Brooks Road Environmental

Brooks Road Landfill Site Vertical Capacity Expansion

Environmental Assessment Annual Compliance Report
February 14, 2019 – February 14, 2020

Brooks Road Landfill

160 Brooks Road Haldimand County, Ontario

May 2020 (Revised)
REF. NO. 018235 (95)

GHD

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1. Introduction

1.1 Purpose and Background

In accordance with Condition 5 of the Minister of the Environment, Conservation and Parks' (Minister's) Notice of Approval to Proceed with the Undertaking, this report describes the results of the Brooks Road Landfill Site Vertical Capacity Expansion Environmental Assessment (Brooks Road Landfill EA) Compliance Monitoring Program (CMP) for February 14, 2019 to February 14, 2020.

The Minister approved the Brooks Road Landfill EA that proposed to increase the capacity of the landfill on February 14, 2019. The Minister's Notice of Approval (Approval) to proceed with the Undertaking issued under Section 9 of the *Environmental Assessment Act*, dictates the conditions of the Approval of the Undertaking that must be adhered to by Terrapure. In particular, the following conditions relating to compliance monitoring and reporting were specified by the Minister in his approval to proceed:

4. Compliance Monitoring Program

4.1 The Proponent shall prepare and submit to the Director for approval and for the public record, an Environmental Assessment compliance monitoring program.

4.2 The compliance monitoring program shall be submitted within one year from the Date of Approval, or 60 days before the commencement of Construction, whichever is earlier, or by another date agreed upon by the Director.

4.3 The compliance monitoring program shall include a description of how the Proponent will:

a. monitor implementation of the Undertaking in accordance with the Environmental Assessment with respect to mitigation measures, public consultation, and additional studies and work to be carried out;

b. monitor compliance with the conditions in this Notice of Approval; and,

c. monitor compliance with all commitments made in the Environmental Assessment and the subsequent review of and approval process for the Environmental Assessment with respect to mitigation measures, public consultation, and additional studies and work to be carried out.

4.4 The compliance monitoring program must contain an implementation schedule for monitoring activities to be completed.

4.5 The Director may require the Proponent to amend the compliance monitoring program at any time. Should an amendment be required, the Director will notify the Proponent in writing of the required amendment and the date by which the Proponent must complete and submit the amendment to the Director.

4.6 The Proponent shall submit the amended compliance monitoring program to the Director within the time period specified by the Director.

4.7 The Proponent shall implement the compliance monitoring program and any amendments to it.

5. Compliance Reporting

5.1 The Proponent shall prepare an annual compliance report outlining the results of the compliance monitoring program (Condition 4 above) and place the document on the public record.

5.2 The first compliance report shall be submitted to the Director for review and for the public record no later than one year following the Date of Approval. Each subsequent annual compliance report shall be submitted on the date that is the anniversary of the Date of Approval thereafter. Each report shall cover the previous year to the date of report submission.

5.3 The Proponent shall submit annual compliance reports until all conditions are satisfied.

5.4 Once all conditions in this Notice of Approval have been satisfied, the Proponent shall notify the Director in writing that the final annual compliance report is being submitted, and that all conditions in this Notice of Approval have been satisfied. The Ministry will confirm whether all conditions have been satisfied and the Director will state this in writing to the Proponent.

5.5 The Proponent shall retain either on the Site or in another location approved by the Director, copies of the annual compliance reports for each reporting year and any associated documentation of compliance monitoring activities.

5.6 The Proponent shall make the compliance reports and associated documentation available to the Director or a designate in a timely manner when requested to do so by the Ministry.

In accordance with Condition 4, the CMP was submitted to the Ministry of the Environment, Conservation and Parks (MECP) on February 6, 2020. The EA CMP outlined the following components to be monitored and managed:

- EA Commitments
- Mitigation and Monitoring Commitments
- *Environmental Assessment Act* (EA Act) Approval Conditions
- Environmental Approvals and Permits

1.2 Overview of the Annual Compliance Report

In accordance with Conditions 5.1 through 5.6 of the Minister's Approval, Brooks Road Environmental is to report on the results of this EA CMP. The Annual Compliance Reports (ACRs) are to cover the activities of the previous year to the date of report submission. In accordance with Condition 5.2, this first ACR covers the period of February 14, 2019 to February 14, 2020.

Consistent with the framework presented in the EA CMP, the 2019 Annual Compliance Report is composed of the following sections:

- **Section 2** lists the mitigation and monitoring commitments made by Brooks Road during the EA that were documented in **Section 7** of the Brooks Road EA Report (EA Report), as well as the Minister's *EA Act* Approval conditions that need to be satisfied.

- **Section 3** lists the additional approvals, authorizations and permits acquired beyond *EA Act* approval as documented in **Section 8** of the EA Report.

Sections 2 and 3 of the ACR include compliance monitoring tables, the following column headings common to all tables have been included for compliance tracking purposes:

- **Evidence of Compliance –** describes how each provision will be monitored for compliance/fulfillment during implementation of the Undertaking.
- **Implementation Schedule** – outlines the estimated project stage when each provision will be fulfilled.
- **Status/Remarks –** allows for an update to be provided on where the fulfillment of the provision stands versus its planned implementation schedule.
- **Compliance Achieved? (Yes or In Progress) –** allows for a "yes" or "in progress" response to be provided so compliance fulfillment can be easily tracked.

The **Evidence of Compliance** and **Implementation Schedule** have been included as they appear in the EA CMP. The **Status/Remarks** and **Compliance Achieved.** Columns contain information specific to this ACR.

2. EA Mitigation and Monitoring Commitments and EA Act Approval Conditions

Table 2.1 includes the following:

- Commitments made during the EA that need to be satisfied during implementation of the Undertaking, as documented in Section 7.3 of the EA Report. These commitments include mitigation measures identified in Section 5.0 of the EA Report for addressing potential adverse environmental effects associated with implementing the Undertaking.
- *EA Act* approval conditions that need to be satisfied during implementation of the Undertaking included in the Minister's Notice of Approval. Where an *EA Act* approval condition relates to an EA commitment, both have been included in the same row for compliance tracking purposes.
- Monitoring programs included in Section 7.1 of the EA Report to ensure that predicted net negative effects are not exceeded, unexpected negative effects are addressed, and predicted benefits are realized.

Table 2.1 indicates the status of fulfilling each provision between February 14, 2019 and February 14, 2020.

Table 2.1 EA Mitigation and Monitoring Commitments and Approval Conditions

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
General	Not Applicable (N.A.)	N.A.	N.A.	N.A.	**Condition #2 - General Requirements** 2.1. The Proponent shall comply with the provisions in the Environmental Assessment, which are hereby incorporated into this Notice of Approval by reference, except as provided in the conditions of this Notice of Approval and as provided in any other approval or permit that may be issued for this Site. 2.2. The Proponent shall fulfill all commitments made in the Environmental Assessment. 2.3. The conditions of the Notice of Approval do not prevent more restrictive conditions being imposed under other statutes.	Confirm the Conditions of Approval have been fulfilled and commitments made have been undertaken.	Prior to March 27, 2020; and during operation, closure, and post-closure of the Site.	Compliance with some of the provisions of the Environmental Assessment has been achieved	In Progress
Best Management Practice Plans	5.0 & 7.2	Prepare Best Management Practice (BMP) Plans following approval of the undertaking by the Minister of the Environment and Climate Change and prior to vertical expansion of the Site. The BMP Plans will include a description of proposed mitigation measures, monitoring requirements, and commitments. The BMP Plans will ensure these mitigation measures, monitoring requirements, and commitments are implemented during construction, operation, closure, and post-closure of the Site.	N.A.	N.A.	N.A.	Confirm BMP Plan(s) have been prepared prior to implementation of the Undertaking.	Preparation and implementation of BMP Plans in 2020. Specific time commitments for each BMP Plan are outlined below in the table.	Best Management Practice plans are included within the Brooks Road Landfill Vertical Expansion Design and Operations Report (D&O Report) submitted as part of the Environmental Compliance Approval (ECA) as follows: Leachate management (Section 4.5); Surface water management (Section 4.6); Storm water management (Section 4.6.7); Sediment and erosion control (Section 4.6.9); Site facility management measures (Section 5.0); Litter control (Section 6.6);	In Progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
								Noise control (Section 6.7); Odour control (Section 6.8 and Appendix I); Dust Management Plan (Section 6.9) Monitoring, inspection and maintenance reporting is included within Section 7 of the D&O Report.	
Consultation	6.0	Continue to facilitate the ongoing function of the PLC as per Conditions 86 and 87 of ECA No. A110302 for the existing Brooks Road Landfill Site.	N.A.	N.A.	N.A.	Confirm that the PLC continues during construction and operation of the Undertaking.	Conduct PLC meetings three times a year. They are anticipated to be held at the beginning of March, June, and November each year, however exact dates will be confirmed during the last meeting of each year for the following year.	The PLC has continued to operate.	In Progress
		Ongoing consultation and engagement, as requested by the public, agencies, County, PLC and First Nations/ Aboriginal communities associated with ECA amendment(s) and other regulatory approvals required at the Site.	N.A.	N.A.	**Condition # 7 – Consultation with Indigenous Communities** 7.1 The Proponent shall prepare, in consultation with Indigenous Communities, an Indigenous consultation plan that sets forth: a. how, during the planning, design, Construction, operation, and closure of the Undertaking, the Proponent will consult with Indigenous Communities and provide them with opportunities to be involved in environmental monitoring activities; b. how the Proponent will notify Indigenous Communities, using a notification protocol, if archaeological resources or Indigenous remains are encountered during the planning, design, Construction, operation, and closure of the Undertaking; and, c. how the Proponent will issue notices and updates to Indigenous communities on key steps in the planning, design, Construction, operation, and closure of the Undertaking.	Confirm that consultation is undertaken as per ECA application requirements. Continue that an Indigenous consultation plan is prepared and submitted to the Director.	Submit final Indigenous consultation plan to Director by May 31, 2020 and carry out consultation with Indigenous Communities during operation, and closure of the landfill as per the Indigenous consultation plan.	In December 2019, Indigenous communities were invited in participate in the development of an Indigenous Consultation Plan. As of February 14, 2020, no Indigenous communities have responded.	In Progress

