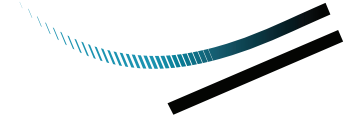




WASTE CONNECTIONS
OF CANADA



DILLON
CONSULTING

WASTE CONNECTIONS OF CANADA

RIDGE LANDFILL

Environmental Assessment

**Category D:
Environmental Remediation**



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View of Ridge Landfill tipping area

PROJECT INNOVATION

Waste disposal capacity in Ontario is limited and diminishing. Additional capacity is needed to ensure the continued economic well-being of the province. In Blenheim, Ontario, Ridge Landfill, is one of the largest landfills in the Province. It was estimated to reach its capacity in 2021. In 2015, Waste Connection of Canada (Waste Connections) began the development of an Individual Environmental Assessment (EA) Terms of Reference (ToR) to expand Ridge Landfill. Specifically, the **proposed expansion aimed to provide long-term, residual waste disposal capacity for central and southern Ontario**, particularly Waste Connections' Industrial, Commercial and Institutional (IC&I) customer base, as well as provide long-term, cost-effective service for the municipal solid waste disposal needs of its host community, Chatham-Kent. **The expansion is planned to extend the life of the landfill for an additional 20-year**

period, starting in 2021, with an annual disposal quantity of 1.3 million tonnes per year, which allows for seamless continuation of current operations and provides critically needed landfill capacity to support the continued economic well-being of the Province.

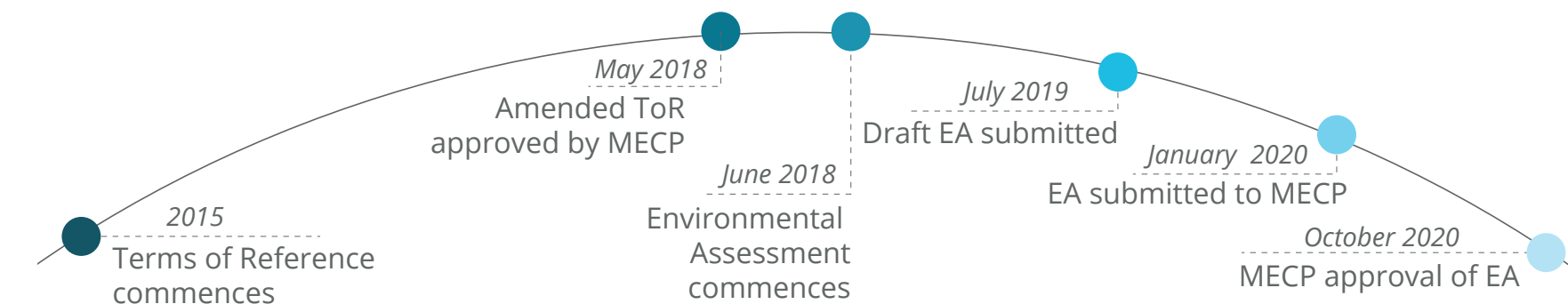
This quantity of waste to be landfilled over the 20 year expansion is equivalent to 200 transport trucks of waste each day, six days a week for the entire period.

The first step towards expanding the landfill included developing an EA Terms of Reference (ToR) to outline a road map for undertaking the EA process. The ToR included detailed descriptions of the environment and potential effects, an assessment of potential alternatives for expansion, and public consultation. Input from the public, interested stakeholders, Indigenous Communities and government agencies was an important piece for the development of the ToR. The EA Terms of Reference was approved by the

Ministry of Environment, Conservation and Parks (MECP) on May 1, 2018, allowing for the commencement of the EA. The comprehensive EA commenced in June 2018. The EA involved three steps:

- Complete technical studies and to profile the existing environment to establish baseline conditions
- Consider alternative methods to carry out the proposed landfill expansion in terms of site development, landfill gas management and leachate treatment. Impact and mitigation measures of the preferred alternative were completed along with mitigation measures to minimize potential effects
- Document the work completed.

In addition to Dillon, Golder Associates provided support with landfill gas expertise and the design and operation (D&O) component of the EA. Stantec provided archaeological services.



Project timeline

After an intense 13 month work effort, the draft EA was submitted to the Ontario Ministry of Environment, Conservation and Parks (MECP) in July 2019, allowing for the public, stakeholders, Indigenous Communities and Organizations and agencies to review and submit comments through a number of consultation events and approaches (e.g., workshops, open houses, public survey). The final EA document, which addressed all of the comments received on the draft, was submitted to the MECP in January 2020.

