

Executive Summary

This Report documents the Environmental Assessment (EA) undertaken for the proposed new landfill footprint at the existing Ottawa Waste Management Facility (Ottawa WMF) in accordance with the approved Terms of Reference (ToR) (see **Appendix A**).

Waste Management of Canada Corporation (WM) in consultation with Agencies, the City of Ottawa (the City), Aboriginal groups, and the public, undertook an EA to develop a new landfill footprint as part of the development known as the West Carleton Environmental Centre (WCEC).

The purpose of the proposed undertaking is to provide additional waste disposal capacity for solid non-hazardous waste in the form of a new landfill footprint, which will enable WM to continue commercial operations and support its business following the closure of the Ottawa WMF in September 2011.

In addition to the new landfill footprint, WM also proposes to include at the WCEC the following diversion facilities: Material Recycling Facility; Construction and Demolition Material Facility; Residential Diversion Facility; Organics Processing Facility; and Electronic Waste Handling Facility.

Chapter 1. Introduction and Background

The EA was initiated in January 2011 following approval of the ToR by the Minister of the Environment on November 25, 2010.

The existing Ottawa WMF is located on Lots 3 and 4, Concession 3 in the former Township of Huntley, formerly in the Township of West Carleton, now the City of Ottawa, near the intersection of Carp Road and Highway 417. The primary (on-site) study area includes those lands within the area bounded by Highway 417, Carp Road, and Richardson Side Road (see **Figure 1**). WM presently owns or has agreements to purchase lands within this area, as shown in **Figure 1**. It should be noted that since the Draft EA was issued in March 2012, WM obtained an agreement to purchase a parcel of land located south of Richardson Side Road, east of William Mooney Road, and west of Carp Road in July 2012. This parcel of land is also shown in **Figure 1**.



