



Waste Management of Canada Corporation

Environmental Assessment for a New Landfill Footprint at the West Carleton Environmental Centre

ATMOSPHERIC – ENVIRONMENTAL NOISE EXISTING CONDITIONS REPORT

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Date:

February, 2012

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1. Introduction

This report provides an overview of the existing Environmental Noise conditions associated with the study area for the West Carleton Environmental Centre (WCEC) Environmental Assessment (EA). The Minister approved Terms of Reference (ToR) included a preliminary description of the existing environmental conditions on-site as well as within the site vicinity (See Section 7 of the approved ToR, August 2010). The ToR made a commitment that the description of the existing conditions would be expanded during the EA¹. With this in mind, investigative studies of the following environmental components were carried out for the purposes of generating a more detailed description and understanding of the environment for use in the assessment and evaluation of alternative landfill footprint options during the EA:

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

Each of the above disciplines also prepared draft work plans that were presented in **Appendix A1**. The work plan presents the scope of work required to complete the EA, including the scope of technical studies for each of the environmental components, including the existing conditions. The specific tasks for completing the description of existing conditions for the Environmental Noise component are provided in Attachment 2 of the work plan and are provided here for reference:

The atmospheric environment is comprised of three sub-components: air quality, noise and odour. The following tasks will be undertaken to characterize existing environmental conditions:

- Compile and interpret information from existing data sources, including information available from the following resources:
 - Atmospheric studies from the previous EA;
 - Ongoing monitoring assessments for the current landfill;

1. *During the EA, and following approval of work plans by the GRT, the project team will collect further information and conduct studies (desktop and field) to describe components and sub-components of the environment identified in the ToR that may be affected by the undertaking (Approved ToR, Section 7.4, p. 41)*



- Environment Canada and MOE air quality monitoring data from local stations; and,
- Review site records related to air emission (odour) and noise complaints;
- Conduct site reconnaissance to confirm site information compiled from existing documentation and finalize location and nature of potential off-site receptors.
- Determine “linkages” with other components and data generation/transfer requirements (e.g., link with natural environment, link with transportation component).
- Consult with the MOE and other members of the GRT to decide on air dispersion / noise modelling approach and protocols to be used in the assessment.
- Based on consultation with MOE, the review of existing information and the project description, identify information gaps and data needs.
- Conduct on-site air quality/ odour sampling to characterize sources of odour and provide data for input to the air quality and odour assessments.
- Conduct noise measurement surveys to determine baseline noise levels at potential sensitive points of reception, and along haul routes, and to determine noise levels from on-site sources, i.e., landfill equipment operations.
- Define baseline conditions for the project, based on available monitoring data.

The technical terms related to the assessment of noise are often not intuitive. Therefore, a plain language description of terminology and relationships between everyday sounds to aid the non-technical reader is provided in **Appendix A2**.

1.1 Purpose of the Study

This study is focussed on baseline conditions. This condition is being defined as the 2012 calendar year with no landfilling taking place at the existing site or at any proposed site. There are some noise sources that will continue to operate at the existing site after closure and these are assessed in this report.

Additionally, the assessment of noise from any future landfill alternatives must be applied against Ontario guideline values which also include an assessment against background noise levels. That is, are the noise sources from a proposed facility significant or potentially discernible from the background noise at a receptor?



The purpose of the baseline noise assessment is to provide background noise levels against which proposed future developments can be assessed and to show that the remaining noise sources on the existing landfill will be in compliance with the applicable criteria.

1.2 Documentation

The results of these individual studies will be documented in separate stand-alone technical memorandums during the EA. The final Existing Conditions will form a chapter of the EA Report with each of the stand-alone memorandums becoming supporting documents/appendices to the EA Report.

A draft Existing Conditions report (dated June 2010) was prepared and submitted to the Ontario Ministry of the Environment (MOE) Environmental Approvals Branch (EAB) for review. Written comments received and requests made during follow-up consultations with the MOE have been taken into account in this edition of the Environmental Noise Existing Conditions Report.

1.3 Environmental Noise Study Team

The Environmental Noise study team consisted of RWDI AIR Inc. staff. The actual individuals and their specific roles are provided as follows:

- **John DeYoe** – Project Director
- **Brad Bergeron** – Project Manager
- **Teresa Drew** – Technical Reviewer
- **Nghi Nguyen** – Technical Co-ordinator

2. Landfill Footprint Study Areas

In accordance with the approved ToR, the generic On-Site and Site-Vicinity study areas for the proposed new landfill footprint at the WCEC are listed below (see **Figure 1** – Overview map with three study areas):

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 in all directions; and,



Regional the lands within approximately 1 to 5 kilometres (km) of the Site for those disciplines that require a larger analysis area (i.e., socio-economic, odour, etc.).

The study areas identified above were presented in the approved ToR with the commitment that these generic study areas would be modified during the EA to suit the requirements of each environmental component.

The study areas relevant to the assessment of Environmental Noise include the Site Vicinity and Regional areas as defined in **Figure 1**. Noise for On-Site lands is also considered, but is not required to be assessed. The general study areas were refined for the purposes of this assessment based on the extent of the predicted and anticipated impacts. In addition, noise effects are assessed from a receptor perspective. Therefore, the area of study is influenced by the location of noise sensitive receptors that may be affected by Project related noise.

Receptors of interest under the Landfill guideline [1] (MOE 1998) defines noise sensitive land uses to be permanent or seasonal residence, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds, as well as noise sensitive buildings such as schools and places of worship.

The area surrounding the facility is a rural industrial setting. The surrounding land use includes extractive industrial, rural industrial, rural commercial, rural and hazard usages. An overview map of the study area, a zoning map and descriptions are provided in **Figure 1** and **Appendix A3**, respectively.

The following describes the specific noise sensitive receptors for the Environmental Noise determination of existing conditions and assessment.

2.1 On-Site and in the Site Vicinity

On-Site lands are either owned or Optioned by WM. WM will exercise the relevant Options upon the expansion of the WCEC property boundary and would remove any receptors that are within the modified On-Site boundary. Receptors that are located within the modified property boundary will not be carried into the detailed assessment as these residences will be removed.