The MECP completed the review of the EA and approved the Ridge Landfill Expansion EA in October 2020. This was a significantly quicker turnaround by both the Dillon team and MECP than typical Landfill EAs.

COMPLEXITY

An Individual EA is complex and typically a lengthy process to complete. This EA considered alternative methods for site development, leachate management and landfill gas management. It assessed environmental effects and developed mitigation plans for the preferred alternative to reduce potential effects to the natural environment, the socio-economic environment, and the cultural and built environments. Under

these categories, Dillon coordinated and provided input to: agriculture, archaeology, atmospheric, bird hazard and aviation safety, biology, climate change, cultural heritage, hydrogeology, landfill design and operations, noise, socio-economic, surface water, transportation and visual landscape.

The Ridge Landfill EA involved coordinating a multi-disciplinary team, including some external to Dillon as well as consulting with Municipality of Chatham-Kent, local area residents and businesses, and Indigenous Communities and Organizations through various means of communication. Given the lengthy process, a challenge involved several changes in project team members with the client, the consulting team and even the regulator. Having continuity of a core project team helped with the transitions, as well as weekly check-in meetings.

The timeline for EA completion was accelerated and field work, assessments, analysis and documentation were completed at “breakneck” speed. However, no shortcuts or unresolved issues were accepted by the consulting team, Waste Connections of Canada or the MECP. The timely approval of this landfill expansion EA demonstrates the ability of

a proponent to move forward quickly with critical infrastructure in this Province by undertaking high quality and complete work and through a process of openness and transparency.

Based on existing environmental conditions, the Dillon team considered alternative methods of carrying out site development, managing landfill gas (LFG) and treating leachate. This involved assessing the potential impact of each alternative, and comparing to determine a preferred option. Each alternative was described in detail to allow our team to determine environmental effects relative to a non-optional “do nothing” (landfill stops operations and ceases to accept waste in 2021) scenario. The potential for environmental effects was assessed based on the broad definition of the environment within the EA Act, using a set of evaluation criteria. The evaluation criteria considered the potential for impact on the natural environment (e.g., terrestrial and aquatic biology, groundwater, surface water, air quality, climate change), social and economic environment (e.g., noise, visual, odour, traffic, worker health and safety, businesses, agriculture, cost), cultural environment (i.e., archaeology, cultural heritage) and the built environment

(e.g., land use, transportation, landfill infrastructure, ease of construction).

Quantitative data was used for this assessment wherever possible, as it is more definitive than qualitative data. Based on the assessment results, the alternative methods were ranked as one of the following: ‘preferred’, ‘less preferred’, ‘least preferred’, and ‘equally preferred’. This relative preference was used to select one of three options for site development, LFG management and leachate treatment.

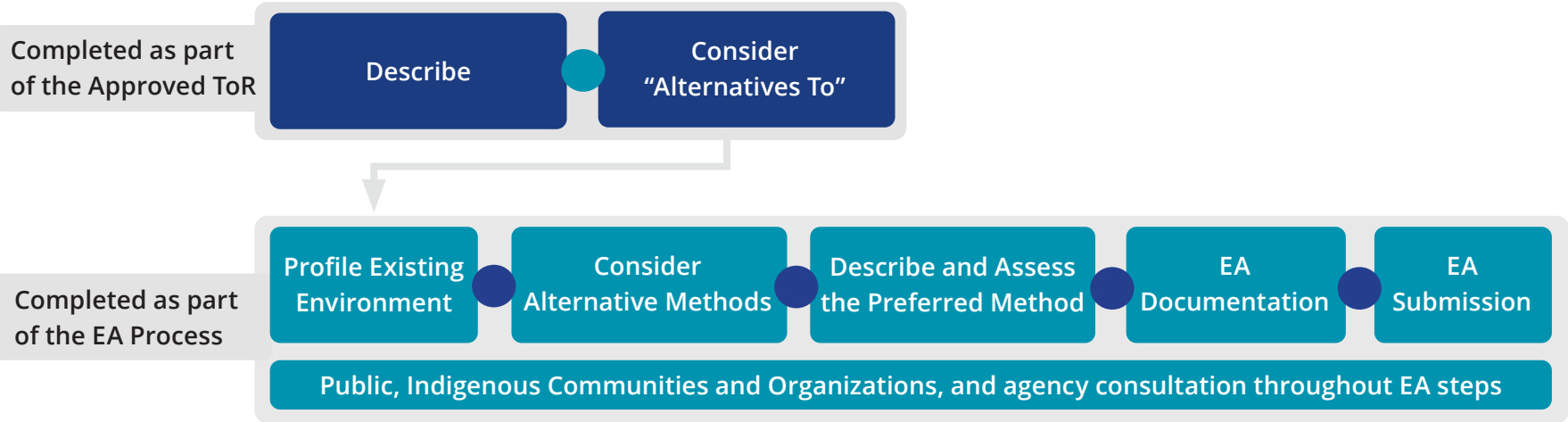
Based on the assessment results, the alternative methods were ranked as one of the following: ‘preferred’, ‘less preferred’, ‘least preferred’, and ‘equally preferred’. This relative preference was used to select one of three options for site development, LFG management and leachate treatment.