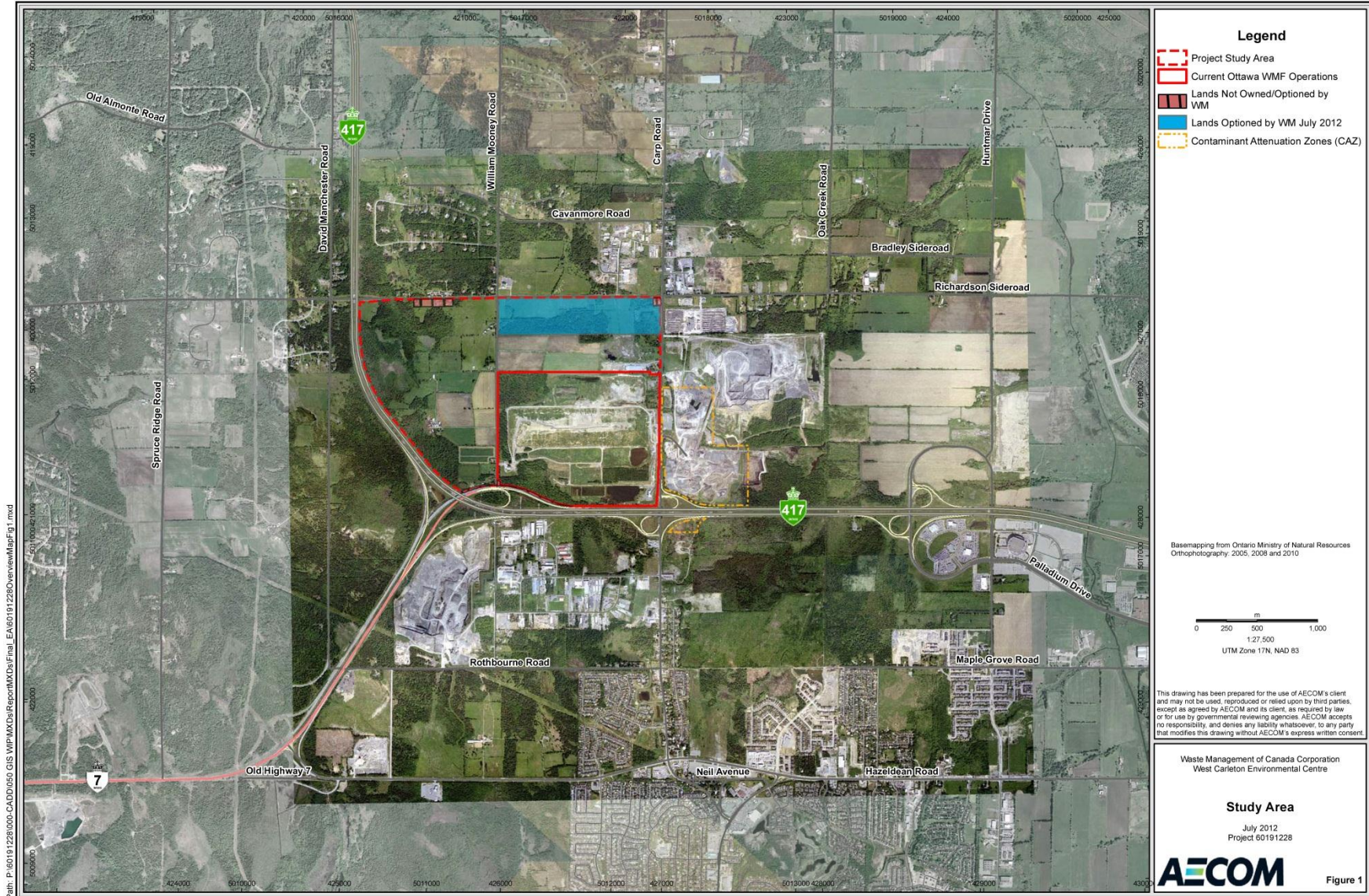


Figure 1. Study Area

Chapter 2. Overview of the Environmental Assessment Process and Study Organization

The WCEC EA was undertaken in accordance with the requirements for a new landfill footprint (as identified in *Ontario Regulation 101/07*) under the Ontario *Environmental Assessment Act* (OEAA) and conducted in accordance with the conditions set out in the approved ToR. As illustrated in **Figure 2**, the ToR was the first step of a two-step OEAA approval process for the proposed undertaking in the Province of Ontario, with the second step being the EA.

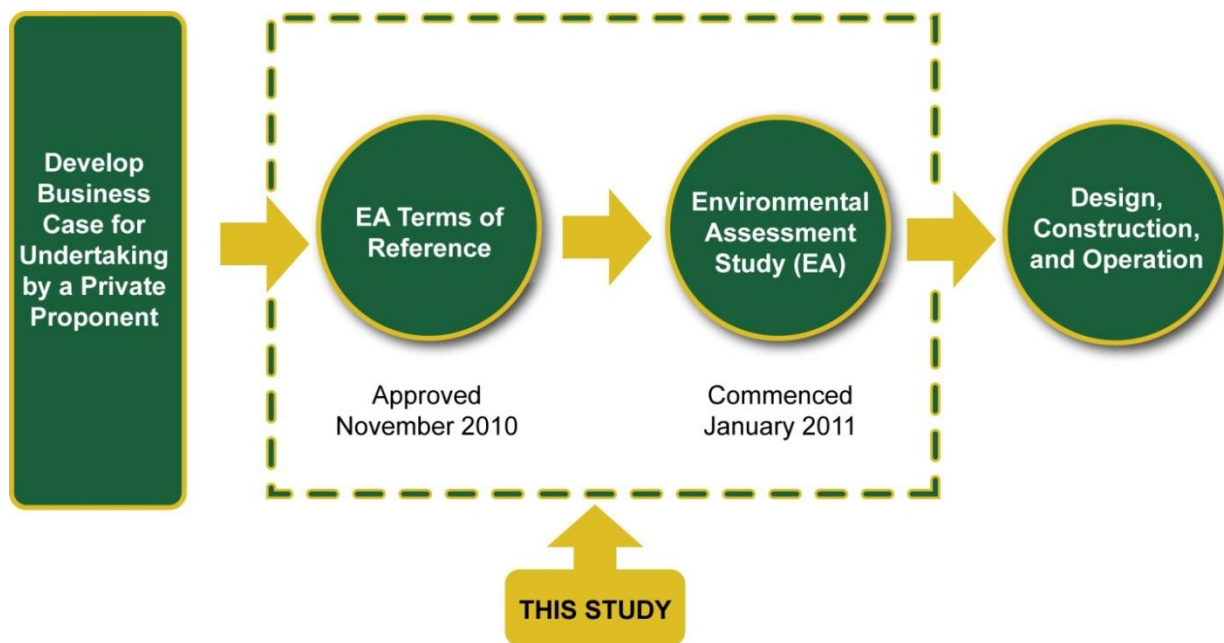


Figure 2. EA Process

The study process consisted of five main phases as follows (see **Figure 3**):

1. Project Initiation
2. Alternative Landfill Footprint Options (Alternative Methods)
3. Comparative Evaluation and Selection of a Preferred Alternative Landfill Footprint
4. Preliminary Design (Detailed Impact Assessment)
5. EA Report