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					2. 90 days before the start of Construction or by such other date as may be agreed to in writing by the Director, the Proponent shall submit the Indigenous consultation plan to the Director for approval, with an outline of how the Proponent consulted on it as per Condition 7.1 above. 3. Once the Director is satisfied with the Indigenous consultation plan, the Proponent shall implement the Indigenous consultation plan during the planning, design, Construction, operation, and closure of the Undertaking.				
Air Quality & Odour	5.0	Fugitive Dust Best Management Plan will be implemented to reduce roadway emission by a minimum of 90 percent. This may include watering and sweeping of roadways and temporary monitoring of particulate matter to confirm that the mitigation measures implemented are effective.	N.A.	N.A.	**Condition #8 - Air Quality and Odour** 8.1 When applying for an Environmental Compliance Approval, the Proponent shall provide, to the satisfaction of the Ministry, the following information as part of its application: a. an emissions summary and dispersion modelling report that includes landfill gas; b. an odour assessment and modelling report for the expanded landfill Site; c. a dust management plan for the Site which shall include fugitive dust emissions from all sources at the Site; and d. an odour management plan detailing the measures for addressing the potential odours that may emanate from the Site. 8.2 The Proponent shall prepare and implement a landfill gas mitigation plan that specifies measures for monitoring and reducing landfill gas emissions for the Construction, operation, closure and post-closure phases of the expanded landfill Site. The Proponent shall report on changes in landfill gas production in its annual compliance report (Condition 5 above). **Condition # 6 - Complaint Protocol** 6.1. The Proponent shall prepare and implement a complaint protocol that sets out provisions for dealing with and responding to inquiries and complaints during all stages of the Undertaking. The complaint protocol shall include a procedure for notifying the Ministry's Hamilton District Office of the complaints received. 6.2. The Proponent shall submit the complaint protocol to the Director for approval and for the public record within one year from the Date of Approval, or 60 days before the start of Construction, whichever is earlier, or by another date agreed upon by the Director.	Confirm that a Fugitive Dust Best Management Plan is implemented during operation Confirm that a SOP for odour has been prepared. Confirm that an Odour Management Plan has been prepared and includes daily odour monitoring. Confirm that the ECA application is completed to the satisfaction of the Ministry. Confirm that a landfill gas mitigation plan has been prepared and implemented. Confirm that a Complaint Protocol is prepared.	Prior to March 27, 2020. Final version of Odour Management Plan to be submitted by June 25, 2020. Implement plans and protocols as specified throughout the life of the Site.	A final Odour Management Plan, including an Emissions Summary and Dispersion Modeling Report and landfill gas mitigation plan is being prepared for submission June 25, 2020. This plan will address comments by the MECP Air Compliance Engineer. A Dust Management Plan has been prepared and is presented in Section 6.9 of the D&O Report. A complaint protocol will be developed and submitted to the Director of the Environmental Assessment Branch. A summary of annual complaints is provided in Appendix A.	In progress

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	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
		Development of standard operating procedure (SOP) for odour to include odour mitigation measures that would be implemented to ensure that odour complaints are investigated and the condition that resulted in the odour complaint is mitigated.	N.A.	N.A.	6.3. The Director may require the Proponent to amend the complaint protocol at any time. Should an amendment be required, the Director shall notify the proponent in writing of the amendment required and when the amendment must be completed. 6.4. The Proponent shall submit the amended complaint protocol to the Director within the time period specified by the Director. 6.5. The Proponent shall implement the complaint protocol and any amendments to it. 6.6. The Proponent shall provide a summary on the complaints received and how they were addressed as part of the annual compliance reporting (Condition 5) and post the summary on the website as part of the public record.			An Odour Best Management Practices Plan and BRE odour complaint response procedure details the complaint protocols (see Appendix I of the D&O Report). A final Odour Management Plan will be prepared by June 25, 2020.	In progress
		Implementation of an Odour Best Management Plan including the continuation and modification of the following odour control measures: • Daily odour monitoring • Minimizing exposed waste through the application of cover material • Limit exposed areas of the leachate collection system • When not in use, ensure blind flanges are placed on leachate collection system cleanouts and sump risers • Application of odour control granules and liquid spray • Community outreach to identify any impacts at neighbouring residences Maintain the leachate collection system under negative pressure may also be included as an Odour BMP.	7.1.1	**Daily Odour Monitoring** Monitoring of odour on Site is conducted and documented daily by Brooks Road Environmental staff. This includes observation of weather conditions; wind speed and direction; site operating conditions; odour type and smell (if present); and documentation of any odour complaints received.				An Odour Best Management Practices Plan and BRE odour complaint response procedure details the complaint protocols (see Appendix I of the D&O Report). A final Odour Management Plan will be prepared by June 25, 2020.	In progress
		N.A.	7.1.1	**Landfill Gas Monitoring** The monitoring network currently consists of six gas probes (nested) installed in three on Site locations (two gas probes per nest). An additional pair of gas probes will be installed adjacent to the leachate treatment facility following commissioning. Landfill gas monitoring activities are to be conducted monthly from December 1 to April 30 and on a quarterly basis from May through November.				The monitoring network consists of eight gas probes (nested) installed in four on–Site locations (two gas probes per nest). Monitoring is conducted monthly (see Section 7.4 of the D&O Report).	In progress/ ongoing
Noise	5.0 & 7.0	Implementation of a Noise Best Management Plan to minimize noise impacts from the Site. BMPs may include barriers and/or berms at the landfill perimeter, as required, administrative controls that limit on-Site landfilling activities, and routine	7.1.2	**Noise Monitoring** Landfill equipment will be routinely monitored to ensure it is performing within acceptable noise limits. As all residential dwellings are	N.A.	Ensure a Noise BMP is prepared and includes a plan for noise monitoring.	Prepare Noise BMP in 2020, and conduct routine noise monitoring in accordance with	Design measures have included buffer areas adjacent to Brooks Road	In progress

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	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
		monitoring of landfill equipment to ensure it is performing within acceptable noise limits.		below the 55 dBA noise limit, no additional annual monitoring is recommended.			the final Noise BMP throughout the operation of the Site.	to minimise noise impacts of site operations (see Section 4.2 of the D&O Report). All equipment associated with the construction and operation comply with noise level outline in the "Noise Guidelines for Landfill Sites" (MECP 2012) (see Section 6.7 of the D&O Report). A Noise BMP to monitor the performance of noise emissions from landfill equipment is to be prepared in 2020.	
Geology & Hydrogeology	7.0	Continuation of the existing groundwater monitoring program, consisting of both hydraulic monitoring and water quality monitoring at a network of 29 monitoring wells.	7.1.3	**Groundwater Monitoring** The existing groundwater monitoring program will continue and consists of both hydraulic monitoring and water quality monitoring at a network of 29 monitoring wells (21 on Site and 8 off Site wells). Hydraulic and groundwater quality monitoring are scheduled to take place in May, July, and November. Groundwater levels will continue to be measured at all monitoring locations, when possible, at the time of sample collection.	N.A.	Confirm that existing groundwater program is continued.	Conduct hydraulic and groundwater quality monitoring May, July, and November each year during operation of the Landfill. Continue to conduct groundwater monitoring during the post-closure period.	Groundwater monitoring is ongoing. An updated monitoring program now includes 34 monitoring wells (26 on-site and 8 offsite wells) (see Section 7.1 of the D&O Report).	In progress
	7.0	Continuation of the existing leachate quality monitoring program.	7.1.3	**Leachate Monitoring** The existing leachate monitoring program at the Site includes leachate quality monitoring. Leachate quality samples are currently collected directly from the leachate collection system. Leachate hydraulic monitoring will commence upon commissioning of the new leachate treatment facility. As part of Site development and progressive closure, leachate monitoring wells will be installed within the waste mound so that further leachate characterization and hydraulic monitoring can be accomplished.	**Condition #9 - Groundwater and Surface Water Protection** 9.1 When applying for an Environmental Compliance Approval, the Proponent shall provide, to the satisfaction of the Ministry, the following information as part of its application: a. information documenting the performance of the existing leachate management system at the Site; b. a description in the design and operations report on how the Proponent will manage the rate of fill and potential leachate generation; and,	Confirm that existing leachate quality monitoring program is continued. Confirm that the ECA application is completed to the satisfaction of the Ministry.	Provide required information during ECA application, continue leachate quality monitoring program as specified in the ECA and report annually on program as a part of Annual Compliance Report, which is to be submitted on	Section 8.2 of the D&O Report details the contingency measures for leachate mounding. Section 3.1.1 of the D&O Report provides an assessment of the leachate	In progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
				Leachate quality monitoring will be conducted in accordance with the ECA. Leachate samples are currently collected from the leachate collection system on an annual basis in July and are analyzed for inorganic chemistry parameters, metals, PAHs, and VOCs	c. a leachate management plan for the vertical landfill expansion.		February 14 each year.	management systems. Section 4.5 of the D&O Report details the leachate management and disposal measures. Documentation of the performance of the leachate treatment system (LTS) is provided annually in accordance with Industrial Sewage ECA No. 1122-BKUPSM. The LTS performance documentation is provided in Appendix B.	
Surface Water Resources	7.0	Continuation of the existing surface water monitoring program, consisting of water quality monitoring and surface water flow measurements.	7.1.4	**Surface water monitoring** Surface water monitoring will continue to include both water quality monitoring and surface water flow measurements. The surface water monitoring network currently consists of seven surface water monitoring stations (two on Site and five off Site), as shown in Figure 4.14, and these stations will be maintained. Water quality monitoring and surface water flow measurements at all of the current seven surface water stations will take place on a quarterly basis in March, May, August, and November. The measurements are also correlated with rain fall events. As such, the John C. Munro Hamilton International Airport in Mount Hope, ON (Hamilton Airport), located approximately 24 km to the north, is often used to schedule surface water monitoring events.	N.A.	Confirm that the existing surface water monitoring program is continued.	Continuation of the surface water monitoring program on quarterly basis each year in March, May, August, and November during operation of the Landfill. Continue to conduct surface water monitoring during the post-closure period.	The Surface water Monitoring Program will continue to be implemented (see Section 7.2 of the D&O Report).	In progress
	7.0	An eighth monitoring station (SW-2) will be added following the construction of the on-Site stormwater management pond. SW-2 will be located on-Site at the outlet from the on-Site stormwater management pond.	7.1.4	An eighth monitoring station (SW 2) will be added following the construction of the on Site stormwater management pond.		Confirm that SW-2 is added following construction	2019	SW-2 was included in the 2019 surface water monitoring activities	Completed