The preferred option included a **footprint expansion** of the South and West Landfills, along with the vertical expansion of the Old Landfill. It also maintained an important woodlot, and avoided prolonged off-site odour impacts. A visual impact assessment was also completed that modelled the views that neighbouring residences would have of the landfill as the landfill expanded in order to identify impacts and provide for mitigation.

LFG management would include continued flaring of collected LFG as it effectively manages LFG reducing greenhouse gas emissions effectively and reliably. The air quality and odour assessment completed for the expansion was extremely comprehensive in that individual airborne contaminants were modelled for all

alternatives over the potential life of each alternative and for each individual receptor. A visual impact assessment was also completed that modelled the views that neighbouring residences would have of the landfill as the landfill expanded in order to identify impacts and provide for mitigation.

Leachate would continue to discharge to the existing sanitary sewer and treatment at the Blenheim Wastewater Treatment Lagoons (BWTL). The Chatham-Kent Public Utilities Commission confirmed that the BWTL can manage the anticipated quality and quantity of leachate into the future. Continuation of the existing system held less risk of impacts from leachate spills on-site than other alternatives. However, a preliminary design was completed for a potential on-site leachate treatment plant in case issues arose with the Municipal facility.



Terms of Reference and Environmental Assessment Process

SOCIAL & ECONOMIC BENEFITS

According to the Ontario Ministry of Finance, the populations of central and southwestern Ontario are projected to grow by 27%, and nearly 16% respectively, or over 1.1 million people by 2041 creating a critical need for waste disposal capacity. Being a regional and inter-regional facility, an expansion will enable the Ridge Landfill to continue to be an essential component of waste management infrastructure in Ontario. Specifically, the expansion continues to provide long-term, residual waste disposal capacity for the company’s Industrial, Commercial and Institutional (IC&I) customer base and for the host community at an annual rate of 1.3 million tonnes per year.

In addition to considering the potential for impact on the environment, the EA included detailed modelling to project the future climate for the geographic area taking into account the most recent climate change predictions. The EA considered in depth how changing climate can potentially impact the expansion and how adaptive measures can be incorporated into the site design to manage impacts of the

changing climate and potential extreme weather events that could impact landfill operations in the future.

Mitigation measures to minimize impacts to the features of the environment on-site, off-site and along the designated haul route were also identified. These include standard operating practices such as setting limits on the hours of operation, placement of daily cover on waste, construction of berms, truck driver education and patrolling of haul routes, placement of litter fencing around the site, and implementing leachate and LFG management systems. These practices reduce the potential for off-site noise, odour, dust and blowing litter. In addition, Waste Connections of Canada maintains compensation for affected residential parties and the Property Value Protection Program.

Commitments made throughout the EA related to the construction, operation, closure and post-closure of the landfill are documented in an EAA Compliance Monitoring Report and submitted annually to the MECP.

The EA included a robust consultation program allowing for open dialogue with the Municipality of Chatham-Kent, local area residents and businesses, and Indigenous Communities and

CONSULTATION ACTIVITIES

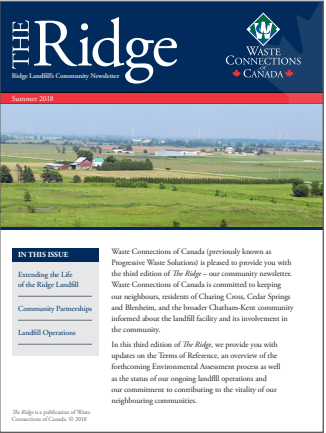
- 6,000 website hits between May 2018 - Jan 2020
- Four community newsletters
- Six media releases
- Three Public Information Centres
- One evaluation criteria workshop
- Contact with 10 Indigenous Communities and Organizations

Organizations. Waste Connections adopted five consultation and communication principles throughout the EA.