EA Process Flow Chart

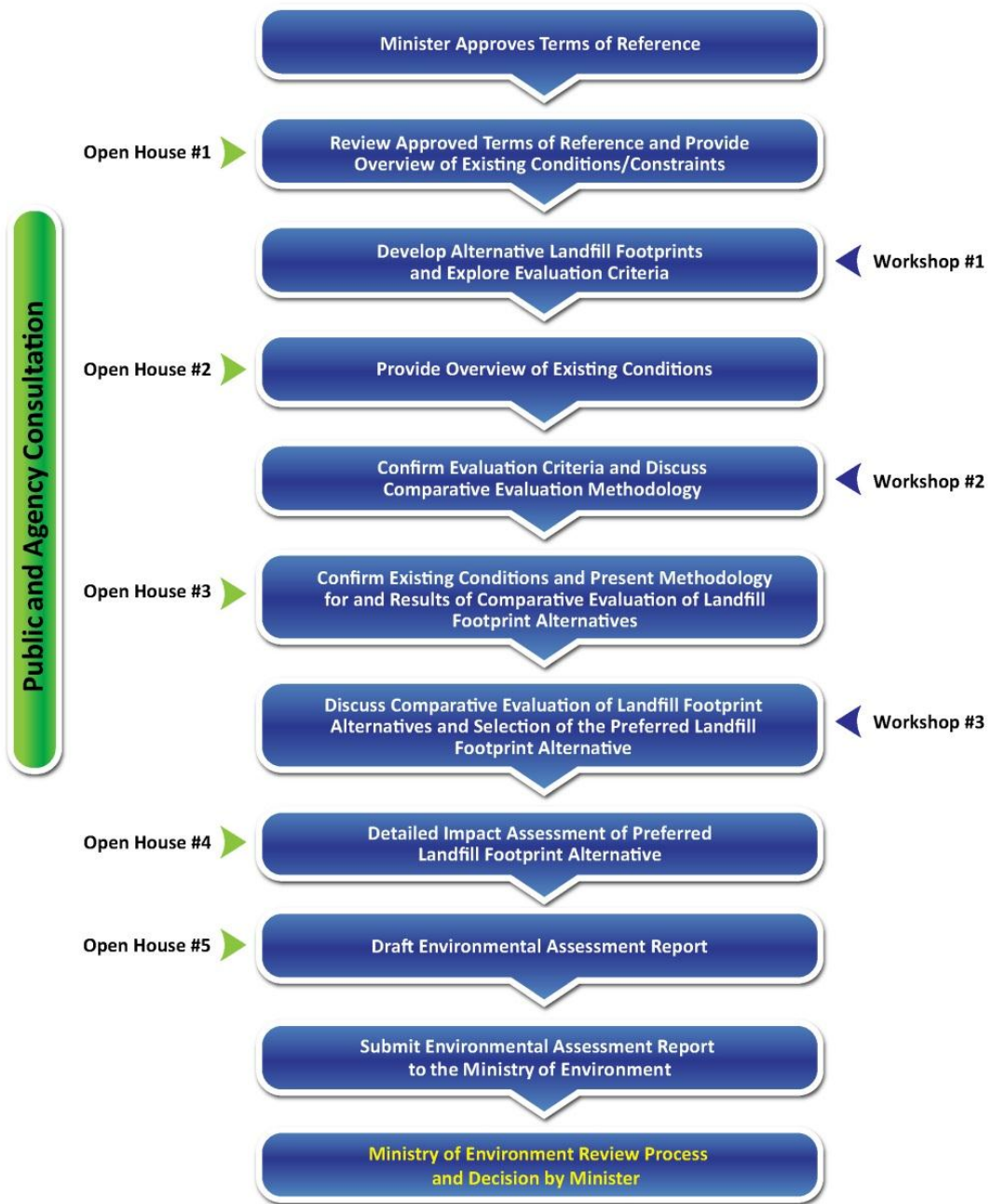


Figure 3. WCEC EA Process



Chapter 3. Overview of the Undertaking

The purpose of the undertaking proposed by WM is to provide residual waste disposal capacity for solid non-hazardous waste from the residential and industrial, commercial and institutional (IC&I) sectors in the form of a new landfill footprint. This will enable WM to continue commercial operations and support its business in Ottawa following the closure of the company's Ottawa WMF in September 2011. The new landfill footprint will primarily serve residential and IC&I waste generators from the City of Ottawa and the Good Neighbour Zone (GNZ), which includes surrounding communities mainly within Lanark County.