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
								following completion of the stormwater management pond. SW-2 will continue to be monitored as part of the Environmental Monitoring Program	
Stormwater Management	5.0	Implementation of a stormwater management infrastructure operation, maintenance, and inspection plan, including regular sediment level monitoring (recommended annually under stabilized post closure conditions) to estimate the portion of the permanent pool that is filled by sediment, sediment removal activities (once accumulation reaches approximately 1/3 of the available permanent pool volume), annual inspection of sediment accumulation within the vegetated swales, and maintenance activities if conveyance capacities are reduced significantly and/or if bare soil areas are present.	N.A.	N.A.	N.A.	Confirm that a stormwater management infrastructure operation, maintenance, and inspection plan is implemented.	Implementation of plan prior to March 27, 2020, and inspection of infrastructure in accordance with the plan.	A Stormwater Management Plan for the site was updated in 2013 and is relevant to the site still (see Section 4.6.2 of the D&O Report).	In progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
Terrestrial & Aquatic Environment	5.0	Implementation of a Terrestrial & Aquatic Environment Best Management Plan. BMPs for continued operation of the landfill may include: • Notify Site operators and delivery contractors of the presence of reptiles and amphibians in the surrounding areas. This includes visual identification tools for species at risk (SAR) common to the area. • Any wildlife incidentally encountered during Site operation activities will not be knowingly harmed and will be allowed to move away from the area on its own if at all possible. • In the event that an animal encountered during Site operation activities does not move from the area, or is injured, the Site Supervisor will be notified. • In the event that the animal is a known or suspected SAR, the Site Supervisor will contact MNRF SAR biologists for advice. • Silt fence is recommended to be added to all perimeter Site fencing as an enhanced effort to minimize human-wildlife interactions on Site. Erosion and sediment controls shall be maintained until all disturbed areas of the Site, including the pond and swales, have fully stabilized and vegetated areas have achieved 70 percent of the native background density of growth. The condition of all swales, culverts, vegetation, infiltration basin outlet, and outflow channels leading to the Brooks Road drainage ditch and off Site will be noted at regular intervals.	7.1.6	1) Routine inspections of the integrity of the perimeter silt fence. Inspections should be conducted at a regular frequency (e.g. minimum quarterly monitoring). Inspection reports should be prepared and maintained on-Site. Incidental observations of silt fence disrepair should be reported immediately to the Site Operations Manager and addressed in a timely fashion. 2) Routinely evaluate the extent of the heavy-duty silt fence and 5 m north Subject Land vegetated buffer. Extend the silt fence and vegetated buffer east along the north Subject Land boundary when disturbance of the temporarily vegetated portion of the stockpile is scheduled. 3) Routine inspections of the integrity and effectiveness of the sites chain link fence for any evidence of wildlife attempting to enter the site. Any disrepair should be reported immediately to the Site Operations Manager and addressed in a timely fashion 4) Monitoring and Report any observations of Species At Risk that may enter the site. Photos of Species At Risk in the area of the site will be kept within the office at the site. Photos will be taken of any Species At Risk on site by landfill staff and documented in the annual monitoring report. Follow-up calls to MNRF will be undertaken should Species At Risk be encountered 5) Monitoring of the wetland to the north of the site will occur for the duration of receipt of waste at the landfill. Monitoring will review effectiveness of mitigation measures put in place to ensure no effects to wetland, i.e. silt fence is in working order, utilize monitoring data from groundwater wells to demonstrate no offsite impacts beyond the perimeter of the site, etc.	**Condition # 12 - Wetland and Species at Risk Protection** 12.1. The Proponent shall install a permanent silt fence that extends the entire perimeter of the Site property to exclude wildlife from accessing the Site. This exclusion fence shall be routinely monitored and maintained in good working condition throughout the Construction, operation and closure of the landfill. 12.2. The Proponent shall train staff in the identification of Blanding's Turtle and other Species at Risk known to be within the general vicinity of the Site. Training shall include Species at Risk awareness and the appropriate steps to take upon encountering a Species at Risk. In the event that a Species at Risk is found on the Site property, all activities that could potentially harm the animal shall cease and a Ministry of Natural Resources and Forestry biologist shall be contacted. 12.3. The Proponent shall develop and implement a wetland monitoring program to demonstrate that there are no impairments to water quality, quantity, vegetation, or wildlife in the Cayuga Swamp Wetland Complex located adjacent to the Site as a result of the Undertaking. The Proponent shall prepare wetland monitoring reports outlining the results of the wetland monitoring program. The Proponent shall provide copies of the wetland monitoring reports to the Ministry of Natural Resources and Forestry and submit them to the Ministry as part of its annual compliance report (Condition 5 above).	Confirm a Terrestrial and Aquatic Environment BMP is prepared. Confirm silt fencing is installed. Confirm staff are trained in the identification of Species at Risk.	Confirm BMP is submitted and silt fencing is installed in 2020 and confirm staff are trained in the identification of Species at Risk at the beginning of each year during the life of the Site.	Section 5.1 of the D&O Report details the specifications around fencing. Section 7.2 of the D&O Report details the additional wetland monitoring location. The Terrestrial and Aquatic Environment Best Management Plan, which includes the wetland monitoring program, employee training on species at risk, and the perimeter silt fence details was prepared April 28, 2020. Wetland monitoring results will be provided in annual compliance reports	In progress
	7.0	Annual monitoring of wetland for duration of landfill operation				Confirm a wetland monitoring program is prepared and reported on annually.	Submit wetland monitoring program by end of June 2020 and submit wetland monitoring reports annually on February 14 as a part of compliance report.	A Wetland Monitoring Program will be developed.	In progress
Archaeology & Cultural Heritage	5.0	The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.	N.A.	N.A.	N.A.	Confirm that if human remains are found that the police or coroner are contacted.	Upon occurrence	No archaeological resources or human remains have been uncovered.	Complete

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	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
Land Use	5.0 & 7.0	Monitor land use applications, plans, and/or policies, including Official Plan, Zoning By-Law, Community Development Plans, plans of subdivision, site plans, and OMB decisions, for the following: • To determine any potential effects on the undertaking; • To provide comments to Haldimand County, as necessary, in relation to the above; and To take further action, as required, in relation to the above, including appeals.	7.1.5	Monitor any changes in plans and by-laws on a regular basis to ensure that any related to waste disposal operations are not overlooked.	N.A.	Confirm if any action was taken to respond to land use applications or changes to land use plans and policies.	Immediate action if required.	No relevant changed in plans or by-laws have been identified.	Completed
	5.0	Nuisance related effects to off-Site recreational resources within 500 m of landfill footprint and the two residential properties within 500 m of the landfill footprint will be mitigated through the implementation of Site Design and Operation BMPs included in the Amended Site D&O Report for the Amended ECA	N.A.	N.A.	N.A.	Confirm inclusion of Site Design and Operation BMPs in the Amended Site D&O Report in the Amended ECA.	Prior to March 27, 2020	The sites BMPs are provided in the D&O Report. These detail several mitigation measure to limit nuisance related effects to recreational resources and residential properties. This includes updated site design to prevent nuisance visual impacts (Section 4.2.2), and operation Best Management Plans to prevent nuisance dust, vermin, and litter (Section 6). A Noise BMP to monitor performance of landfill equipment will be prepared in 2020. An updated odour management plan will be prepared by June 25, 2020.	In progress
Agriculture, Soils, & Mining	5.0	Nuisance related effects to surrounding agricultural operations will be mitigated through the implementation of Site Design and Operation BMPs included in the Amended Site D&O Report for the	N.A.	N.A.	N.A.	Confirm inclusion of Site Design and Operation BMPs in the Amended Site D&O	Prior to March 27, 2020	The site D&O Report has been completed and submitted for review. This	In progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
		Amended ECA (see **Site Design & Operations**, below).				Report in the Amended ECA.		includes updated site design to prevent nuisance visual impacts (Section 4.2.2), and operation Best Management Plans to prevent nuisance dust, vermin, and litter (Section 6). A Noise BMP to monitor performance of landfill equipment will be prepared in 2020. An updated odour management plan will be prepared by June 25, 2020.	
Site Design & Operations	5.0	The Amended Site D&O Report for the Amended ECA will include BMPs to be implemented by Brooks Road Environmental to maximize operational flexibility and may include the following: • Tarping vehicles transporting waste to and around the Site, as required, to prevent litter from blowing out of the vehicle. • Applying daily cover to exposed waste to confine light weight material. • Ensuring that cover material is readily available to allow the working face to be fully covered at the end of each operating day. • Minimizing the area of exposed waste at the working face. • Adjusting the location of the working face, as required, to provide shelter from prevailing winds, if possible. • Using portable litter fences around the working face to capture litter. • Collecting litter on an as-needed basis, both from the Site and, if required, from the adjacent lands and roadway. • Operating on-Site equipment in a manner such that noise impacts are minimized, wherever possible. • Ensuring that all landfill construction equipment associated with the development, operation, or closure of the Site comply with the noise levels	N.A.	N.A.	N.A.	Confirm the elements are included in the Amended Site D&O Report.	Prior to March 27, 2020	The site D&O Report has been completed and submitted for review. This includes updated operation Best Management Plans. Section 4.2.2 provides design details related to visual screening Section 4.3.2 identifies the availability of soil for daily cover Section 4.4 identifies the waste compaction Section 6.4 provides details on cover placement Section 6.6 provides litter control measures	In progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
		outlined in applicable MOECC guidelines and technical standards. • Vegetating the berm on the western Site boundary and/or on-Site plantings, as required, to attenuate visual and noise impacts. • Compacting waste immediately after placement and spreading. • Vector and vermin are controlled, as required. • Maintaining the comprehensive monitoring and maintenance program to address all aspects of landfill operation, including waste inspection and monitoring of landfill odour. • Site haul roads are constructed to minimize mud trackout and dust mitigation measures are employed on an as-needed basis.						Section 6.7 provides noise control and a Noise BMP will be prepared in 2020 to monitor landfill equipment performance Section 6.9 provides dust management Section 6.10 provides vector and vermin control Section 7 provides the environmental monitoring program and inspection programs	
Socio-Economic	5.0	Views of the Site from the west and southwest will be minimized by planting trees or shrubs on top of the berm along the western property boundary and/or introducing additional on-Site plantings, as required.	N.A.	N.A.	N.A.	Confirm that plantings and/or berms are implemented, as necessary.	Annually during the spring and fall (as required).	Section 4.2.2 of the D&O Report detail the measures which will be taken to limit visual impacts of the site.	In progress
	5.0	Nuisance related effects to the 11 residences within the Local Study Area will be mitigated through the implementation of Site Design and Operation BMPs included in the Amended Site D&O Report for the Amended ECA (see **Site Design & Operations**, above).	N.A.	N.A.	N.A.	Confirm inclusion of Site Design and Operation BMPs in the Amended Site D&O Report in the Amended ECA.	Prior to March 27, 2020	The Design and Operations Report- Vertical Expansion include improved management measures for nuisance related effects and a Fugitive Odour Best Management Practices Plan which is presented in Appendix I. Further BMPs are being finalized as noted under Site Design & Operations.	In progress