Any apparently vacant or agricultural lands adjacent to the modified property boundary have been zoned industrial, so consideration for future noise receptors is not required. Land use information is included in **Appendix A3**.

An assessment of baseline conditions at five (5) On-Site receptors and ten (10) receptors in the Site-Vicinity was completed to account for worst-case noise impacts at each cardinal direction.



An additional sixteen (16) Regional receptors were selected to account for noise impacts within the 1 to 5 km study area. These Regional receptors were considered in this assessment to be consistent with the assessments undertaken by other disciplines. The location of receptors with ID's beginning with NR or RR were provided by AECOM. The locations of the noise-sensitive receptors are shown in **Figure 2**.

The On-Site receptors not carried forward into the detailed impact assessment are detailed below.

On-Site Receptors

- 2 -storey home Carp Road Central (PR2);
- 2-storey home at 569 William Mooney Road NNW (PR3);
- 2-storey home at 505 William Mooney Road NW (PR5);
- 1-storey home at 381 William Mooney Road (PR6); and
- 2-storey home at 427 William Mooney Road West (NR3).

The sensitive receptors in the Site-Vicinity that are relevant to the MOE requirements consist of residences. These receptors will be considered in the detailed noise assessment and are listed below.

Site-Vicinity Receptors

- 2-storey home on Richardson Side Road NNW (PR4);
- 2-storey home David Manchester Road (PR9);
- 1-storey home at 2485 Carp Road North (NR1);
- 2-storey home at 2166 Carp Road East (NR2);
- 2-storey home at 292 Moonstone Road South (NR4);
- 2-storey Terrace Youth Residential Services (NR8);
- 2-storey Sensitive Business Operation (NR9);
- 2-storey David Manchester Road Central (RR12);
- 2-storey at 607 William Mooney Road (RR14); and
- 2-storey Wilbert Cox Drive (RR15).

Regional Receptors

- 2-storey home at 2096 Carp Road South (PR7);
- St. Stephen Catholic Elementary School (NR5);
- Huntleigh United Cemetery (NR6);
- Lloydalex Park (NR7);
- 2-storey Spruce Ridge Road Central (RR10);
- 2-storey David Manchester Road North (RR11);
- 2-storey David Manchester Road South (RR13);



- 2-storey Carp Road North (RR16);
- 2-storey Oak Creek Road (RR17);
- 2-storey West Carleton Industrial Park (RR18);
- 2-storey Timbermere (RR19);
- 2-storey Stittsville (RR20);
- 2-storey Jackson Trails (RR21);
- 2-storey Fairwinds (RR22);
- 2-storey Arcadia (RR23); and,
- 2-storey Kanata West (RR24).

Receptor NR1 is a single dwelling that is located on a single large parcel of land bounded by Richardson Road to the north, Carp Road to the east, William Mooney Road to the west and the WCEC Landfill to the south. This parcel of land is currently zoned as rural. However, no future rural/commercial land use has been identified or amended. Any future residential development in this parcel of land would require an official zoning change. Therefore, this baseline analysis and the detailed assessment assume any future use of this land would be commercial/industrial. Only the single dwelling, located to the northeast of this parcel, has been used and is identified as NR1.

Seven (7) additional residential receptors (PR2 to PR7, and PR9), were included in the assessment to account for the worst-case noise impacts for the proposed footprint, as required in the ToR, and are the focus for compliance with MOE requirements.

Environmental Noise study areas for the new landfill footprint at the WCEC are provided in the Figures section following the report.

3. Methodology

Based on the work plans presented in **Appendix A1**, and in consultation with the MOE, the following sections outline the methodology for detailing the Environmental Noise existing conditions.

3.1 Approach and Methods

The baseline conditions to be established for the WCEC require that the 2011 shutdown of current operations be considered, as the proposed expansion is not scheduled to begin until 2012. Therefore, a predictive model was used to establish the expected noise contributions at receptors due to permanent, existing on-site noise sources (flares and gas-to-energy plant) which are expected to remain in operation once landfilling operations on the existing site have



ended later in 2011 and traffic. Although existing on-site noise sources which are expected to remain in operation, the operating schedules are not consistent throughout the year. These operations were not included in the prediction of the baseline noise environment as a conservative approximation. A site visit was also completed to measure these existing sources. The result of the measurements was that these existing sources were not expected to contribute to the background acoustic environment at most receptors based on their location and current traffic patterns.

The following outlines the approach for predicting the 2012 baseline noise environment in the selected study areas potentially affected by the WCEC landfill expansion.

- Collect existing on-site noise emission data and investigate if there are applicable regulated off-site operations such as quarries, cement plants, and asphalt plant that are expected to continue operation past 2011.
- Use noise emission data as inputs to ISO-9613 Noise Propagation Algorithms to model worst-case hour existing noise impacts.
- Use the former landfill and public roadway traffic data to estimate the traffic reduction once the former landfill is closed.
- Review available land use data to select noise-sensitive receptors representative of worst-case baseline and proposed expansion noise impacts.
- Use predicted noise impacts at receptors due to background traffic to determine the lowest one-hour sound exposures. These levels are used to establish the applicable sound level limits.

The site location and study area is shown in **Figure 1**. The baseline noise assessment will be used as a basis of comparison for the proposed landfill expansion alternatives.

3.2 Data Collection

3.2.1 Noise Source Data Collection

Noise emission estimates for the majority of the sources were based on noise measurements. Measurement of existing on-site equipment and surrounding industrial facilities were taken during site visits conducted by RWDI personnel throughout the months of April, May and June of 2006 and relevant sources updated/verified in April of 2011. All measurements were consistent with ISO 3744:1994(E) [2], and ISO 3746:1995(E) [3] measurement standards, and the applicable portions of the MOE Publication NPC-103 [4]. Details on the measurement data, calculations and measurement equipment information are included in **Appendix B1**.



Measured sound pressure levels (SPLs) were converted into sound power levels (PWLs) based on measurement distances and the size of the equipment being measured, as appropriate in accordance with applicable standards and accepted acoustical practices. Details on the noise emissions (sound power levels) for all of the noise sources considered in this assessment and SPL to PWL conversions are included in **Appendix B1**.