The "Alternatives To" the undertaking proposed by WM during the ToR included existing and planned facilities (i.e., public landfills, private landfills, out-of-province landfills, and other facilities) and other options to provide residual waste disposal capacity for solid non-hazardous waste from the municipal residential and IC&I sectors. Based upon the screening of the "Alternatives To", WM concluded that *Alternative #3 – Close the Current Landfill and Establish a New Engineered Landfill at the WCEC* was the only reasonable alternative that may be implemented.

The Official Plan of the City of Ottawa projects its population to grow from 870,000 in 2006 to 1,136,000 in 2031 with an annual growth rate of approximately 1.2%. The Community Vision and County Strategic Plan for Lanark County projects its population to grow from 68,700 in 2006 to 85,550 in 2031. Based on the projections developed by WM from available data, it is estimated that, in total, approximately 13.5 million tonnes of waste generated within Ottawa will require disposal over the 20 year period from 2014 to 2033.

Accounting for future population growth, waste generation, waste diversion, and its business continuance in the City of Ottawa and surrounding area, including the Ottawa WMF, WM has concluded that there is an ongoing need for residual waste disposal capacity to serve for generators within the City of Ottawa and the surrounding municipalities, including the GNZ.

The development of the new landfill footprint and other facilities at the WCEC addresses a variety of issues, including legislative and environmental considerations, and presents a range of benefits. While WM is aware of the uncertainty associated with a number of factors that may affect the volume of disposal capacity required, WM believes that there is a sustainable market opportunity for the company to provide up to 6.5 million cubic metres (m³) of landfill disposal capacity at the WCEC.



Chapter 4. Description of the Environment Potentially Affected by the Undertaking

The existing site of the Ottawa WMF, as defined by O.Reg. 232/98 and within Provisional Certificate of Approval A461002, includes the following:

- Entire waste disposal site, including the buffer lands, is located on Lots 3 and 4, Concession 3, in the former Township of Huntley, formerly in the Township of West Carleton, now the City of Ottawa; , near the intersection of Carp Road and Highway 417; and
- The contaminant attenuation zone (CAZ), including portions of 2301, 2330, 2104, 2326 and 2300 Carp Road, located on Part of Lot 4, Concession II, Part of Lot 3, Concession 2, and Part of Lot 2, Concession II, in the former Township of Huntley, formerly in the Township of West Carleton, now in the City of Ottawa.

The Ottawa WMF was first licensed by the Ministry of Environment (MOE) in 1971 as a sanitary landfill and also for aggregate extraction. In 1987, Laidlaw Waste Systems Ltd. (Laidlaw) purchased the Ottawa WMF from Newill Realty Limited. In 1996, Canadian Waste Services (CWS), now WM, purchased the Ottawa WMF from Laidlaw. WM has owned and operated the Ottawa WMF from 1996 to the present.

The Ottawa WMF is comprised of various facilities, including a closed landfill, landfill-gas-to-energy plant, waste transfer station, residential recycling drop-off, storm water management system, gas collection and management system with flares, and leachate collection and management system with poplar plantation. The landfill at the Ottawa WMF was closed in September 2011.

In May and December 2007, MOE issued Provincial Officer's Orders (POO) requiring WM to implement an Odour Contingency Plan (OCP) to address odour emission from the landfill at the Ottawa WMF that were causing or likely to cause an adverse effect to the community. In October 2011, MOE issued a compliance letter that confirmed WM had met these requirements and complied with the POO. WM continues to manage odours through air induction, gas extraction and enclosed flare systems, and conducts ongoing monitoring in accordance with the Environmental Compliance Approval (ECA) issued for the Ottawa WMF.

Since the early 1990s, WM has installed purge wells, landfill liners, and leachate control systems to control and manage groundwater issues. The first phase of geosynthetic-lined leachate collection system and boundary purge well system were constructed at the Ottawa



WMF in 1991. A discharge forcemain to the City of Ottawa sanitary sewer system was completed in November 2001. WM continues to manage groundwater by the purge wells, landfill liners, and leachate control systems, and conducts ongoing monitoring in accordance with the ECA issued for the Ottawa WMF.

WM has purchased adjacent lands to establish CAZs to resolve legacy groundwater issues on downgradient properties. The CAZs enable WM to address MOE Guideline B-7 “Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities”. The CAZs for the Ottawa WMF include a land area of approximately 54.39 hectare located east of Carp Road and 2.02 hectares located southeast of Highway 417 and Carp Road. Ongoing monitoring of the CAZs is conducted and results provided to MOE.