Three key milestones during the EA process included confirmation of alternative methods, evaluation of alternative methods, and assessment of potential effects and development of mitigation measures for the preferred alternative method. Public consultation events included:

- One-on-one neighbour, stakeholder and Indigenous Community and Organization meetings for each key milestone
- An evaluation criteria workshop
- Open House #1 and a newsletter related to the alternative methods and the evaluation approach and criteria

- Open House #2 related to the evaluation of alternative methods
- Open House #3 and a newsletter covered the preferred alternative including measures to mitigate potential effects.



The Ridge community newsletter

Trees in the southwest woodlot on the landfill site needed to be replaced at a 2:1 ratio to accommodate the landfill expansion. In a meeting in August 2018, the Chippewas of the Thames First Nation expressed interest to be involved in a tree planting initiative. In August 2019, the Oneida Nation of the Thames expressed interest in reviewing the list of trees to be planted and to receive trees. The tree planting list was shared, and in Spring 2019, 7,000 trees were planted

on Waste Connections’ property; 3,000 trees were planted at Chippewas of the Thames First Nation and 1,000 trees were planted at Oneida of the Thames First Nation communities.

ENVIRONMENTAL BENEFITS

The Ridge Landfill site is located on a thick deposit of low permeability clay till. Based on the very slow downward groundwater flow, it would require more than 3,000 years for leachate to reach the underlying aquifer, by which time the quality of the leachate will have improved such that it will meet current drinking water criteria.

The landfill has been in operation since 1966 (over 50 years) with no impacts to groundwater or drinking water wells

in the area. The Ridge Landfill has an excellent environmental record and has long-term positive relationships with the local municipality with strong local support for its continued operation and expansion. This landfill site is an ideal location for the expansion to address the critical need for landfill capacity in Ontario. A comprehensive series of environmental studies were undertaken to document existing and anticipated future environmental conditions on-site, off-site, along the haul route and in the broader community (as applicable). Study Areas for each discipline were determined based on the potential extent of the effects from the proposed expansion and haul route. Potential net environmental effects (effects remaining after mitigation is applied) resulting from the proposed landfill expansion's construction,



operation, closure and post-closure activities were evaluated through technical impact assessments. Cumulative effects of the landfill expansion, combined with the effects of other activities were also assessed.

While considering potential environmental impacts, the EA included detailed modelling of the future climate of the area, taking into account the most recent climate change predictions. The EA considered in depth how changing climate can potentially impact the expansion and how adaptive measures can be incorporated into the site design to manage those impacts in the future

MEETING CLIENT NEEDS

The Ridge Landfill has been in operation since 1966 and has been a reliable disposal facility for the IC&I customer base in southern and central Ontario and for the host community, Chatham-Kent. With its strong environmental track record and efficient operations, Waste Connections of Canada was committed to continue providing long-term and cost-effective solid waste disposal. Ontario is facing a disposal capacity shortage and relies on the United States disposal facilities, in Michigan and

New York, to fulfill some of Ontario's disposal needs. Expanding the Ridge Landfill provides Ontario with a facility that adheres to Ontario waste disposal site approval requirements. This opportunity for Waste Connections was documented in a separate report and included a separate market assessment to identify the business opportunity for Waste Connections.

It was very important to Waste Connections that an open dialogue was maintained and that strong relationships continued to be built and maintained. The EA included a robust consultation program allowing for open dialogue with the Municipality of Chatham-Kent, local area residents and businesses, and Indigenous Communities and Organizations. Waste Connections adopted five consultation and communication principles throughout the EA.

Increased waste diversion is an important component of Waste Connections' efficient, integrated system. Waste Connections is committed to considering opportunities to enhance waste diversion and assist the Province in meeting its diversion goals and objectives. Waste Connections promotes the 3Rs (reduce, reuse and recycle) to its large customer base. They also encourage source separation for the extraction of value from the waste stream

so that only residual waste remains. As part of the EA process, the Dillon team evaluated 10 options to assist with waste diversion activities and initiatives related to the landfill expansion. One of the recommended options was to build an onsite drop-off depot where local residents in Chatham-Kent can bring their non-curb-side collected materials for reuse, recycling and/or safe disposal.

The EA addressed the issues and concerns raised by the public which is documented in the EA Record of Consultation. There were no unresolved concerns or issues that were not addressed at the completion of the EA. **Through this open and transparent dialogue, the expansion encountered widespread support throughout the local community and the regulator, a rarity in most Landfill related projects!**

"I am incredibly proud of the talented group of employees who committed their time and energy to this project and to the extended team of environmental, legal and communications professionals that made this team unstoppable."
-Dan Pio, President, Waste Management Canada.



Ridge Landfill new cell view looking East



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