Under MOE Publication NPC-103 [4] noise guidelines, sources that produce tonal, buzzing, quasi-steady impulsive or cyclically varying sound characteristics at the points of reception, the sound level adjustments described in MOE Publication NPC-104 [5] are applicable. The pest control “whistle” currently in use at the landfill was identified as being tonal. This source will be used for the future landfill expansion but will not be used once landfilling stops at the end of 2011. A concentric opening at the Blower Building was also identified as tonal on-site, but was not audible off-site. As such, a 5 dB tonal penalty was not applied to the sound power level. No other noise sources with tonal, buzzing, quasi-steady impulsive or cyclically varying characteristics are anticipated for the 2012 baseline scenario.

Details pertaining to the locations of existing on-site equipment were collected from observations and discussions with landfill personnel during the 2006 and 2011 visits.

3.2.2 Ambient Traffic Noise Data

Ambient sound levels at noise-sensitive locations around the WCEC were predicted based on road traffic noise. Ambient sound levels in the area are dominated by the sound of road traffic along Richardson Road, Carp Road, Highway 7 and Highway 417.

Updated traffic volumes for existing conditions on Carp Road, Richardson Side Road, Highway 417, and Highway 7 were provided by AECOM. Traffic volumes for William Mooney Road were unavailable due to low volumes; therefore, this road was excluded from the analysis. Landfill related vehicles were subtracted from the traffic on public roads to address expected baseline conditions with no landfill in operation. Detailed traffic data are provided in **Appendix B2**.

The traffic data were provided as hourly vehicle volumes; with the exception of two road segments (i.e., Richardson Road east of Carp Road and Highway 417 west of Carp Road). Hourly volumes for 2009 were not collected by the Ministry of Transportation (MTO) for Highway 417 west of Carp Road segment. As such, traffic volumes in the form of Average Annual Daily Traffic (AADT) for Richardson Road east of Carp Road and Highway 417 west of Carp Road were used with adjustments described below.

Typical hourly distribution for Highway 417 was provided by AECOM and used where applicable (i.e., Highway 417 west of Carp). Hourly distributions from Richardson Road west of Carp Road were assumed to be the same as the distribution from Richardson Road east of Carp Road, as



data was unavailable. Traffic volume data and tables summarizing the traffic volumes are included in **Appendix C**. Traffic assumptions are consistent with the initial baseline and the ECR should be referenced.

Historical road traffic volumes for the various segment lengths of Highway 417 and Highway 7 were taken from MTO Provincial Highways Traffic Volumes for 2006 to 2007. The most recent annual percent change in traffic volume based on data from MTO's AADT was applied to approximate the 2012 traffic volumes. Where an annual percent change was not available, a default target of 1% growth per year was applied as per City of Ottawa 2020 Transportation Master Plan.

3.2.3 Modelling and Calculations

The modelling and calculations conducted to establish existing conditions for the future effects assessment of the WCEC demonstrate both the contributions and current state of compliance for stationary noise sources existing on the WCEC site as well as establish the compliance noise levels at all identified receptors based on traffic volume.

The 2012 Baseline Scenario results were determined through the calculation method used for road traffic contributions.

Stationary on-site sources (flares and gas-to-energy plant) were modelled using Cadna/A, a commercially available software implementation of the ISO-9613 [6, 7] environmental noise propagation algorithms, produced by Datakustik GmbH. The modelling took into account the following factors:

- Source sound power level and directivity;
- Distance attenuation;
- Source-receptor geometry including heights and elevations;
- Barrier effects of site buildings and surrounding topography;
- Duration of events;
- Ground and air (atmospheric) attenuation;
- Temperature and humidity effects on propagation; and
- Moderate downwind or inversion conditions (per the ISO-9613 standard, where sound contributions at a receptor from multiple sources are calculated under a downwind condition, regardless of spatial orientation).

Noise impacts were predicted for the Site-Vicinity receptors within the study area. Key parameters included in the noise model and output files pertaining to landfill noise propagation modelling are included in **Appendix C1**. The Point of Reception summary tables are also included in **Table C1.2** of **Appendix C1**.



Road traffic sound levels at the applicable receptors surrounding the facility were calculated using methods outlined in the MOE Publications NPC-206 [8] and “Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT, 1989)” [9]. Background sound levels were predicted using traffic only. Industrial sources of background noise were excluded from this assessment based on consultation with the MOE. On-site sources (landfill gas flares and gas-to-energy plant) were also excluded, but are not expected to contribute to the overall background sound levels. Details pertaining to road traffic noise modelling are included in **Appendix C2**.

Where applicable, the barrier effect of houses with respect to landfill noise was included when assessing background noise levels related to traffic.

4. Existing Environmental Noise Conditions

4.1 Environmental Noise Criteria

This baseline assessment has been prepared in support of the EA application for the WCEC landfill expansion. However, as the baseline case does not involve an operating landfill the MOE “Stationary Source” guidelines for Class 2 (suburban) and Class 3 (rural) areas, set out in MOE Publication NPC-205 [10] and NPC-232 [11] apply, respectively. These guidelines state that one hour sound exposures (Leq (1 hour) dBA values) from stationary noise sources, received at receptors in Class 2 or Class 3 areas, shall not exceed that of the background, where the background is defined as the sound level present in the environment produced by noise sources other than those associated with the facility under assessment. In general, Class 3 sound level limits at a point of reception are applicable within 30 m of a dwelling or a camping area. This assessment considered the separation distance of a Class 3 dwelling or a camping area, as applicable.

4.1.1 Steady-State (Stationary) Operations

The MOE Publication NPC-205 sound level limits for receptors in Class 2 areas are outlined as follows:

- The higher of 50 dBA or background noise, during the daytime hours (7:00 am to 7:00 pm);
- The higher of 45 dBA or background noise, during the evening hours (7:00 pm to 11:00 pm); and
- The higher of 45 dBA or background noise, during the night-time hours (11:00 pm to 7:00 am).