With respect to Study Areas for the EA, the generic On-Site, Site-Vicinity, and Regional Study Areas for the proposed new landfill footprint at the WCEC are listed below:

- On-Site** the lands owned or optioned by WM and required for the new landfill. The Site is bounded by Highway 417, Carp Road and Richardson Side Road;
- Site-Vicinity** the lands in the vicinity of the site extending about 500 metres (m) in all directions; and,
- Regional** the lands within approximately 3 to 5 kilometres (km) of the Site for those disciplines that require a larger analysis area (i.e., socio-economic, odour, etc.).

Investigative studies of the following environmental components were carried out for the purpose of generating a more detailed description and understanding of the environment:

- Atmospheric (Air Quality, Odour, Landfill Gas, and Noise);
- Geology and Hydrogeology;
- Surface Water;
- Biology (Terrestrial and Aquatic);
- Archaeological Resources;
- Cultural Heritage Resources;
- Transportation;
- Land Use;
- Agriculture; and
- Socio-Economic.



Chapter 5. Alternative Methods to the Undertaking

Alternative Landfill Footprint Options

During the ToR phase, preliminary development envelopes were identified within the study area within which landfill footprint alternatives and other non-landfill components of the WCEC could be located. Two distinct development envelopes, located North and West of the existing landfill, were identified. WM considered the following constraints when determining appropriate landfill footprint envelopes:

- WM ownership of land or option to purchase land;
- Existing natural environment features;
- Land use constraints; and,
- Perimeter buffer zones.

Preliminary options for landfill footprints were then developed within each of the landfill footprint envelopes using the following basic design parameters:

Size: 6.5 million m³ (as per the approved ToR)

Height: Between approximately 27 to 33 m

Side Slopes: 4:1

Initially, two alternative landfill footprint options were generated and developed for presentation to the public. After presenting the initial two landfill footprint options, WM received feedback from the public that two additional footprints should be considered in the comparative evaluation. One option was a variation on the northern footprint and the other was presented as a hybrid between the two landfill envelopes, or a “wrap-around” to the existing Ottawa WMF. Both of these landfill footprint options were accepted by WM as potentially viable options to be carried forward in the assessment of alternative landfill footprint options.

The four alternative landfill footprint options were developed to a conceptual level of detail to enable a comparative analysis. Once WM confirmed that the four options would be carried forward for evaluation, further details were completed with respect to each of the landfill footprint options in a Conceptual Design Report.

Following the development of the alternative landfill footprints to a conceptual level of detail, an assessment and evaluation of the four footprints was undertaken. This multi-step process began with confirming the evaluation criteria and indicators for each environmental component and applying them to each of the four footprint options through a “net effects analysis” to determine the net positive or negative environmental effects. By identifying the potential effects



on the environment (both positive and negative) for each footprint alternative, and then applying (where applicable) appropriate avoidance/ mitigation/ compensation/ enhancement measures, the relative merits of each footprint were compared on the basis of net effects.

Once the net effects were determined, rankings were assigned to each individual criteria based on the level of effect determined for each indicator under that criteria. Following this, an overall ranking for each alternative (based on the individual environmental component rankings) was determined. A Reasoned Argument or Trade-off method was carried out using this information to determine a preferred alternative landfill footprint.

Option #2 ranked as the best option for the majority of environmental components and was therefore carried forward to the Detailed Impact Assessment stage as the Preferred Alternative Landfill Footprint.

Leachate Treatment Alternatives

The following five alternatives were put forward for managing leachate disposal at the proposed new landfill:

- #1 - On-site Tree Irrigation
- #2 - On-site Leachate Evaporation
- #3 - Off-site Effluent Discharge to Surface Water
- #4 - Off-site Effluent Discharge to City of Ottawa Sanitary Sewer
- #5 - Truck Haulage Off-site to Alternative Wastewater Treatment Plant

The leachate treatment alternatives were described to a conceptual level of detail, focused primarily on the characteristics used to differentiate the alternatives from one another in order to facilitate the comparative analysis. Criteria and indicators under the following environmental components were selected in order to comparatively evaluate the leachate treatment alternatives:

- Atmospheric Environment
- Geology and Hydrogeology
- Surface Water Resources
- Biology
- Transportation
- Land Use
- Social
- Site Design and Operations

The same “Reasoned Argument” or “Trade-off” method used to evaluate the alternative landfill footprint options was also employed to undertake the comparative evaluation of leachate



treatment alternatives. The ranking of the five stand-alone leachate treatment alternatives resulting from the comparative evaluation indicated that Option #4 – Off-site Effluent Discharge to City of Ottawa Sanitary Sewer was the highest ranked alternative. Option #1 – On-site Tree Irrigation and Option #2 – On-site Leachate Evaporation tied for second, Option #5 – Truck Haulage Off-site to Alternative Wastewater Treatment Plant placed third, and Option #3 – Off-site Effluent Discharge to Surface Water was the lowest ranked.