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
Contingency Plans	7.4	Prepare Contingency Plans following approval of the undertaking by the Minister of the Environment and Climate Change and prior to vertical expansion of the Site. The Contingency Plans will include a description of proposed contingency measures, monitoring requirements, and commitments. The Contingency Plans will ensure these contingency measures, monitoring requirements, and commitments are implemented, if required, during construction, operation, closure, and post-closure of the Site.	N.A.	N.A.	N.A.	Confirm that Contingency Plans are prepared, as necessary.	Prior to March 27, 2020	Contingency plans have been prepared as part of the Design and Operations Report- Vertical Expansion, see Section 8.	Completed
Public Record	N.A.	N.A.	N.A.	N.A.	**Condition # 3 – Public Record** 3. Public Record 3.1. Where a document is required for the public record, the Proponent shall post the document on the Proponent website and provide one hardcopy and one electronic copy of the document to the Director. 3.2. The EA Reference Number 13004 and EA File Number 03-08-02 shall be quoted on all documents submitted to the Ministry pursuant to this Notice of Approval. 3.3. For every document submitted to the Ministry, the Proponent shall clearly identify which condition of approval the document is meant to fulfill.	Confirm that documents have been placed on the public record, as required.	Upon submission of documents for the public record	The required number of copies was provided to the Director for each document required for the public record	In Progress
Compliance Monitoring	N.A.	N.A.	N.A.	N.A.	**Condition # 4 – Compliance Monitoring Program** 4.1. The Proponent shall prepare and submit to the Director for approval and for the public record, an Environmental Assessment compliance monitoring program. 4.2. The compliance monitoring program shall be submitted within one year from the Date of Approval, or 60 days before the commencement of Construction, whichever is earlier, or by another date agreed upon by the Director. 4.3. The compliance monitoring program shall include a description of how the Proponent will: a. monitor implementation of the Undertaking in accordance with the Environmental Assessment with respect to mitigation measures, public consultation, and additional studies and work to be carried out; b. monitor compliance with the conditions in this Notice of Approval; and, c. monitor compliance with all commitments made in the Environmental Assessment and the subsequent review of and approval process for the Environmental Assessment with respect to mitigation measures, public consultation, and additional studies and work to be carried out. 4.4. The compliance monitoring program must contain an implementation schedule for monitoring activities to be completed.	Confirm Compliance Monitoring Program have been prepared and submitted to the Director.	Submission of revised Compliance Monitoring Program by May 31, 2020.	The Compliance Monitoring Program was submitted to the Director on February 6 2020.	Completed

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
					4.5. The Director may require the Proponent to amend the compliance monitoring program at any time. Should an amendment be required, the Director will notify the Proponent in writing of the required amendment and the date by which the Proponent must complete and submit the amendment to the Director. 4.6. The Proponent shall submit the amended compliance monitoring program to the Director within the time period specified by the Director. 4.7. The Proponent shall implement the compliance monitoring program and any amendments to it.				
	N.A.	N.A.	N.A.	N.A.	**Condition # 5 – Compliance Reporting** 5.1. The Proponent shall prepare an annual compliance report outlining the results of the compliance monitoring program (Condition 4 above) and place the document on the public record. 5.2. The first compliance report shall be submitted to the Director for review and for the public record no later than one year following the Date of Approval. Each subsequent annual compliance report shall be submitted on the date that is the anniversary of the Date of Approval thereafter. Each report shall cover the previous year to the date of report submission. 5.3. The Proponent shall submit annual compliance reports until all conditions are satisfied. 5.4. Once all conditions in this Notice of Approval have been satisfied, the Proponent shall notify the Director in writing that the final annual compliance report is being submitted, and that all conditions in this Notice of Approval have been satisfied. The Ministry will confirm whether all conditions have been satisfied and the Director will state this in writing to the Proponent. 5.5. The Proponent shall retain either on the Site or in another location approved by the Director, copies of the annual compliance reports for each reporting year and any associated documentation of compliance monitoring activities. 5.6. The Proponent shall make the compliance reports and associated documentation available to the Director or a designate in a timely manner when requested to do so by the Ministry.	Confirm Annual Compliance Reports are submitted annually until all conditions are satisfied.	Annually each year on February 14 until all conditions are satisfied.	The first Annual Compliance Report was submitted to the Director on February 14 2020.	In Progress
Extreme Weather Events	N.A.	N.A.	N.A.	N.A.	**Condition # 10 – Extreme Weather Events** 10.1. When applying for an Environmental Compliance Approval, the Proponent shall provide to the satisfaction of the Ministry as part of its application, an assessment of landfill vulnerability to side slope failure due to extreme weather	Confirm that the Environmental Compliance Approval is application is completed to the satisfaction of the Ministry.	April 29, 2019	A technical memorandum was prepared which address extreme weather events in relation to the extension	Completed

Category	EA Commitments		Proposed Monitoring		EA Act Approval Conditions	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Compliance Reporting	
	EA Report Section	EA Commitment	EA Report Section	Monitoring				Status/Remarks (as of February 14, 2020)	Compliance Achieved? (Yes/In Progress)
					events. The Proponent shall complete a slope stability modelling exercise to determine the appropriate safety factor to be applied to the design of the vertically expanded landfill and identify appropriate mitigation and contingency measures to prevent side slope failure.			of the facility (see Attachment B of the D&O Report).	
Waste Diversion	N.A.	N.A.	N.A.	N.A.	**Condition # 11 – Waste Diversion** 11.1. The Proponent shall develop and implement a waste diversion protocol which shall contain information on awareness programs for waste generators and haulers, and on-site waste segregation protocols to maximize the diversion of industrial, commercial and institutional waste, including organics. The Proponent shall submit the waste diversion protocol to the Ministry in its application for an Environmental Compliance Approval and report industrial, commercial and institutional waste diversion amounts in its annual compliance report (Condition 5 above).	Confirm a waste diversion protocol is prepared.	Prior to March 27, 2020	Section 5.5 of the D&O Report discusses waste diversion A Waste Diversion Protocol was submitted in a letter to MECP Approvals dated September 10, 2019. An updated version has been prepared and is attached as Appendix C.	Completed
Duration of Approval	N.A.	N.A.	N.A.	N.A.	**Condition # 13 – Duration of Approval** 13.1. If Construction has not commenced within 2 years of the Date of Approval, the Proponent shall conduct a review of the Environmental Assessment and submit that review to the Director. The review shall look at the potential environmental effects and mitigation measures, and identify any changes to these components. If Construction has not commenced within 5 years of the Date of Approval, this Notice of Approval shall expire.	Confirm construction (expansion of the Landfill) has commenced within two years of the Date of Approval.	January 15, 2021	Expansion of Landfill commenced on March 27, 2020.	In progress

3. Additional Environmental Approvals and Permits

In addition to EA approval, further environmental approvals will be required in support of the proposed undertaking. This section outlines the other approvals that will be required for the proposed undertaking and indicates the status of obtaining each approval/permit between February 14, 2019 and February 14, 2020.

Table 3.1 Approvals and Permits Compliance Monitoring

Applicable Approval/Permit	Evidence of Compliance	Implementation Schedule (Estimate Timelines and Dates)	Status/Remarks (as of date of Annual Compliance Report)	Compliance Achieved? (Yes/In Progress)
Environmental Compliance Approval - Ministry of the Environment, Conservation and Parks				
An application to amend the existing ECA for the Site will need to be submitted to the MECP for approval. Changes to the design and operations of the landfill required as a result of the Preferred Alternative will be documented in an update to the existing Design and Operations (D&O) Report for the Site.	Confirm the ECA is approved by MECP.	March 27, 2020	An application to amend the existing ECA for the Site has been submitted to the MECP for approval	In Progress
Noise				
The updated D&O and amended ECA will include any additional mobile noise sources such as crushing equipment for C&D processing. Other landfill operations equipment and potential on Site noise sources, including intermittent, will be addressed under the ECA for the Site overall.	Confirm the updated D&O includes any additional mobile noise sources, as necessary	April 29 2019	No additional mobile noise sources are anticipated	Completed
Surface Water Resources				
The updated D&O and amended ECA will include details of any changes required to the approved on-Site stormwater management system.	Confirm the updated D&O includes changes to the approved on-site stormwater management system, as appropriate.	April 29 2019	The updated D&O Report includes details regarding the on-site stormwater management system	In Progress

Appendix A

2019 Complaint Summary

2019 Complaint Summary
Brooks Road Landfill

Date of Complaint	Time	Received	By	Mitigative action
Friday, January 11, 2019	8:00pm	Tuesday, January 15, 2019	MECP	Additional Daily cover placed on active face.
Friday, January 18, 2019	9:00pm	Monday, January 21, 2019	MECP	Additional Daily cover placed on active face.
Wednesday, February 6, 2019	Afternoon	Monday, February 11, 2019	MECP	Additional clay cover material placed western side slope
Thursday, February 28, 2019	6:36am	Thursday, February 28, 2019	MECP	Additional clay material placed and graded in Stage 3 cell.
Thursday, February 28, 2019	7:00am	Thursday, February 28, 2019	MECP	
Thursday, February 28, 2019	8:10am	Thursday, February 28, 2019	MECP	
Thursday, February 28, 2019	8:41am	Thursday, February 28, 2019	MECP	
Thursday, February 28, 2019	6:45pm	Thursday, February 28, 2019	MECP	
Thursday, February 28, 2019	7:20pm	Thursday, February 28, 2019	MECP	
Friday, March 1, 2019	8:00pm	Tuesday, March 5, 2019	MECP	Additional Daily cover placed on active face. Continued efforts to place additional clay material in Stage 3.
Wednesday, March 6, 2019	7:06pm	Friday, March 8, 2019	MECP	Continue additional clay placement in stage 3. Placement of Odour control granulars. Committed to
Wednesday, March 6, 2019	9:27pm	Friday, March 8, 2019	MECP	
Friday, March 8, 2019	5:18am	Monday, March 11, 2019	MECP	Continue additional clay placement in stage 3. Placement of Odour control granulars. Started hauling leachate off-site to licensed facility.
Friday, March 8, 2019	8:05am	Monday, March 11, 2019	MECP	
Friday, March 8, 2019	8:09pm	Monday, March 11, 2019	MECP	
Saturday, March 9, 2019	6:45am	Saturday, March 9, 2019	MECP	Continue additional clay placement in stage 3. Placement of Odour control granulars.
Saturday, March 9, 2019	6:45am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:15am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:15am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:30am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:35am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:45am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:45am	Saturday, March 9, 2019	MECP	
Saturday, March 9, 2019	8:55am	Saturday, March 9, 2019	MECP	
Thursday, March 14, 2019	6:00pm	Monday, March 18, 2019	MECP	Continue additional clay placement in stage 3. Placement of Odour control granulars. Surface leachate from spring thaw pumped into the leachate collection system.
Thursday, March 14, 2019	6:08pm	Monday, March 18, 2019	MECP	
Thursday, March 14, 2019	7:00am	Monday, March 18, 2019	MECP	