The MOE Publication NPC-232 sound level limits for receptors in Class 3 areas are outlined as follows:

- The higher of 45 dBA or background noise, during the daytime hours (7:00 am to 7:00 pm);
- The higher of 40 dBA or background noise, during the evening hours (7:00 pm to 11:00 pm); and
- The higher of 40 dBA or background noise, during the night-time hours (11:00 pm to 7:00 am).

For residential receptors where background (ambient) sound levels are higher than the guideline minima, the background ambient noise level may be used as the limit (assessed only for traffic contribution). The applicable sound level limits vary by point of reception. Based on a review of the acoustic environments within the study, RR10 is the only receptor that would be classified as a Class 3 (rural) area. All other receptors would fall under the Class 2 (suburban) area.

4.1.2 Landfill Operations

The baseline assessment does not include an operating landfill. However, the future WCEC expansion would include landfilling activities. There are specific noise requirements, as set out in the MOE Landfill guideline [1], regarding operating landfills and these will apply in future assessments, but for the baseline assessment these guidelines do not apply.

The relevant MOE Landfill guideline [1] is presented below since they will apply to proposed landfilling operation alternatives in future scenarios.

- The higher of 55 dBA or background noise, during the daytime hours (7:00 am to 7:00 pm); and
- The higher of 45 dBA or background noise, during the evening hours (7:00 pm to 11:00 pm); and
- The higher of 45 dBA or background noise, during the night-time hours (11:00 pm to 7:00 am).

For residential receptors where background sound levels due to non-landfill related noise sources, such as road traffic, are higher than the 55 dBA and 45 dBA guidelines, the background noise level may be used as the limit.

Landfill operations are planned to occur during daytime hours between 7:00 am to 7:00 pm. Other existing sources (flares and gas-to-energy plant) or future noise sources that operate 24/7 would therefore be assessed against the applicable sound level limit (NPC-205/NPC-232 requirements or elevated background sound levels).



4.1.3 Pest Control Devices

The baseline noise assessment does not include pest control devices since there will be no requirement for these devices once the existing landfill is closed. The Landfill guideline [1] will apply to proposed landfilling operation alternatives in future scenarios.

Pest control devices at the future WCEC landfill site are expected to include impulsive sources (e.g., propane cannons), and quasi-steady impulsive sources (e.g., “whistles”). Bird bangers are not proposed for use with the future landfilling activities. The Landfill guideline [1] sets sound level limits for pest control devices at off-site points of reception is as follows:

Type of Pest Control Noise	Applicable Guideline Limit
Impulsive Noise	70 dBAI, $L_{LM}^{[1]}$
Quasi-Steady Impulsive Noise	60 dBA, L_{eq} (1-hr)

Note: [1] L_{LM} - Logarithmic Mean Impulse Level

These higher of each identified limits or the background sound level at a point of reception will apply.

4.2 Results

4.2.1 Overview of Noise Sources

This section provides a general description of the existing noise conditions based on available traffic data, observations collected and consultation with the MOE. The existing noise environment in the vicinity of the site once current landfill operations have ceased will be influenced by traffic on public road, existing on-site and off-site noise sources. Only traffic on public roads has been considered in the assessment of the existing noise environment. A site plan showing locations of ongoing stationary noise sources on the former landfill site (flares and gas-to-energy plant) is provided in **Figure 3**.

4.2.1.1 Existing Landfill Operations – GTE

Landfill stationary noise sources include the biosolids area, the GTE incinerator, flare building, purge water building and several leachate pump houses. During site visits by RWDI personnel, these sources were noted and those that may contribute to off-site facility noise levels measured. The specific stationary sources considered in the modelled baseline scenario are as follows:

- One (1) blower building concentric opening;
- One (1) candlestick flare exhaust;



- One (1) candlestick flare motor;
- Two (2) enclosed flare intakes at base;
- Two (2) energy building air intake sections;
- Three (3) energy building overhead doors;
- Five (5) energy building Smithco generator radiator fans;
- Five (5) energy building generator combustion exhausts; and
- Three (3) energy building walls.

4.2.1.2 Road Traffic Noise

Road traffic noise surrounding the WCEC includes Richardson Side Road, Carp Road, William Mooney Road, Highway 7, and Highway 417. The noise impacts from each road have been separated into the following segments:

- Highway 7, south of Highway 417;
- Highway 417, west of Highway 7;
- Highway 417, west of Carp Road;
- Highway 417, east of Carp Road;
- Carp Road, north of Highway 417 and north of landfill entrance;
- Carp Road, north of Highway 417 and south of landfill entrance;
- Carp Road, south of Highway 417;
- Richardson Side Road, west of Carp Road; and,
- Richardson Side Road, east of Carp Road.

The variations in ambient sound levels due to changes in hourly road traffic volumes have been included in the determination of the hourly road traffic noise impacts. Traffic data are discussed earlier in Section 3.2 and are provided in **Appendix B2**.

4.2.2 Calculation and Model Assumptions

The following is a list of key assumptions particularly relevant to the baseline noise assessment:

General

- The baseline noise impact assessment has been completed for conditions representative of operations at the end of 2011.
- Details of the modelling parameters used for the stationary sources in Cadna/A are listed in **Appendix C1**.



- Details of the analysis and parameters used in the ORNAMENT traffic noise calculation are found in **Appendix C2**.

Detailed calculations and model assumptions are presented in **Appendix C**.

Landfill Related Traffic on Public Roads

- Assumed to be 100% heavy trucks.
- 5% of vehicle will travel via Richardson Side Road, East of Carp Road.
- 5% of vehicles will travel via Carp Road, south of Highway 417.
- 90% of vehicle will travel via Highway 417.

Landfill Operations (Baseline Conditions)

- There are no landfill activities included in the baseline scenario.

Landfill Pest Control Devices

- There are no landfill pest control devices in use for the baseline scenario.

Landfill Stationary Noise Sources

- The biosolids area, existing scale house, recycling building, purge water building, and leachate pump houses have not been included in this assessment, as they are not expected to cause any significant noise impacts.
- Operation of the flares and gas-to-energy plant has been measured and the values converted to sound power for comparison with the applicable guideline limits.