Option #3 was determined to be an unreliable alternative for the disposal of leachate due to the insufficient assimilative capacities of the surrounding surface water bodies. Based upon the consideration of each of the four remaining individual alternative leachate treatment methods in terms of their ability to function in a stand-alone manner, further consideration was given to the ability of Options #1, #2 and #4 to function in combination as systems to allow for operational flexibility.

Given that Option #4 – Off-site Effluent Discharge to City of Ottawa Sanitary Sewer ranked highest among the five leachate treatment alternatives in the comparative evaluation, and that operational flexibility at the WCEC would be enhanced by its implementation in combination with Option #1 – On-site Tree Irrigation, it can be concluded that the Preferred Leachate Treatment Alternative for the WCEC is the implementation of Options #1 and #4 in combination.

The application of Option #1 – On-site Tree Irrigation and Option #2 – On-site Leachate Evaporation in combination would also be a viable means of disposing leachate, and is considered to be the contingency system, should the preferred alternative not be able to be implemented for any reason.

Option #5 – Truck Haulage Off-site to Alternative Wastewater Treatment Plant would be implemented as an emergency measure in the case of either combination, Options #1 and #4 or Options #1 and #2, being unable to operate.

Chapter 6. Detailed Impact Assessment of the Undertaking

Following identification of the Preferred Alternative Landfill Footprint, design plans were further refined from the conceptual design stage. Refinements were based on additional, more detailed site specific data influencing the engineered features and design of the landfill. Stakeholder comments received during the EA process were also considered in making refinements to the landfill footprint. The purpose of the refinements was to further avoid or mitigate potential adverse environmental effects, as identified in the net effects analysis during the Alternative Methods phase of the EA. These refinements are captured in the Facility Characteristics Report (FCR).