2019 Complaint Summary
Brooks Road Landfill

Date of Complaint	Time	Received	By	Mitigative action
Tuesday, March 26, 2019	6:56am	Tuesday, April 2, 2019	MECP	Continue additional clay placement in stage 3. Placement of Odour control granulars. Clean effluent hauling to licensed wastewater treatment started.
Friday, March 29, 2019	8:45am	Friday, March 29, 2019	Complaint Line	Continue additional clay placement in stage 3. Placement of Odour control granulars. Clean effluent hauling to licensed wastewater treatment started.
Friday, March 29, 2019	8:20am	Tuesday, April 2, 2019	MECP	
Friday, March 29, 2019	9:40pm	Tuesday, April 2, 2019	MECP	
Friday, March 29, 2019	10:01pm	Tuesday, April 2, 2019	MECP	
Sunday, April 7, 2019	8:15am	Sunday, April 7, 2019	Complaint Line	Odour inspection was conducted in the area. No odour was detected. Odour control granulars placed as preventative measure
Sunday, April 7, 2019	8:16am	Sunday, April 7, 2019	Complaint Line	
Wednesday, April 17, 2019	9:00pm	Friday, May 3, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Monday, April 22, 2019	7:00pm	Friday, May 3, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Thursday, April 25, 2019	6:00am	Friday, May 3, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Thursday, April 25, 2019	9:00am	Friday, May 3, 2019	MECP	Complaint received 1 week after occurance. Not action could be taken.
Sunday, May 5, 2019	8:00pm	Thursday, May 16, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Sunday, May 5, 2019	12:00am	Thursday, May 16, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Wednesday, May 8, 2019	8:00pm	Thursday, May 16, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Sunday, May 12, 2019	Not provided	Thursday, May 16, 2019	MECP	Complaint received 2 weeks after occurance. No action could be taken.
Tuesday, May 14, 2019	8:30pm	Thursday, May 16, 2019	MECP	No odour was detected in the area of the complaint.
Thursday, May 16, 2019	7:00am	Thursday, May 16, 2019	MECP	Odour was detected during odour monitoring drive. Mobile odour control misting machine started. Odour
Thursday, May 16, 2019	7:36am	Thursday, May 16, 2019	Complaint Line	
Friday, May 24, 2019	5:55am	Monday, May 27, 2019	MECP	No odour was detected in the area of the complaint.
Monday, May 27, 2019	5:30am	Monday, May 27, 2019	MECP	Additional odour monitoring drives conducted and no odour was detected.

2019 Complaint Summary
Brooks Road Landfill

Date of Complaint	Time	Received	By	Mitigative action
Wednesday, May 29, 2019	10:13am	Wednesday, May 29, 2019	Complaint Line	Additional odour monitoring drives conducted and no odour was detected.
Friday, June 7, 2019	3:30am	Monday, June 10, 2019	MECP	Complaint received 3 days after occurance. Brooks road starts active and passive odour mitigation strategy to reduce off-site odour mitgration and impact.
Friday, June 7, 2019	10:00pm	Monday, June 10, 2019	MECP	
Wednesday, June 12, 2019	6:30am	Wednesday, June 12, 2019	MECP	Odour was detected during odour monitoring drive. Mobile odour control misting machine started. Odour control granulars placed.
Thursday, June 13, 2019	8:30pm	Wednesday, June 12, 2019	Complaint Line	Odour was detected during odour monitoring drive. Mobile odour control misting machine started. Odour control granulars placed.
Saturday, June 15, 2019	7:52am	Tuesday, June 25, 2019	MECP	Complaint received 10 days after occurance. Could not be verified.
Sunday, June 16, 2019	9:29am	Tuesday, June 25, 2019	MECP	Complaint received 9 days after occurance. Could not be verified.
Sunday, June 16, 2019	9:33am	Tuesday, June 25, 2019	MECP	
Wednesday, June 19, 2019	5:00am	Tuesday, June 25, 2019	MECP	Complaint received 9 days after occurance. Could not be verified.
Sunday, June 23, 2019	8:56pm	Tuesday, June 25, 2019	MECP	Complaint received 2 days after occurance. Could not be verified.
Monday, July 1, 2019	7:12am	Monday, July 1, 2019	Cell Phone - Bill Sutton	Complaint received on holiday weekend.
Monday, July 1, 2019	4:30pm	Thursday, July 4, 2019	MECP	
Friday, July 5, 2019	6:00am	Tuesday, July 9, 2019	MECP	Complaint received 4 days after occurance. Could not be verified.
Saturday, July 6, 2019	10:54pm	Saturday, July 6, 2019	Cell Phone - Bill Sutton	No odour was detected in the area of the complaint.
Monday, July 8, 2019	11:00pm	Tuesday, July 9, 2019	MECP	Odour was detected during odour monitoring drive. Additional interim cover placed in stage 3
Thursday, July 25, 2019	11:50 PM	Tuesday, July 30, 2019	MECP	No odour was detected in the area of the complaint.
Wednesday, July 31, 2019	9:30pm	Wednesday, July 31, 2019	Complaint Line	Odour was detected during odour monitoring drive. Additional interim cover placed in stage 3
Tuesday, August 13, 2019	11:00 PM	Tuesday, August 13, 2019	Cell Phone - Bill Sutton	Odour granulars were placed in stage 3. Interim cover was re-compacted.
Tuesday, August 13, 2019	10:40 PM	Wednesday, August 14, 2019	MECP	
Tuesday, August 13, 2019	10:55 AM	Tuesday, August 13, 2019	Complaint Line	
Tuesday, August 20, 2019	5:30 AM	September 4,2019	MECP	Odour was detected during odour monitoring drive.
Tuesday, August 20, 2019	5:23 AM	September 4,2019	MECP	Odour control granulars placed and stationary odour

2019 Complaint Summary
Brooks Road Landfill

Date of Complaint	Time	Received	By	Mitigative action
Friday, August 23, 2019	7:30 AM	Friday, August 23, 2019	Cell Phone - Bill Sutton	No odour was detected in the area of the complaint.
Saturday, August 31, 2019	11:30 AM	September 4,2019	MECP	No odour was detected in the area of the complaint.
Tuesday, September 3, 2019	8:30 AM	Tuesday, September 3, 2019	Complaint Line	No odour was detected in the area of the complaint.
Tuesday, September 3, 2019	8:42 AM	Tuesday, September 3, 2019	Complaint Line	
Wednesday, October 2, 2019	6:49 AM	Wednesday, October 2, 2019	MECP	Odour granulars were placed in stage 3. Interim cover was re-compacted.
Saturday, October 19, 2019	8:51 AM	Saturday, October 19, 2019	Cell Phone - Bill Sutton	Odour granulars were placed in stage 3. Interim cover was re-compacted.
Saturday, October 19, 2019	8:44 AM	Saturday, October 19, 2019	Complaint Line	
Saturday, October 19, 2019	12:44 PM	Saturday, October 19, 2019	Complaint Line	
Friday, October 25, 2019	6:45 PM	Tuesday, November 5, 2019	Cell Phone - Bill Sutton	Staff was send to site Saturday 6 am to place odour control granulars
Friday, October 25, 2019	5:25 PM	Tuesday, November 5, 2019	Cell Phone - Bill Sutton	
Monday, October 28, 2019	10:09 AM	Tuesday, November 5, 2019	MECP	Odour granulars were placed in stage 3. Interim cover was re-compacted.
Thursday, October 31, 2019	6:00 AM	Tuesday, November 5, 2019	MECP	Odour granulars were placed in stage 3. Interim cover was re-compacted.
Friday, November 1, 2019	9:00 PM	Tuesday, November 5, 2019	MECP	Staff was send to site Saturday 6 am to place odour control granulars
Sunday, November 3, 2019	9:20 PM	Tuesday, November 5, 2019	MECP	On Monday odour granulars were placed in stage 3. Interim cover was re-compacted.
November 17 ,2019	8:41 AM	Monday, November 18, 2019	MECP	No odour was detected in the area of the complaint.
Sunday, November 17, 2019	5:00 PM	Monday, November 18, 2019	MECP	
Monday, November 18, 2019	7:00 AM	Wednesday, November 20, 2019	MECP	No odour was detected in the area of the complaint.
Tuesday, November 19, 2019	9:49 AM	Wednesday, November 20, 2019	MECP	Drive around conducted next day in morning, no odour was detected in the area of the complaint.
Tuesday, November 19, 2019	6:02 PM	Wednesday, November 20, 2019	MECP	
Tuesday, November 19, 2019	8:00 PM	Wednesday, November 20, 2019	MECP	
Tuesday, November 19, 2019	10:24PM	Wednesday, November 20, 2019	MECP	
Monday, December 16, 2019	5:50PM	Tuesday, January 7, 2020	MECP	Complaint received 3 weeks after occurance. Could not be verified.
Tuesday, December 17, 2019	11:38	Tuesday, January 7, 2020	MECP	Complaint received 3 weeks after occurance. Could not be verified.
Wednesday, December 18, 2019	8:56PM	Tuesday, January 7, 2020	MECP	Complaint received 3 weeks after occurance. Could not be verified.
Friday, December 20, 2019	7:23PM	Tuesday, January 7, 2020	MECP	Complaint received 2 weeks after occurance. Could not be verified.

2019 Complaint Summary
Brooks Road Landfill

Date of Complaint	Time	Received	By	Mitigative action
Monday, December 23, 2019	9:31PM	Tuesday, January 7, 2020	MECP	Complaint received on holiday.
Tuesday, December 24, 2019	4:58PM	Tuesday, January 7, 2020	MECP	Complaint received on holiday.
Saturday, December 28, 2019	8:56PM	Tuesday, January 7, 2020	MECP	Complaint received 2 weeks after occurance. Could not be verified.
Saturday, December 28, 2019	9:06PM	Tuesday, January 7, 2020	MECP	Complaint received 2 weeks after occurance. Could not be verified.
Sunday, December 29, 2019	3:42PM	Tuesday, January 7, 2020	MECP	Complaint received 2 weeks after occurance. Could not be verified.

Appendix B

LTS Annual Performance

CLEARFORD™ WATERWORKS INC.

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2270386 Ontario Limited

BROOKS ROAD LANDFILL SITE LEACHATE TREATMENT WORKS

2019 ANNUAL REPORT

January 1, 2019 to December 31, 2019

Environmental Compliance Approval Number 4142-ASEKJ2

Date:

April 19, 2020

Prepared by:

Clearford Waterworks
212-704 Mara Street,
Point Edward, ON,
Canada N7V 1X4

Tel: 519 542 7900
or 1 800 704 4188
Fax: 519 542 3020

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APPENDICES

1.0 OVERVIEW

The Brooks Road leachate treatment works provide wastewater treatment for the Brooks Road Landfill Site in Cayuga, Haldimand County, Ontario. The Works consist of a leachate collection sump, one (1) primary settling tank, an aeration system, a membrane bioreactor (MBR) treatment system, two (2) ultraviolet disinfection units, an effluent transfer tank, three (3) effluent batch discharge holding tanks, one (1) sludge storage tank, and a chemical addition system, all described in detail in Environmental Compliance Approval (ECA) Number 4142-ASEKJ2.