Off-site Ambient Noise Sources

- The surrounding quarries (Clark Quarry and Karson Quarry) and cement plants (CBM, Cumberland Ready-Mix, and West Carleton Concrete) are excluded from the baseline scenario based on consultation with the MOE.

4.2.3 Existing Stationary Source Impacts

A predictive model was used to assess noise impacts at the points of reception from all ongoing on-site sources that will remain after the existing landfill has ceased operation. A summary of the predicted noise impacts for the daytime, evening and night-time periods are provided in **Table C1.3 of Appendix C1**. The predicted sound levels from the existing sources are below



the MOE default guideline limits for stationary sources at all receptors for all time periods. The sound levels at receptors range from 15 to 40 dBA. Comparing this to the guideline limits, the existing sources have little influence over the background noise environment.

The noise contours (isopleths of equal noise levels) have been generated for the predictable worst-case sound levels from existing on-site sources. **Figure 4** shows the noise contours generated for the noise impacts from the stationary sources identified.

4.2.4 Resulting Landfill Activity Sound Level Criteria

An assessment of the existing noise conditions at the receptors in the vicinity of the WCEC was completed for the purposes of comparison with potential future impacts. The ambient noise levels at sensitive receptors will be primarily based on off-site road traffic contributions. Some localized influence will be present from other local stationary noise sources but these were excluded from the assessment. Noise from existing on-site sources has also been excluded, but as demonstrated in 4.2.3 are not expected to influence the resulting baseline sound levels.

The environmental noise criteria as described in Section 4.1 states that the default daytime guideline limits for landfilling operations, impulsive, quasi-steady pest control, and stationary noise sources are 55 dBA, 70 dBA, 60 dBA, and 50 dBA, respectively. These will be the limits that apply for the environmental assessment of future proposed landfill alternatives. The baseline sound levels influence these guideline limits. The predicted baseline noise levels, excluding the existing landfill and off-site industrial sources, were used for the determination of sound level limits for landfill noise contributions and the resulting assessment criteria. Therefore, the resulting assessment criteria or baseline noise condition for daytime landfill operations at all off-site receptors surrounding the WCEC are presented in **Tables 1 through 4**. Baseline sound levels for the evening and night-time periods are included in **Tables C2.7a to C2.7c** of **Appendix C2**.



Table 1. Determination of Daytime Assessment Criteria – Landfilling Baseline Operations

Point of Reception ID	Point of Reception (PoR) Description	MOE Landfill Guideline Limit ^[1] (dBA)	Performance Limit ^[2] (dBA)	Performance Limit Source ^[3]	Resulting Landfill Guideline Limit ^[4] (dBA)	
On-site Receptors	PR2	2-storey home Carp Road Central	55	50	C	55
	PR3	2-storey home at 569 William Mooney Road NNW	55	50	D	55
	PR5	2-storey home at 505 William Mooney Road NW	55	50	D	55
	PR6	1-storey home at 381 William Mooney Road	55	51	C	55
	NR3	2-storey home at 427 William Mooney Road West	55	50	D	55
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	55	56	C	56
	PR9	2-storey home David Manchester Road	55	59	C	59
	NR1	1-storey home at 2485 Carp Road North	55	50	C	55
	NR2	2-storey home at 2166 Carp Road East	55	60	C	60
	NR4	2-storey home at 292 Moonstone Road South	55	64	C	64
	NR8	2-storey Terrace Youth Residential Services	55	57	C	57
	NR9	2-storey Sensitive Business Operation	55	64	C	64
	RR12	2-storey David Manchester Road Central	55	63	C	63
	RR14	2-storey at 607 William Mooney Road	55	61	C	61
	RR15	2-storey Wilbert Cox Drive	55	50	D	55
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	55	60	C	60
	NR5	St. Stephen Catholic Elementary School	55	50	D	55
	NR6	Huntleigh United Cemetery	55	50	D	55
	NR7	Lloydalex Park	55	50	D	55
	RR10	2-storey Spruce Ridge Road Central	55	45	D	55
	RR11	2-storey David Manchester Road North	55	60	C	60
	RR13	2-storey David Manchester Road South	55	50	D	55
	RR16	2-storey Carp Road North	55	50	D	55
	RR17	2-storey Oak Creek Road	55	61	C	61
	RR18	2-storey West Carleton Industrial Park	55	52	C	55
	RR19	2-storey Timbermere	55	50	D	55
	RR20	2-storey Stittsville	55	50	D	55
	RR21	2-storey Jackson Trails	55	50	D	55
	RR22	2-storey Fairwinds	55	50	D	55
RR23	2-storey Arcadia	55	50	D	55	
RR24	2-storey Kanata West	55	50	D	55	

Notes:- All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. MOE Noise Guidelines for Landfill Sites.
2. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
3. Performance limit (aka guideline limit) based on following:
C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
4. The higher of MOE Landfill guideline limit or performance limit. This is also referred to as the "baseline noise condition".



Table 2. Determination of Daytime Assessment Criteria – Impulsive Pest Control Baseline Operations