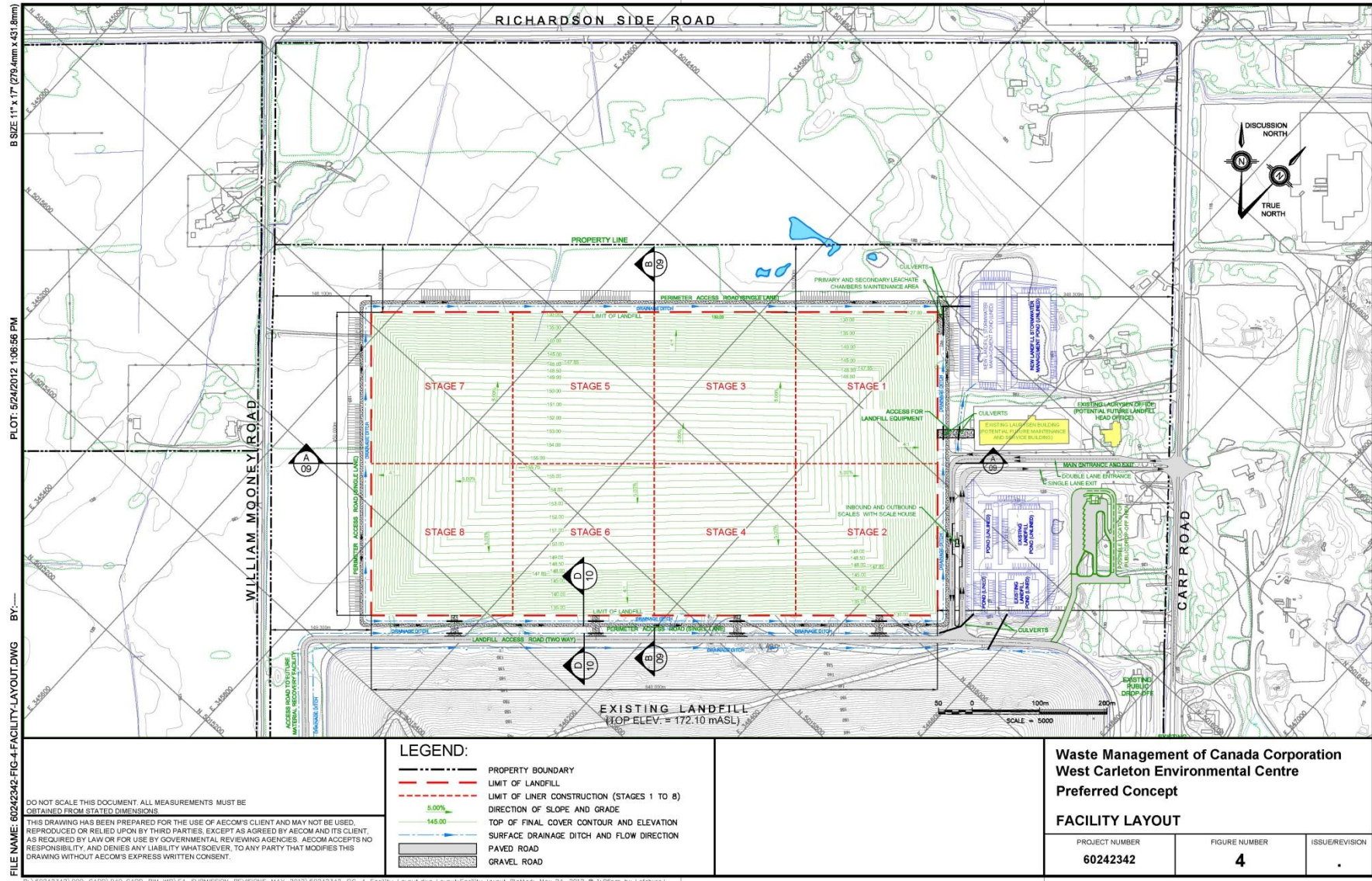


Figure 4. Preferred Alternative Landfill Footprint

With a more detailed description of the Preferred Alternative Landfill Footprint a broader understanding of the environment was developed by each of the Technical disciplines. The previously identified potential effects and recommended mitigation or compensation measures associated with the Preferred Alternative Landfill Footprint in the Comparative Evaluation phase were reviewed to ensure their accuracy in the context of the preliminary design presented in the FCR. Based on the review, the potential effects, mitigation or compensation measures, and net effects associated with the Preferred Alternative Landfill Footprint were confirmed and documented in stand-alone Detailed Impact Assessment Reports. In addition to identifying mitigation or compensation measures, potential enhancement opportunities as well as monitoring requirements associated with the preliminary design for the Preferred Alternative Landfill Footprint were also identified, where possible.

WM committed to undertaking an assessment of the cumulative effects of the landfill and other WCEC components/facilities, as well as other non-WCEC projects/activities that exist, are planned and approved, or are reasonably foreseeable. The assessment of cumulative environmental effects is not required in the provincial EA process; however, in recognition of the public's concerns related to potential effects created by the proposed WCEC and surrounding development, WM decided to include a cumulative effects evaluation similar to that typically undertaken in the federal EA process.

Cumulative environmental effects are defined as effects that are likely to result from the proposed project in combination with other projects or activities that have been or will be carried out within the foreseeable future. The cumulative effects assessment completed for this project focused on the resultant net effects of the preferred undertaking, combined with the potential effects caused by the other WCEC facilities and other planned and approved or reasonably foreseeable projects in the local Study Area.

Based on the implementation of mitigation measures proposed for the WCEC, the determination of significance of effects, and the context of this Project in conjunction with other Projects in the area, the WCEC is not likely to cause significant adverse cumulative environmental effects.

Chapter 7. Public and Agency Consultation

An extensive consultation program was put in place for the WCEC EA. The program included numerous consultation events with various authorities, agencies, Aboriginal communities, groups, stakeholders, and members of the public to provide information on the project, obtain input, and address comments.



Project Advisory Committee

The Project Advisory Committee (PAC) was formed during the ToR stage of the WCEC EA and continued throughout the EA process. The role of the PAC is to review and provide comment on all WM submissions prepared as part of the EA, for which public comment is requested. PAC meetings took place throughout the course of the EA.

Government Review Team

Consultation was initiated with all relevant review agencies during the preparation of the ToR and continued through the duration of the EA process. Specific consultation activities included direct correspondence via letters/e-mails to the appropriate agencies, meetings to which all Government Review Team (GRT) members were invited, as well as meetings held with individual agencies or groups of agencies, as appropriate. Review agencies were also invited to attend Open House events, Workshops and other activities throughout the project. Four GRT meetings were held during the EA.

First Nation and Aboriginal Consultation

The following First Nation and Métis organizations were contacted at the onset of the EA:

- Algonquins of Ontario
- Métis Nation of Ontario
- Métis National Council
- Mohawk Council of Akwesasne

First Nation and Aboriginal organizations were contacted at each stage of the EA to provide them with the opportunity to participate in Open Houses, Workshops, and individual consultation sessions. No requests for participation in EA consultation events have been received to date.