This report presents a summary of the annual monitoring results from January to December 2019. It should be noted the system first effluent discharge commenced in January 2019. In accordance with Condition 11 of the ECA, this report includes a detailed analysis of effluent concentrations with reference to the criteria outlined in Conditions 4 and 5, as well as flow analysis and facility performance issues. It also includes modifications to the process including implementation of a dissolved air flotation (DAF) system to improve the MBR process performance.

2.0 MONITORING DATA & EFFLUENT LIMITS

2.1 MONITORING PROGRAM

The monitoring program for the facility is described in detail in the ECA, including: Influent Leachate monthly and quarterly grab samples, and Effluent weekly, quarterly and batch discharge grab samples. Batch flow measurements were recorded by a magnetic flowmeter on the effluent discharge line.

Samples were collected by the plant operator, Clearford Waterworks, who is licensed in accordance with the conditions of O.Reg. 129/04. Samples were tested for the following parameters:

- Influent Leachate – (Monthly) $CBOD_5$, TSS, TAN, TP, pH, Zinc, Phenols, Ethylbenzene; (Quarterly) Chlorides, Nitrate (N), Arsenic, Barium, Boron, Chromium, Copper, Iron, Lead, Benzo(a)pyrene, Naphtalene, Benzene, Toluene;

- Effluent – (Weekly) $cBOD_5$, TSS, TAN, TP, pH, Temp; (Batch) $cBOD_5$, TSS, TAN, TP, pH, Zinc, Phenols, Ethylbenzene; (Quarterly) as above, and Acute Lethality.

Temperature and pH testing were performed at site by the operator. All other parameter testing was conducted by Bureau Veritas, an independent accredited laboratory. Samples were retained in laboratory-supplied coolers containing ice and transported to the laboratory for analysis. Chain of custody documents were provided for all samples.

2.2 SUMMARY

The facility performance is presented below with respect to the parameters identified in the monitoring program. Table 1, Table 2, Table 3, Table 4, and Table 5 summarize the weekly, monthly, and quarterly values for the influent, and treated effluent parameters during the reporting period, respectively.

Influent Leachate Monitoring

In accordance with ECA, raw sewage samples are collected from the sampling port on the effluent line from primary settling tank flowing to aeration tanks. The following tables summarize sampling results.

TABLE 1. SUMMARY OF MONTHLY INFLUENT PARAMETERS

PERIOD	INFLUENT LEACHATE							
Parameter (mg/L)	**$cBOD_5$**	**TSS**	**TAN**	**TP**	**Zinc**	**Phenols**	**EB[1]**	**pH**
Jan	230	17	150	1.30	0.01	0.240	9.8	7.00
Feb	140	11	130	0.96	0.01	0.049	9.6	7.17
Mar	160	6	120	0.72	0.01	0.080	9.8	6.86
April	200	6	130	2.00	0.01	0.077	9.2	6.82
May	130	430	120	0.89	0.01	0.041	8.9	7.07
June	140	46	140	0.89	0.01	0.085	12	7.05
July	120	7	170	1.00	0.01	1.000	11	7.00
August	150	9	190	1.50	0.01	0.062	11	7.06
September	110	12	170	1.30	0.01	0.029	11	7.10
October	97	7	140	0.82	0.01	0.009	9.4	7.12
November	95	5	120	0.89	0.01	0.014	8.3	7.22
December	53	10	120	1.1	0.01	0.009	10	7.25
Annual Avg	**135**	**47**	**142**	**1.1**	**0.01**	**0.14**	**10**	**7.06**

Notes:

1. Ethylbenzene
2. "<" denotes result below the analytical detection limit

TABLE 2. SUMMARY OF QUARTERLY INFLUENT PARAMETERS

PERIOD	INFLUENT LEACHATE											
Parameter (mg/L)	**Chloride**	**NO_3**	**Arsenic**	**Barium**	**Chromium**	**Copper**	**Iron**	**Lead**	**Benzo()pyrene**	**Naphtalene**	**Benzene**	**Toluene**
04-Jan-19	870	0.50	0.20	0.31	0.03	0.02	1.30	0.05	0.80	5.1	5.0	11.0
11-Apr-19	700	0.50	0.20	0.26	0.03	0.02	0.13	0.05	0.80	4.4	5.0	10.0
03-Jul-19	930	0.01	0.20	0.35	0.04	0.02	0.08	0.05	0.80	5.7	10.0	20.0
09-Oct-19	630	0.01	0.20	0.32	0.03	0.02	0.18	0.05	0.80	4.3	3.2	3.7

Notes:

1. "<" denotes result below the analytical detection limit

Effluent Leachate Monitoring

Effluent weekly and quarterly samples are collected from the sampling port after UV disinfection units and effluent batch samples are collected from batch discharge holding tanks. The following tables summarize the effluent sampling results.

TABLE 3. SUMMARY OF AVERAGE WEEKLY EFFLUENT PARAMETERS

PERIOD	EFFLUENT LEACHATE					
Parameter (mg/L)	**$cBOD_5$**	**TSS**	**TAN**	**TP**	**pH**	**Temp**
Jan	6	3	0.37	0.078	8.3	13.2
Feb	108	2	0.45	0.050	8.4	13.8
Mar	2	2	0.37	0.120	8.5	16.5
April	2	2	0.35	0.080	8.1	18.6
May	3	2	0.21	0.105	8.0	19.1
June	2	3	0.30	0.160	8.0	23.4
July	3	4	0.19	0.098	8.0	25.4
August	3	4	0.22	0.320	8.0	27.7
September	2	3	0.28	0.260	8.3	24.7
October	5	4	0.25	0.150	8.3	19.6
November	10	6	25.26	0.062	8.3	15.1
December	2	4	18.00	0.020	8.5	13.9
Annual Avg	**11**	**3**	**3.84**	**0.142**	**8.2**	**19.2**

TABLE 4. SUMMARY OF EFFLUENT BATCH PARAMETERS

PERIOD	EFFLUENT BATCH MONITORING									
Parameter (mg/L)	**Sample Date**	**cBOD5**	**TSS**	**TAN**	**TP**	**Zinc**	**Phenols**	**Ethylbenzene[2]**	**pH**	**Temp**
Objective		**5**	**5**	**1.0**	**0.3**	**0.03**	**0.005**	**8**	**6.5-8.5**	**N/A**
Compliance		**10**	**10**	**3.0**	**0.5**	**N/A**	**N/A**	**N/A**	**6.0-9.5**	**N/A**
AST1	08-Jan-19	2	3	0.3	0.4	0.03	0.002	2.5	8.4	9.8
AST2	17-Jan-19	8	4	0.3	0.1	0.03	0.003	2.5	8.2	4.0
AST1	28-Jan-19	2	2	0.3	0.1	0.03	0.002	2.0	8.4	3.8
AST2	07-Feb-19	230	7	0.4	0.1	0.03	0.003	1.0	8.2	4.6
AST1	15-Feb-19	37	3	0.6	0.1	0.03	0.004	1.0	8.5	7.7
AST2	22-Feb-19	14	1	0.4	0.0	0.02	0.003	1.0	8.5	12.2
AST1	28-Feb-19	4	1	0.5	0.0	0.02	0.004	1.0	8.5	9.1
AST2	06-Mar-19	6	1	0.6	0.1	0.01	0.004	1.0	8.4	11.0
AST1	13-Mar-19	2	2	0.4	0.0	0.01	0.003	1.0	8.2	14.0
AST2	20-Mar-19	2	3	0.3	0.0	0.01	0.002	1.0	8.6	14.1
AST3	22-Mar-19	6	2	0.4	0.1	0.01	0.002	2.0	8.6	12.7

1. "<" denotes result below the analytical detection limit
2. Unit of measure ug/L

TABLE 5. SUMMARY OF QUARTERLY EFFLUENT CHEMICAL AND TOXICITY PARAMETERS

PERIOD	08-JAN-19	4-APR-19	15-JUL-19	16-OCT-19
Parameter (mg/L)				
Chlorides	490	560	700	620
NO_3	155	126	170	142
Arsenic	0.20	0.20	0.20	0.20
Barium	0.11	0.16	0.20	0.15
Boron	9.1	7.8	9.6	8.3
Chromium	0.03	0.02	0.03	0.02
Copper	0.03	0.02	0.20	0.02
Iron	0.15	0.36	0.10	0.05
Lead	0.05	0.05	0.05	0.05
Benzo(a)pyrene	0.20	0.20	0.20	0.20
Naphtalene	0.20	0.20	0.20	0.20
Benzene	2.5	2.5	2.5	0.5
Toluene	5	5	5	1
Toxicity – *Daphnia magna*	NAL	NAL	NAL	NAL
Toxicity – Rainbow Trout	NAL	NAL	NAL	NAL

Notes:

1. "<" denotes result below the analytical detection limit
2. "NAL" denotes not acutely lethal

The facility generally achieved compliance with the effluent limits in the ECA with respect to all parameters except $cBOD_5$, as described in Section 3.0 below.

Discharge Summary

The facility has three (3) existing effluent batch discharge holding tanks, each with a rated capacity of 150 m^3, with a design daily average flow capacity of 30 m^3/day and peak day capacity of 60 m^3/day. The discharge events are summarized in Table 6 below. Each tank is released at around 50-55 m^3/day, as hydraulics and dynamic pressure head cause the flow rate to vary slightly.

Following the content sampling of the batch discharge holding tank, and before any effluent batch discharge to Brooks Road, monitoring results are reviewed to confirm parameters outlined in Condition 8 (3) meet the concentration limits as defined in the ECA. In the event of any instance of non-compliance with effluent concentrations stipulated in Condition 8 (3), the effluent batch discharge holding tank is returned to the landfill.

TABLE 6. SUMMARY OF EFFLUENT BATCH DISCHARGE

PERIOD	EFFLUENT BATCH DISCHARGE				
	Location	Discharge Start	Discharge End	Quantity (m^3)	Flow Rate (L/s)
08-Jan-19	AST 1	18-Jan-19	21-Jan-19	150	0.6
17-Jan-19	AST 2	28-Jan-19	31-Jan-19	150	0.6
28-Jan-19	AST 1	06-Feb-19	09-Feb-19	150	0.6
28-Feb-19	AST 1	08-Mar-19	11-Mar-19	150	0.6
06-Mar-19	AST 2	15-Mar-19	18-Mar-19	150	0.6
13-Mar-19	AST 1	20-Mar-19	23-Mar-19	150	0.6

Table 7 below shows the monthly average, maximum, and total volume of leachate processed through the MBR system since it was commissioned in the beginning of 2019 through Dec 31, 2019. As seen in the table, the fouling issue has negatively impacted the WWTP performance, particularly in the months of August to October and the minimum flow generated was in September.