Point of Reception ID	Point of Reception (PoR) Description	MOE Impulsive Guideline Limit ^[1] (dBAI)	Performance Limit ^[2] (dBA)	Performance Limit Source ^[3]	Resulting Impulsive Guideline Limit ^[4] (dBAI)	
On-site Receptors	PR2	2-storey home Carp Road Central	70	50	C	70
	PR3	2-storey home at 569 William Mooney Road NNW	70	50	D	70
	PR5	2-storey home at 505 William Mooney Road NW	70	50	D	70
	PR6	1-storey home at 381 William Mooney Road	70	51	C	70
	NR3	2-storey home at 427 William Mooney Road West	70	50	D	70
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	70	56	C	70
	PR9	2-storey home David Manchester Road	70	59	C	70
	NR1	1-storey home at 2485 Carp Road North	70	50	C	70
	NR2	2-storey home at 2166 Carp Road East	70	60	C	70
	NR4	2-storey home at 292 Moonstone Road South	70	64	C	70
	NR8	2-storey Terrace Youth Residential Services	70	57	C	70
	NR9	2-storey Sensitive Business Operation	70	64	C	70
	RR12	2-storey David Manchester Road Central	70	63	C	70
	RR14	2-storey at 607 William Mooney Road	70	61	C	70
	RR15	2-storey Wilbert Cox Drive	70	50	D	70
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	70	60	C	70
	NR5	St. Stephen Catholic Elementary School	70	50	D	70
	NR6	Huntleigh United Cemetery	70	50	D	70
	NR7	Lloydalex Park	70	50	D	70
	RR10	2-storey Spruce Ridge Road Central	70	45	D	70
	RR11	2-storey David Manchester Road North	70	60	C	70
	RR13	2-storey David Manchester Road South	70	50	D	70
	RR16	2-storey Carp Road North	70	50	D	70
	RR17	2-storey Oak Creek Road	70	61	C	70
	RR18	2-storey West Carleton Industrial Park	70	52	C	70
	RR19	2-storey Timbermere	70	50	D	70
	RR20	2-storey Stittsville	70	50	D	70
	RR21	2-storey Jackson Trails	70	50	D	70
	RR22	2-storey Fairwinds	70	50	D	70
RR23	2-storey Arcadia	70	50	D	70	
RR24	2-storey Kanata West	70	50	D	70	

Notes: - All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. MOE Noise Guidelines for Landfill Sites with pest control devices.
2. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
3. Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
4. The higher of MOE Impulsive Landfill guideline limit or performance limit. This is also referred to as the "baseline noise condition".



Table 3. Determination of Daytime Assessment Criteria – Quasi-Steady Pest Control Baseline Operations

Point of Reception ID	Point of Reception (PoR) Description	MOE Quasi-Steady Guideline Limit ^[1] (dBA)	Performance Limit ^[2] (dBA)	Performance Limit Source ^[3]	Resulting Quasi-Steady Guideline Limit ^[4] (dBA)	
On-site Receptors	PR2	2-storey home Carp Road Central	60	50	C	60
	PR3	2-storey home at 569 William Mooney Road NNW	60	50	D	60
	PR5	2-storey home at 505 William Mooney Road NW	60	50	D	60
	PR6	1-storey home at 381 William Mooney Road	60	51	C	60
	NR3	2-storey home at 427 William Mooney Road West	60	50	D	60
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	60	56	C	60
	PR9	2-storey home David Manchester Road	60	59	C	60
	NR1	1-storey home at 2485 Carp Road North	60	50	C	60
	NR2	2-storey home at 2166 Carp Road East	60	60	C	60
	NR4	2-storey home at 292 Moonstone Road South	60	64	C	64
	NR8	2-storey Terrace Youth Residential Services	60	57	C	60
	NR9	2-storey Sensitive Business Operation	60	64	C	64
	RR12	2-storey David Manchester Road Central	60	63	C	63
	RR14	2-storey at 607 William Mooney Road	60	61	C	61
	RR15	2-storey Wilbert Cox Drive	60	50	D	60
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	60	60	C	60
	NR5	St. Stephen Catholic Elementary School	60	50	D	60
	NR6	Huntleigh United Cemetery	60	50	D	60
	NR7	Lloydalex Park	60	50	D	60
	RR10	2-storey Spruce Ridge Road Central	60	45	D	60
	RR11	2-storey David Manchester Road North	60	60	C	60
	RR13	2-storey David Manchester Road South	60	50	D	60
	RR16	2-storey Carp Road North	60	50	D	60
	RR17	2-storey Oak Creek Road	60	61	C	61
	RR18	2-storey West Carleton Industrial Park	60	52	C	60
	RR19	2-storey Timbermere	60	50	D	60
	RR20	2-storey Stittsville	60	50	D	60
	RR21	2-storey Jackson Trails	60	50	D	60
	RR22	2-storey Fairwinds	60	50	D	60
RR23	2-storey Arcadia	60	50	D	60	
RR24	2-storey Kanata West	60	50	D	60	

Note : - All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. MOE Noise Guidelines for Landfill Sites with pest control devices.
2. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
3. Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
4. The higher of MOE Quasi-Steady Landfill guideline limit or performance limit. This is also referred to as the "baseline noise condition".



Table 4. Determination of Daytime Assessment Criteria – Stationary Source Baseline Operations

	Point of Reception ID	Point of Reception (PoR) Description	MOE Stationary Source Guideline Limit ^[1] (dBA)	Performance Limit ^[2] (dBA)	Performance Limit Source ^[3]	Resulting Stationary Source Guideline Limit ^[2] (dBA)
On-site Receptors	PR2	2-storey home Carp Road Central	50	50	C	50
	PR3	2-storey home at 569 William Mooney Road NNW	50	50	D	50
	PR5	2-storey home at 505 William Mooney Road NW	50	50	D	50
	PR6	1-storey home at 381 William Mooney Road	50	51	C	51
	NR3	2-storey home at 427 William Mooney Road West	50	50	D	50
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	50	56	C	56
	PR9	2-storey home David Manchester Road	50	59	C	59
	NR1	1-storey home at 2485 Carp Road North	50	50	C	50
	NR2	2-storey home at 2166 Carp Road East	50	60	C	60
	NR4	2-storey home at 292 Moonstone Road South	50	64	C	64
	NR8	2-storey Terrace Youth Residential Services	50	57	C	57
	NR9	2-storey Sensitive Business Operation	50	64	C	64
	RR12	2-storey David Manchester Road Central	50	63	C	63
	RR14	2-storey at 607 William Mooney Road	50	61	C	61
	RR15	2-storey Wilbert Cox Drive	50	50	D	50
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	50	60	C	60
	NR5	St. Stephen Catholic Elementary School	50	50	D	50
	NR6	Huntleigh United Cemetery	50	50	D	50
	NR7	Lloydalex Park	50	50	D	50
	RR10	2-storey Spruce Ridge Road Central	45	45	D	45
	RR11	2-storey David Manchester Road North	50	60	C	60
	RR13	2-storey David Manchester Road South	50	50	D	50
	RR16	2-storey Carp Road North	50	50	D	50
	RR17	2-storey Oak Creek Road	50	61	C	61
	RR18	2-storey West Carleton Industrial Park	50	52	C	52
	RR19	2-storey Timbermere	50	50	D	50
	RR20	2-storey Stittsville	50	50	D	50
	RR21	2-storey Jackson Trails	50	50	D	50
	RR22	2-storey Fairwinds	50	50	D	50
	RR23	2-storey Arcadia	50	50	D	50
RR24	2-storey Kanata West	50	50	D	50	

Notes: - All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. MOE NPC-205 Class 2 or NPC-232 Class 3 Sound Level Limits for Stationary Sources.
2. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
3. Performance limit (aka guideline limit) based on following:
C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
4. The higher of MOE NPC-205/232 guideline limit or performance limit. This is also referred to as the "baseline noise condition".