Open Houses

A series of five Open House events were held between January 18, 2011 and March 8, 2012. The purpose of the Open House events was to provide an opportunity for the public to learn about, and provide comments on, the proposed WCEC. Project Team members were in attendance at all Open House sessions to facilitate discussions and answer questions.

Workshops

A series of three Workshops were held between February 24, 2011 and November 23, 2011. The purpose of the Workshops was to provide an additional avenue for consultation with local



residents, businesses, agencies and interested stakeholders. Workshops were intended to be more interactive than the Open House events, offering participants the opportunity to present their questions and comments regarding the proposed WCEC directly to the Project Team, as well as to discuss them with other attendees. Project Team members were in attendance at all Workshop sessions to facilitate discussions and answer questions.

Stakeholder Roundtable Discussion

At the request of the community, a Stakeholder Roundtable Discussion was held on October 12, 2011. The purpose of the Round Table Discussion was to provide an open and impartial forum between community stakeholders and WM to have a dialogue about EA compliance with the ToR; deficiencies in the EA; communication and outreach with stakeholders; definition of community stakeholders and their role in the EA; and possible modifications to the process.

Technical Sessions

A provision was made in the ToR to hold “special Technical Sessions” on specific topics to provide more in-depth information on a particular subject, if required. At the request of the community three Technical Sessions on the topics of Air, Groundwater, and Property Value were held between November 1, 2011 and January 25, 2012.

Changes to the EA due to Public Input

Modifications were made to the EA due to input from members of the public. These modifications are described as follows:

- During Workshop #1 it was suggested that two additional footprint options – one to the north and one ‘wrap around’ option – be considered along with the two footprint locations to the north and west proposed initially.
- In response to stakeholder suggestions at Open House #1 regarding notification, WM changed the notification protocol for all future consultation events as follows:
 - Advertisements in the local weekly newspapers (to run two consecutive weeks);
 - Unaddressed mail-drop to residents in the KOA 1L0 post code; and
 - E-mail sent to all individuals listed on our contact database.
- Two additional Socio-Economic criteria were included in the comparative evaluation of the alternative landfill footprint options in response to stakeholder suggestions at Workshop #1.



- Technical Sessions on the topics of Air, Groundwater, and Property Value as well as a Stakeholder Roundtable Discussion were held at the request of the public.
- Consultation material was made available prior to consultation events at the request of the public.

Chapter 8. Monitoring and Commitments for the Undertaking

Monitoring strategies were developed for each discipline as part of the detailed impact assessments carried out for the Preferred Alternative Landfill Footprint to ensure that:

- Predicted net effects are not exceeded;
- Unexpected negative effects are addressed; and
- Predicted mitigation effects are realised.

Environmental Management Plans (EMP) and/or Best Management Practice (BMP) plans will be developed by WM following the approval of the undertaking by the Minister of the Environment and prior to construction. The EMPs and/or BMPs will include a description of the proposed mitigation and monitoring measures for the relevant disciplines.

Additionally, each discipline made recommendations, from which WM made a set of commitments, to ensure that the identified mitigation or compensation measures and monitoring requirements proposed will be carried out as part of the construction, operation and maintenance of the undertaking.

Chapter 9. Approvals

The proposed undertaking will require other environmental and land use approvals, aside from the EA approval. It should be noted that on October 31, 2011, the MOE's "Modernization of Approvals" came into effect, which changed a Certificate of Approval into an ECA under Section 27 of the Environmental Protection Act (EPA). As a result, the undertaking will require either an application for an amendment to the current ECA for the existing Ottawa WMF, or application for a new ECA. This must occur before construction and operation of the undertaking. This approval will be based upon a more detailed description of the undertaking design, operations, closure, post-closure care and financial assurance to address the requirements of Ontario Regulation 232/98.



Chapter 10. Amending the EA

Some aspects of the project may require a change following approval by the Minister of the Environment under the OEAA, as the design details are further developed during the later stages of project design, construction and/or operation. WM is proposing that any unforeseen changes to the Preferred Undertaking be first reviewed by WM staff in conjunction with the MOE and then grouped into one of three categories: (1) no amendment required; (2) a minor amendment required; or (3) a major amendment required. As a result of this approach, two amendment procedures are being proposed: one associated with minor amendments and one associated with major amendments.

It should be noted that no amendments to the landfill capacity (6,500,000 m³) included in this EA will be sought by WM. Therefore, if there was a desire to increase the landfill capacity, WM would be required to complete a separate approval under the OEAA in accordance with this process.

