Total Approved Capacity</b>	73,185	Units	Cubic Metres
<b>Does your Site have a Maximum Approved Fill Rate?</b>	<input type="radio"/> <b>Yes</b> <input checked="" type="radio"/> <b>No</b>		
<b>If yes, please specify Maximum Approved Fill Rate</b>		Units	<input type="text"/>
<b>Total Waste Received within Monitoring Period (Year)</b>	0	Units	Cubic Metres
<b>Total Waste Received within Monitoring Period (Year)</b> <i>Methodology</i>			
<b>Estimated Remaining Capacity</b>	2,718	Units	Cubic Metres
<b>Estimated Remaining Capacity</b> <i>Methodology</i>	Direct Survey (GPS/Total Station)		
<b>Estimated Remaining Capacity</b> <i>Date Last Determined</i>	December 20 , 2023		
<b>Non-Hazardous Approved Waste Types</b>	<input checked="" type="checkbox"/> Domestic <input type="checkbox"/> Industrial, Commercial & Institutional (IC&I) <input type="checkbox"/> Source Separated Organics (Green Bin) <input type="checkbox"/> Tires	<input type="checkbox"/> Contaminated Soil <input type="checkbox"/> Wood Waste <input type="checkbox"/> Blue Box Material <input type="checkbox"/> Processed Organics <input type="checkbox"/> Leaf and Yard Waste	<input type="checkbox"/> Food Processing/Preparation Operations Waste <input type="checkbox"/> Hauled Sewage Other: <input type="text" value="Construction and demolition and Bulky waste"/>
<b>Subject Waste Approved Waste Classes: Hazardous &amp; Liquid Industrial</b> <i>(separate waste classes by comma)</i>			
<b>Year Site Opened</b> <i>(enter the Calendar Year only)</i>	<input type="text" value="1960"/>	<b>Current ECA Issue Date</b>	1980-03-27 amended 2026-01-27
<b>Is your Site required to submit Financial Assurance?</b>	<input type="radio"/> <b>Yes</b> <input checked="" type="radio"/> <b>No</b>		
<b>Describe how your Landfill is designed.</b>	<input checked="" type="radio"/> Natural Attenuation only <input type="radio"/> Fully engineered Facility <input type="radio"/> Partially engineered Facility		
<b>Does your Site have an approved Contaminant Attenuation Zone?</b>	<input type="radio"/> <b>Yes</b> <input checked="" type="radio"/> <b>No</b>		

If closed, specify C of A, control or authorizing document closure date:

Has the nature of the operations at the site changed during this monitoring period?

Yes

No

If yes, provide details:

Have any measurements been taken since the last reporting period that indicate landfill gas volumes have exceeded the MOE limits for subsurface or adjacent buildings? (i.e. exceeded the LEL for methane)

Yes

No

# Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

## Sampling and Monitoring Program Status:

<p>1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	
<p>2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document (s):</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>	<p>If no, list exceptions below or attach information.</p>

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
BH3	Observed to be destroyed since fall 2021	April and November 2024
MW08-5	Dry	April and October 2025
MW23-8S & MW23-8D	Dry	April and October 2025

3) a) Is landfill gas being monitored or controlled at the site?		<input checked="" type="radio"/> Yes <input type="radio"/> No	
If yes to 3(a), please answer the next two questions below.			
b) Have any measurements been taken since the last reporting period that indicate landfill gas is present in the subsurface at levels exceeding criteria established for the site?		<input type="radio"/> Yes <input checked="" type="radio"/> No	
c) Has the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:		<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Applicable	If no, list exceptions below or attach additional information.
<b>Groundwater Sampling Location</b>	<b>Description/Explanation for change (change in name or location, additions, deletions)</b>	<b>Date</b>	
All sampling completed in general conformance with Jp2g sampling procedures			
4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):	<input checked="" type="radio"/> Yes <input type="radio"/> No	All sampling completed in general conformance with Jp2g sampling procedures	

## Sampling and Monitoring Program Results/WDS Conditions and Assessment:

<p>5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>		
<p>6) The site meets compliance and assessment criteria.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	Compliant with Guideline B-7	
<p>7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>		
<p>1) Is one or more of the following risk reduction practices in place at the site:</p> <p>(a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/ treatment; or</p> <p>(b) There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or</p> <p>(c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):</p> <p><i>i.</i> The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and</p> <p><i>ii.</i> Seasonal and annual water levels and water quality fluctuations are well understood.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p>Note which practice(s):</p>	<p><input type="checkbox"/> (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (c)</p>
<p>9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</p>	<p><input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Applicable</p>		

## Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Select Date

## Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

No changes to the monitoring program are recommended

The following change(s) to the monitoring program is/are recommended:

Continue to monitor with no changes from 2025 monitoring program

No Changes to site design and operation are recommended

The following change(s) to the site design and operation is/are recommended:

<b>Name:</b>	Andrew Buzza, P.Geo		
<b>Seal:</b>	Add Image		
<b>Signature:</b>	<input type="text"/>	<b>Date:</b>	March 2026
<b>CEP Contact Information:</b>	Andrew Buzza, P.Geo		
<b>Company:</b>	Jp2g Consultants Inc		
<b>Address:</b>	1150 Morrison Drive Suite 410		
<b>Telephone No.:</b>	613 828 7800	<b>Fax No. :</b>	613 828 2600
<b>E-mail Address:</b>	andrew.buzza@jp2g.com		
<b>Co-signers for additional expertise provided:</b>			
<b>Signature:</b>	<input type="text"/>	<b>Date:</b>	
<b>Signature:</b>	<input type="text"/>	<b>Date:</b>	

## Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s)	Unnamed Creeks
Distance(s)	Approximately 850 m northwest of the site

Based on all available information and site knowledge, it is my opinion that:

### Sampling and Monitoring Program Status:

1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:	<input checked="" type="radio"/> Yes <input type="radio"/> No	
2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not applicable (No C of A, authorizing / control document applies)	If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date
SW2	Dry	April, July , and October 2025
SW4	Dry	October 2025
SW8 and SW9	Dry	July and October 2025

<p>3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.</p>	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p> <p><input type="radio"/> Not Applicable</p>	
<p>b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:</p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> Not Applicable</p>	<p>If no, specify below or provide details in an attachment.</p>
<p><b>Surface Water Sampling Location</b></p>	<p><b>Description/Explanation for change (change in name or location, additions, deletions)</b></p>	<p><b>Date</b></p>
<p>All sampling completed in general conformance with Jp2g sampling procedures</p>		
<p>4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):</p>	<p><input checked="" type="radio"/> Yes</p> <p><input type="radio"/> No</p>	<p>All sampling completed in general conformance with Jp2g sampling procedures</p>

## Sampling and Monitoring Program Results/WDS Conditions and Assessment:

<b>5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):</b>	<input type="radio"/> Yes <input checked="" type="radio"/> No
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**If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:**

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
Phosphorus	IPWQO 0.03	SW5 33.3% (October 2025)

<b>6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?</b>	<input checked="" type="radio"/> Yes <input type="radio"/> No	
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<p>7) <b>All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.</b></p>	<p><input checked="" type="radio"/> <b>Yes</b></p> <p><input type="radio"/> <b>No</b></p>	
<p>8) <b>For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):</b></p>	<p><input checked="" type="radio"/> <b>Yes</b></p> <p><input type="radio"/> <b>No</b></p> <p><input type="radio"/> <b>Not Known</b></p> <p><input type="radio"/> <b>Not Applicable</b></p>	<p>Overall the results of the surface and groundwater sampling do not indicate that the past landfilling activities at this location is having a negative effect on the surface water around the Landfill site.</p>
<p>9) <b>Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):</b></p>	<p><input checked="" type="radio"/> <b>Yes</b></p> <p><input type="radio"/> <b>No</b></p> <p><input type="radio"/> <b>Not Applicable</b></p>	<p>At SW5, no parameter concentrations were above PWQO or 75th percentile of background surface water quality except for:</p> <ul style="list-style-type: none"> <li>•In April: Chemical Oxygen Demand (COD)</li> <li>•In July: total Kjeldahl nitrogen (TKN).</li> <li>•In October: Phosphorus, sulphate, COD, and TKN.</li> </ul> <p>These exceedances did not trigger the implementation of the contingency plan.</p>

## Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated:

Select Date

## Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

<p><input checked="" type="radio"/> <b>No Changes to the monitoring program are recommended</b></p> <p><input type="radio"/> <b>The following change(s) to the monitoring program is/are recommended:</b></p>	<p>Monitoring will continue in 2026 with no changes from the 2025 monitoring program, as the three (3) new surface water stations required under the Amended ECA were already implemented in 2025.</p>
<p><input checked="" type="radio"/> <b>No changes to the site design and operation are recommended</b></p> <p><input type="radio"/> <b>The following change(s) to the site design and operation is/are recommended:</b></p>	

<b>CEP Signature</b>	
<b>Relevant Discipline</b>	Professional Geoscientist, education and over 30 years experience
<b>Date:</b>	March 2026
<b>CEP Contact Information:</b>	Andrew Buzza
<b>Company:</b>	Jp2g Consultants Inc
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<b>Telephone No.:</b>	613 828 7800
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<b>E-mail Address:</b>	andrew.buzza@jp2g.com
<b>Save As</b>	<b>Print Form</b>