5. Conclusions

This analysis presents the baseline noise conditions expected at receptors representative of the noise environment predicted for the year 2012 with future noise impacts from the existing landfill site after closure. This analysis shows that the stationary noise sources on the existing landfill will comply with applicable noise criteria and has minor contributions to the background noise environment. Off-site noise sources such as quarries and cement plants were excluded based on consultation with the MOE.

The results of the analysis also indicate that the baseline noise levels at noise sensitive receptors will be dominated by road traffic contributions only. These expected baseline conditions affect the noise criteria for a number of receptors to be considered in the detailed landfill assessments, per the MOE Landfill Guidelines. The background noise levels at each of the effected receptors for future proposed alternatives have been determined.

6. Recommendations / Further Work

Further baseline analysis has not been identified for completion of the WCEC Expansion assessment.

Report Prepared By:

Nghi Nguyen
Technical Co-ordinator

Report Reviewed By:

Teresa Drew, B.Sc., INCE
Senior Consultant, Environmental Noise



7. References

ISO-3744:1994(E):

Acoustics – Determination of sound power levels of noise sources using sound pressure. Engineering method in an essentially free field over a reflecting plane.

ISO-3746:1995(E):

Acoustics – Determination of sound power levels of noise sources using sound pressure. Survey method of using a reference sound source.

ISO-9613-1:

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ISO-9613-2:

Acoustics – Attenuation of Sound during propagation outdoors. Part 2 – General method of calculation.

Ontario Ministry of the Environment, 1977:

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“*Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)*”, November 1988.

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Ontario Ministry of Environment, 1995:

Publication NPC-205, “*Sound Level Limits for Stationary Sources in Class 1&2 Areas (Urban)*”, October 1995.

Ontario Ministry of Environment, 1995:

Publication NPC-232, “*Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)*”, October 1995.

Ontario Ministry of the Environment, 1998:

Noise Guidelines for Landfill Sites (Draft), October 1998.



Figures



★ Nearest Receptors

- 1 Nearest House, North
- 2 Nearest House, East
- 3 Nearest House, West
- 4 Nearest House, South
- 5 St. Stephen Catholic Elementary School
- 6 Huntleigh United Cemetery
- 7 Lloydalex Park
- 8 Terrace Youth Residential Services
- 9 Nearest Sensitive Business Operation

★ Representative Receptors

- 10 Spruce Ridge Road Central
- 11 David Manchester Road North
- 12 David Manchester Road Central
- 13 David Manchester Road South
- 14 William Mooney Road
- 15 Wilbert Cox Drive
- 16 Carp Road North
- 17 Oak Creek Road
- 18 West Carleton Industrial Park
- 19 Timbermere
- 20 Stittsville
- 21 Jackson Trails
- 22 Fairwinds
- 23 Arcadia
- 24 Kanata West