The system was not able to meet the target flow based on design objectives, however the ECA objectives for ADF and maximum flow were met during the operating year of 2019. One (1) of the MBR cassettes was out of operation starting September which resulted in the lowest generated flow during the month of September in addition to high observed transmembrane pressures in the other two (2) membrane cassettes due to fouling issues. The MBR cassette was replaced in November and this resulted in enhanced product flow following this change.

TABLE 7. MONTHLY AVERAGE, MAXIMUM, AND TOTAL FLOW OUTPUT

MONTH	Average Flow (m^3/d)	Max Flow (m^3/d)	Total Flow (m^3)
DESIGN BASIS	**200**	**200**	**-**
DISCHARGE CRITERIA	**30**	**60**	**-**
January	0.2	1.2	2.1
February	64.2	124.2	1798.6
March	70.9	103.0	2196.6
April	85.0	130.4	2551.3
May	89.7	122.0	2780.8
June	71.9	104.5	2156.7
July	68.1	95.3	2112.4
August	42.8	83.5	1328.3
September	16.7	39.1	501.4
October	45.7	124.0	1416.5
November	66.7	104.2	1999.7
December	61.5	94.4	1905.3
Annual	**57.0**	**130.4**	**20749.7**

2.3 INTERPRETATION

Carbonaceous Biochemical Oxygen Demand (cBOD)

The annual average influent $cBOD_5$ to the facility was 135 mg/L while the treated effluent value was 11 mg/L. Effective cBOD removal within the effluent limit was typically achieved throughout the year, except for the month of February as demonstrated by the effluent concentrations in the tables above. The high cBOD values observed in effluent samples in February could be attributed to glycol being washed out of the membranes during start up/commissioning of the new WWTP with Fibracast modules. As seen in Table1, cBOD of the raw leachate started decreasing since October through December. In order to prevent any negative impact on the operation, an external carbon source was added to the aeration tanks to sustain the biomass due to nutrient deficiency.

Total Suspended Solids (TSS)

The annual average influent TSS to the facility was 47 mg/L while the treated effluent value was 3 mg/L. Effective TSS removal within the effluent limit was achieved throughout the year, as demonstrated by the monthly influent and effluent concentrations in the Tables above.

Total Ammonia Nitrogen (TAN)

The annual average influent TAN to the facility was 142 mg/L while the treated effluent value was 4 mg/L. Effluent TAN below the limit was typically achieved throughout the year, as demonstrated by the monthly influent and effluent concentrations in the tables above.

Additionally, elevated effluent TAN levels occurred in November and December as a result of a biological upset in the plant. Refer to 3.0 for a description of these events.

Total Phosphorous (TP)

The annual average influent TP to the facility was 1.11 mg/L while the treated effluent value was 0.14 mg/L. Effective TP removal within the effluent limit was achieved throughout the year, as demonstrated by the monthly influent and effluent concentrations in the tables above.

pH

All sample pH measurements during the reporting period fell within the treated effluent compliance limits of 6.0 to 9.5, with values ranging from 7.7 to 8.9 and an average of 8.2, as shown by the data in Table 3 and Table 4.

Zinc, Phenols, Ethylbenzene

The effluent concentrations were consistently below the objective values except for ethylbenzene, with annual averages for zinc 0.02 mg/L, phenols 0.003 mg/L, and ethylbenzene 1.455 mg/L, as demonstrated by the monthly influent and effluent concentrations in the tables above.

Other Chemicals and Toxicity

Quarterly effluent chemical sampling concentrations and toxicity testing results are presented in Table 5 above, with detailed influent and effluent data included in tables above. The sampled effluent was not acutely lethal to *daphnia magna* and rainbow trout.

3.0 OPERATING PROBLEMS & CORRECTIVE ACTIONS

No major operational problems were encountered during the reporting period. However, following table lists all the operational challenges during 2019 along with their remediation steps including irreversible membrane fouling and biomass loss following DAF installation.

Although the quality of the effluent was not negatively impacted, the presence of a number of species such as solids and dissolved inorganics in the effluent impacted hydraulic performance of the membranes and caused fouling. A containerized DAF pilot unit was proposed and installed on site to test its effectiveness as a pre-treatment step prior to membrane filtration to mitigate the fouling issues. The system consists of a DAF unit with a stand-alone polymer feed and pH adjustment, a chemical storage, and temporary plumbing of feed and discharge lines to the downstream process.

All equipment issues were dealt with in a timely manner and did not affect the long-term performance of the plant. There were no by-passes, spills, or abnormal discharge events during the reporting period.

TABLE 8. OPERATIONAL PROBLEMS AND CORRECTIVE ACTIONS

DATE	OPERATIONAL CHALLENGE	CORRECTIVE ACTION
Mar-2019	Foaming issues in aeration tanks which resulted in spill from MBR tank vent pipe.	• Proper control of anti-foaming chemical added to aeration tank. • Spill area was cleaned properly.
Apr-2019	DO sensors erratic behaviour in aeration tanks.	• New DO sensors installation.
May-2019	Odour issues from leachate, PST, and aeration tanks.	Installation of carbon filters on vent pipes from tanks.
May-2019	High TMP observed requiring more intense chemical cleaning of the membranes.	Membrane modules were removed from tanks and manually cleaned using higher concentration of chemical cleaning agents.
May/June/Dec 2019	MBR tanks pressure transmitters inaccurate readings.	Replacement of the instruments in MBR tanks.

Oct-2019	Irreversible fouling of the membrane modules.	Membrane modules replacement.
Oct-2019	Frequent inorganic scaling on the membrane surfaces.	Implementation of a DAF prior to MBR process to mitigate fouling.
Dec-2019	Biomass loss from aeration tanks during DAF optimization period.	• Aeration tank was re-seeded with fresh biomass to increase viable bacteria population. • Additional carbon source was added to aeration tanks for acclimation phase.

4.0 FACILITY & EQUIPMENT MAINTENANCE

Regular and preventative maintenance performed during the reporting period included:

- Checks on blowers, air filters and oil levels;
- Chemical pumps maintenance;
- Cleaning and calibrating pH probes;
- Effluent booster pump and pump strainer cleaning;
- Sludge settleability testing;
- Inspection of membrane modules;
- Membrane cleaning and reconditioning

Major repairs and replacements undertaken during the reporting period included:

- Received waste activated sludge to reseed the bioreactors following loss of biomass in October/November 2019
- Replacement of four (4) filters for the 2 air blowers, part # F8-109 Paper Element
- Replacement of three (3) Winter Pressure Gauges, part # Q798
- Replacement of one (1) Foamtrol AF3566 DC3 205 L Drum
- Replacement of twelve (12) Fibracast membrane modules in November 2019

5.0 EFFLUENT QUALITY ASSURANCE

The facility operator undertook regular quality assurance activities during the reporting period to ensure adequate treatment plant operation and effluent quality, including measurements for phosphates, ammonia, pH, dissolved oxygen, and temperature of the process stream, settleability testing, and monitoring of chemical dosages and sludge wasting volumes.

Data was recorded in the facility logbook and monitored for changes. When appropriate, the operator made minor adjustments to the treatment processes and took corrective actions to ensure that the effluent quality met the objective limits for the facility.

6.0 MONITORING EQUIPMENT CALIBRATION & MAINTENANCE

No calibration or maintenance was performed on the facility discharge flowmeter, which is factory-calibrated and does not require annual re-calibration.

7.0 RESULTS FOR EFFLUENT OBJECTIVES

The operational efforts made during the reporting period typically achieved the effluent objectives listed in the facility ECA, as summarized in Table 4. Monthly data for all measured parameters are described in Section 2.0.

8.0 SLUDGE MANAGEMENT

No sludge was hauled off-site during the reporting period.

Waste sludge was settled, supernatant was decanted back to the aeration tanks and settled solids disposed of in the landfill cells.

9.0 COMPLAINTS

There were no complaints received by Operator of the WWTP from the public during the reporting period.

10.0 BY-PASSES, SPILLS & ABNORMAL DISCHARGES

There were no by-passes, spills, or abnormal discharge events during the reporting period.

Excess treated effluent or effluent not meeting discharge criteria was hauled off-site for disposal by the Owner.

11.0 NOTICES OF MODIFICATION

A Notice of Modification (dated May 15, 2018) was submitted to the District Manager as a result of ECA Schedule ‘B’, Section 1 in the previous year in 2018, related to Limited Operational Flexibility of the sewage works (refer to Appendix A). Another Notice of Modification (dated September 13, 2019) regarding DAF pilot installation was submitted to the District Manager as a result of ECA Schedule ‘B’, Section 1.5, related to Limited Operational Flexibility of the sewage works (refer to Appendix A). The descriptions and implementation status of the modifications are provided in Table 9 below.

TABLE 9. SUMMARY OF MODIFICATIONS AS PART OF LIMITED OPERATIONAL FLEXABILITY

DESCRIPTION OF MODIFICATION	STATUS
Four (4) Bergohf membrane modules with a total surface area of 147.8 m^2 replaced with sixty (60) Fibracast membrane modules, providing a total surface area of 372 m^2	Complete
Replacement of existing recirculation pump (pumping capacity of 200 m^3/hr) with a permeate pump (pumping capacity of 10 m^3/hr)	Complete
Installation of pilot plant	Complete
Installation of DAF (with associated piping and related pumps)	Complete

12.0 OTHER REQUESTED INFORMATION

No additional information was requested by the District Manager during the reporting period.

13.0 SUMMARY

The tubular Berghof membranes failed after a relatively short period of time, and to test a different solution, a pilot plant equipped with Fibracast membranes was installed in the previous year in May 2018. The Fibracast membranes provided a consistent level of treatment during the pilot trial.

During the reporting period, the facility generally achieved compliance with the effluent objective and compliance limits in the ECA. The pilot plant produced good quality effluent. No special maintenance or quality assurance measures were undertaken outside of regular activities.

To address elevated solids fouling and clogging the membranes, a small DAF pilot system was installed ahead of the membranes for removal of solids. Feed to the membrane filters was rerouted from the aeration tanks to the outlet of the DAF, resulting in some improvement in hydraulic throughput.

It is anticipated that the facility will continue to achieve adequate treatment and operational performance during the next reporting period.

APPENDIX A.
NOTICE OF MODIFICATION

Ontario

Ministry of the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL PLANTS) OR DISTRICT MANAGER (FOR INDUSTRIAL PLANTS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Owner	ECA number	Issuance Date (mm/dd/yy)	Notice number
2270386 Ontario Limited	4142-A5EKJ2	01/29/18	

Part 2 – Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:
1. A detail description above of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. An assessment of the anticipated environmental effects
3. Updated versions of, or amendments to, all relevant technical documents required by this ECA that are affected by the modifications as applicable, e.g. site plan, design brief, drawings, emergency and spill prevention plan, etc.

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Kevan Hall	100153032.
Signature	**Date (mm/dd/yy)**
	05/14/18

Name of Employer: Koester Canada

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Bill Sutton	General Manager
Owner Representative's Signature	**Date (mm/dd/yy)**
	05/15/18

EAB Form June 20, 2013

Ontario
Ministry of
the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
4142-ASEKJ2	01/29/19	N/A

ECA Owner	Municipality
2270386 Ontario Limited	Haldimand County

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Installation of pilot DAF pretreatment system per Schedule B Sect 1.5. See attached description of works.

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name (Print)	PEO License Number
John Levie	100049723
Signature	**Date (mm/dd/yy)**
	09/13/19
Name of Employer	
Clearford - ASI Inc.	

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name of Owner Representative (Print)	Owner representative's title (Print)
Bill Sutton	General Manager
Owner Representative	**Date (mm/dd/yy)**
	13/09/19

Notice of Modifications Dec-2013.pdf

CLEARFORD™

September 13, 2019

Paul Widmeyer, District Manager,
Ministry of the Environment, Conservation and Parks
Hamilton District Office
Ellen Fairclough Bldg 9th Flr,
119 King St W,
Hamilton, ON L8P 4Y7

Dear Mr. Widmeyer:

Subject: **Brooks Rd. Landfill Site Leachate Treatment System**
Environmental Compliance Approval No. 4142-ASEKJ2 (01/29/18)
Modification under Schedule B Section 1.2(d) – Limited Operational Flexibility

Working with the site owner, 2270386 Ontario Ltd., and your office we are proposing the addition of a mobile (containerized) dissolved air flotation (DAF) unit to test the effectiveness of this equipment as a pre-treatment step prior to the membrane filtration module. The presence of a number of species in the effluent has produced challenges with respect to the hydraulic performance of the membranes; however, effluent quality has never been impacted.

To address the restriction on system throughput as a result of surficial fouling of the membrane modules, the DAF system shall be installed on a temporary, pilot basis at two different locations in the process train,

- Between the aerated bioreactor and the membrane filtration system. In this location the DAF will be assessed on the ability to reduce the solids (MLSS/MLVSS) and dissolved species (calcium) loading on the membranes; and,
- Between the primary settling tank (PST) and the aerated treatment system (bioreactor). In this location the DAF will be assessed on the ability to reduce solids (colloidal clay and particulates) and dissolved species (calcium) loading to the aerated bioreactor, and ahead of the biological reduction of organic matter.

The system shall consist of a single, containerized DAF complete with stand alone polymer feed and pH adjustment, separate (contained) chemical storage, and temporary plumbing of feed and discharge lines to the downstream process.

CLEARFORD WATER SYSTEMS
100-515 LEGGET DRIVE
OTTAWA, ON
CANADA K2K 3G4

TEL: 613 599 6474
OR 1 866 231 1104
FAX: 613 599 7478

CLEARFORD KOESTER CANADA
294 FIFTY ROAD
STONEY CREEK, ON
CANADA L8E 5L1

TEL: 289 965 8440
OR 1 866 231 1104

CLEARFORD WATERWORKS
212-704 MARA STREET
POINT EDWARD, ON
CANADA N7V 1X4

TEL: 519 542 7900
OR 1 800 704 4188
FAX: 519 542 3020

CLEARFORD ASI
566 ARVIN AVE
STONEY CREEK, ON
CANADA L8E 5P1

TEL: 905 643 3283
FAX: 905 643 1816

UV PURE TECHNOLOGIES
1-455 MILNER AVE
TORONTO, ON
CANADA M1B 2K4

TEL: 416 208 9884
OR 1 888 407 9997
FAX: 416 208 5808

www.clearford.com

The system shall be operated to coincide with the existing system design, with all effluent discharged to the existing MBR based system prior to discharge per the existing, permitted outlets.

The system is covered under Sect. 1.5 (Pilot Systems) of Schedule B (LOF) in the ECA, which reads:

1.5 Pilot Systems

a. Installation of pilot systems for new or existing technologies provided that:

i. any effluent from the pilot system is discharged to the inlet of the sewage treatment plant or hauled off-site for proper disposal,

ii. any effluent from the pilot system discharged to the inlet of the sewage treatment plant or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process, and

iii. the pilot system's duration does not exceed a maximum of two years; and report with results is submitted to the Director and District Manager three months after completion of the pilot project.

The modifications required are estimated to be complete within two (2) weeks, and shall permit collection of operating data for evaluation and consideration for possible future incorporation to the approved works. .

If you have any concerns or questions regarding the proposed pilot system, please do not hesitate to contact me at your convenience.

Sincerely,

CLEARDORD ASI INC.

John Levie, M.Eng. P. Eng.
Vice President of Engineering

JL/vy

Appendix C

Waste Diversion Protocol

Waste Diversion Protocol

1.0 Introduction

Brooks Road Environmental (BRE) operates the Brooks Road Landfill Site (Landfill or Site). The Site operates in accordance with amended Environmental Compliance Approval (ECA) A110302, dated March 27, 2020. Prior to issuance of the amended ECA, BRE undertook an Environmental Assessment (EA) for the vertical expansion of the Landfill. The EA was approved through issuance of the Notice of Approval, dated February 14, 2019. The EA Notice of Approval and ECA contain conditions for the design, operation, and maintenance of the Site.

Condition 11 of the Notice of Approval requires a Waste Diversion Protocol be developed. Condition 11 is reproduced below.

The Proponent shall develop and implement a waste diversion protocol which shall contain information on awareness programs for waste generators and haulers, and on-site waste segregation protocols to maximize the diversion of industrial, commercial and institutional waste, including organics. The Proponent shall submit the waste diversion protocol to the Ministry in its application for an Environmental Compliance Approval and report industrial, commercial and institutional waste diversion amounts in its annual compliance report (Condition 5 above).

The Waste Diversion Protocol was submitted in a response to comments during the ECA amendment process in a letter dated September 10, 2019. This Waste Diversion Protocol is intended to supersede the previous version and provide a standalone document to satisfy Condition 11.

The Site is permitted to accept solid non-hazardous Industrial, Commercial, and Institutional (ICI) waste, including contaminated soils, and processed organic waste (e.g., dewatered sewage sludge from the Caledonia Sewage Treatment Plant).

BRE currently accepts primarily contaminated soil, with a small volume of ICI waste in the form of building demolition materials and commercial dumpsters and the Site is not open to the public. It is noted that waste diversion was discussed with the Ministry of Environment, Conservation and Parks (MECP) during the ECA amendment process and mutually agreed that development of a large waste segregation area would not be suitable for the Site. Therefore large volumes of waste for diversion are not expected to be managed on Site. BRE will notify waste generators and haulers not to bring waste that can be diverted to the Site.

This Waste Diversion Protocol has been prepared in accordance with Condition 11 of the Notice of Approval and considers the types of waste brought to the Site. Should new waste diversion regulations come into effect, or new waste streams be brought to the Site, this Waste Diversion Protocol will be updated as necessary.

2.0 Diversion Awareness

BRE will provide a list of material to be diverted from the Landfill to all waste generators and haulers on an annual basis and inform them that these materials will not be accepted at the Landfill.

BRE will provide notification to haulers and generators that are serviced by the Site about the following waste diversion programs through distribution of this Waste Diversion Protocol.

Tire Collection Network

This program provides accessible, convenient tire collection across the Province of Ontario with tire producers responsible for the network. BRE will endeavor not to landfill any tires through the practices described in Section 3. BRE will notify generators and haulers that they service that tires should be brought directly to the Tire Collection Network, and not to the Site.

The nearest tire collector is Haldimand Tire 4078 Highway 3, Haldimand County.

Waste Electrical and Electronic Equipment (WEEE) Program

This program recycles computers and other electronic equipment. This program is in the process of winding up and will end December 31, 2020. Following this date, electroninc waste will be transitioned to individual producer responsibility.

Until the WEEE program is wound up, the nearest electronic recycler is Haldimand County 1433 Nanticoke Road, Jarvis, Ontario.

Proposed regulations will require the development of a collection network. Once established, electronics, lighting, appliances, and power tools will be regulated and collected under the new regulations.

Municipal Hazardous or Special Waste (MHSW) Program

MHSW is not accepted at the Site. Paint, antifreeze, batteries, fertilizers and other hazardous or special wastes are managed under the Municipal Hazardous or Special Waste Program.

This program is in the process of winding up. As of June 30, 2021, the MHSW program will cease as responsibility for these wastes shifts to producer responsibility. As of June 30, 2020, single-use batteries will no longer be accepted in this program.

Until this time, “orange drop locations” accept MHSW. Haldimand County utilizes drop off events for MHSW. Refer to https://www.haldimandcounty.ca/garbage-recycling/garbage-recycling-programs/ for the latest events.

Until the single-use battery program changes, batteries can be accepted at the Cayuga Fire Hall 11 Thorburn St W. Cayuga.

Blue Box Program

Paper, cardboard and packaging are recycled in the Blue Box Program. Generators and haulers will be encouraged to transport blue bin materials to the Canborough Waste Transfer Station. Pending regulations may transfer responsibility of the Blue Box Program to producers of plastic and other packaging.

Deposit Return Program

Beverage and alcohol containers can be returned to the Beer Store for a refund on the deposit. The nearest Beer Store is located at 55 Main St N Hagersville.

Organics

BRE accepts primarily contaminated soil and some local ICI waste. The local ICI waste may include commercial organics intermingled with other ICI wastes. Haldimand County does not currently have a green bin organics program to segregate organic waste. Once an organics program is established in Haldimand County, generators and haulers will be notified of the potential to divert this waste.

3.0 On-Site Diversion Practices

BRE personnel are trained to inspect each waste load visually as it enters the Site and unloads at the tip face. Unloading is only conducted during hours of operation. Waste haulers are to confirm the type of waste and state if any recoverable materials are included. Personnel will note when a waste load contains:

- Waste that is not approved for disposal at the Site
- Tires
- Electronics
- MHSW
- Recyclables including metal and wood

In the event that waste is brought to the Site that is not approved for disposal at the Site, the waste will be rejected and the MECP will be notified of the rejected load. In the event that other wastes with potential for diversion are identified, the hauler will be provided with the information for the pertinent collection location and BRE will record the diverted waste on the daily log.

In the event that waste eligible for diversion is noted at the tip face after the hauler has left the Site, BRE will attempt to segregate the material at the tip face, when safe and practical to do so, to be transported to the nearest pertinent collection facility and the diverted waste will be recorded on the daily log.

Quantities of waste diversion, whether through redirecting the hauler or by segregation at the tip face, will be reported in the Annual Compliance Report required by the EA Notice of Approval.