Legend

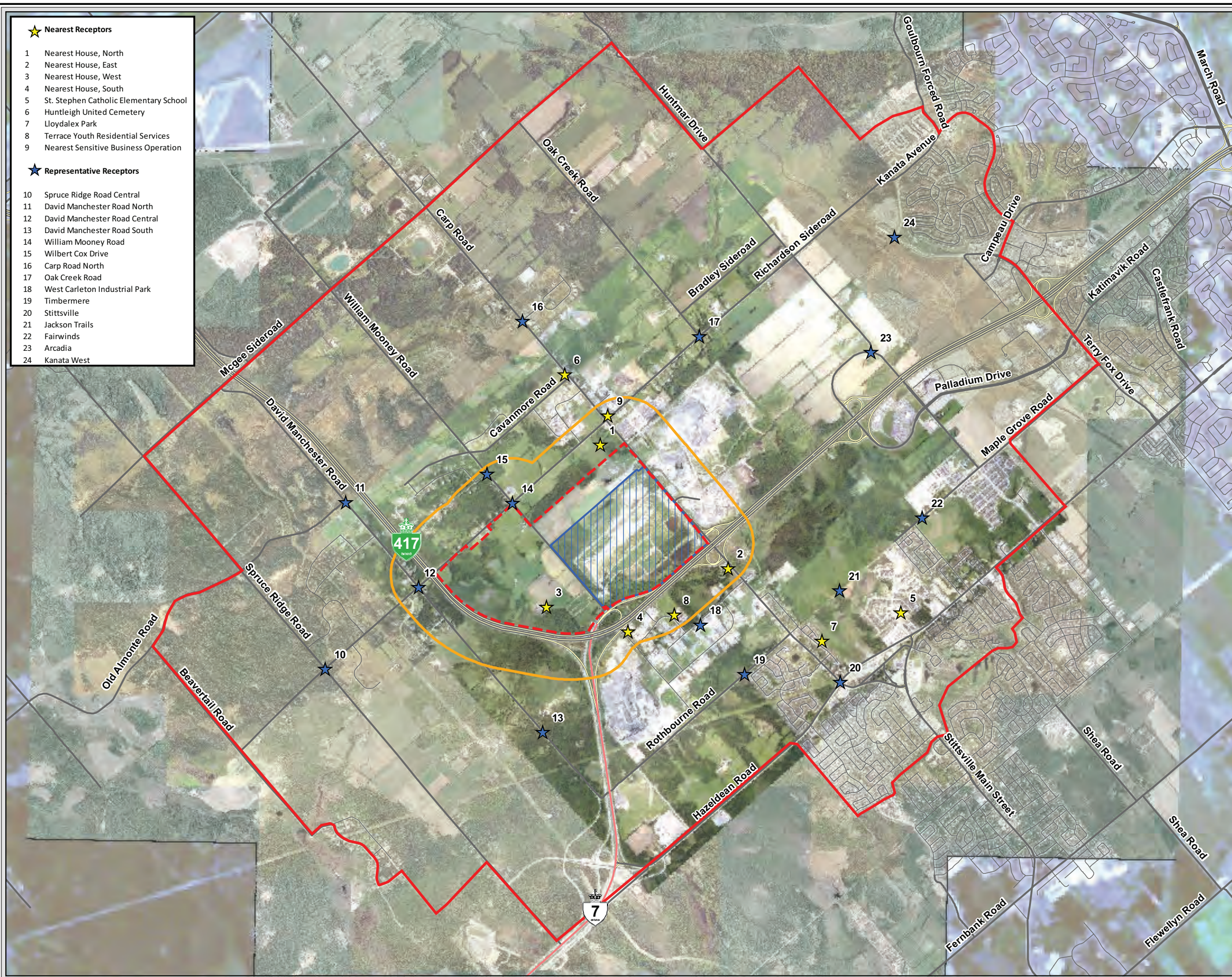
Receptors

- ★ Nearest Receptors
- ★ Representative Receptors

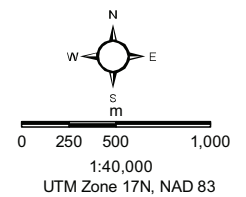
Boundaries

- Existing WM Operations
- Subject Site: On-site Study Area
- 500m of Subject Site
- Site-Vicinity Study Area (Approx 3 km of Subject Site)

Map Document: I:\60191228\000-CADD\B60_GIS\WIP\MXDs\SocialEconomic\MXDs\60191228Receptors.mxd
4/7/2011 11:07:50 AM



Basemapping from Ontario Ministry of Natural Resources
Orthophotography: 2005, 2008, 2010



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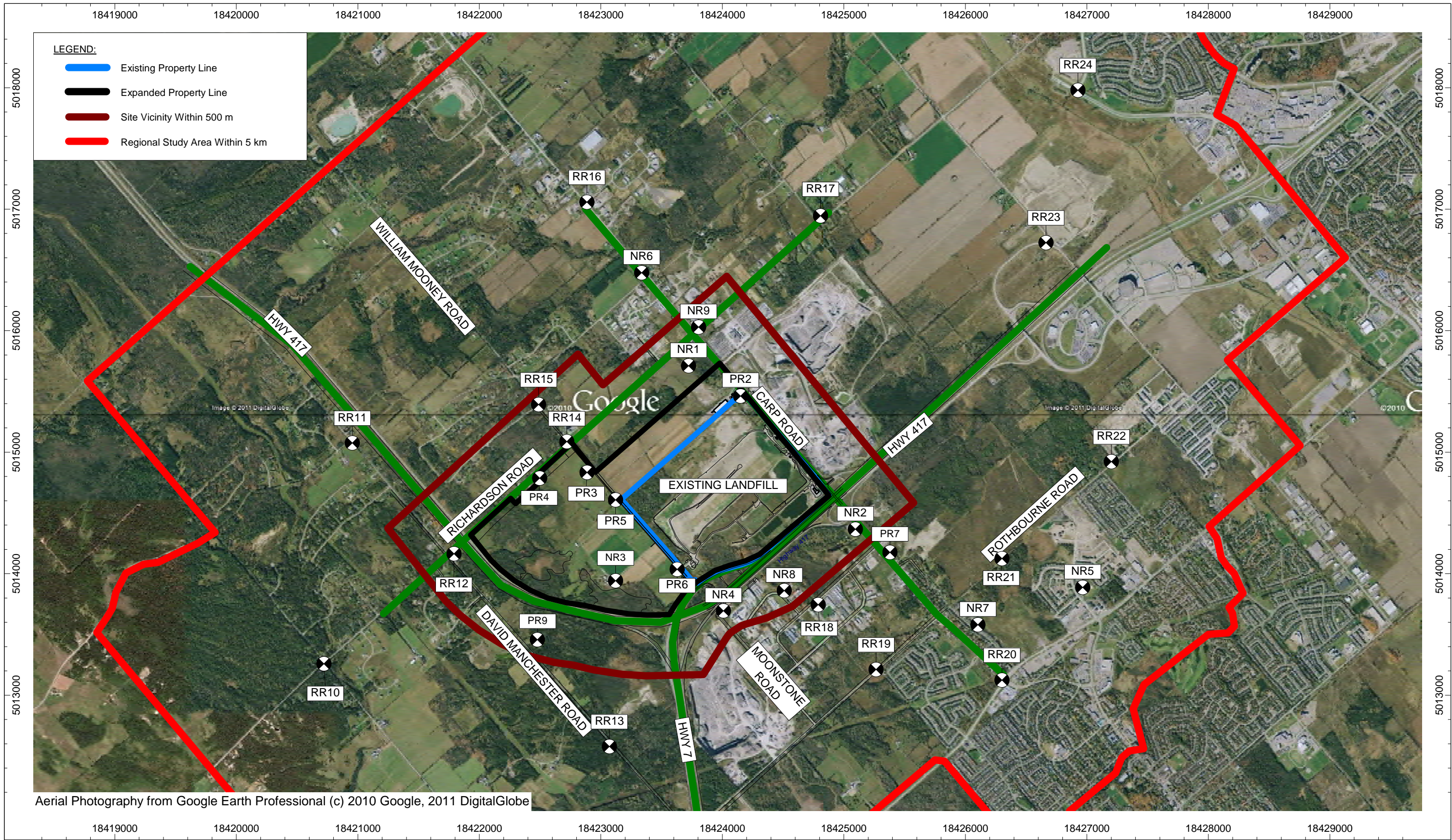
Waste Management of Canada
Environmental Assessment of a New Landfill
Footprint at the West Carleton Environmental Centre

Receptor Locations

April 2011
Project 60191228



Figure 1



Environmental Noise Study Area and Receptor Locations

WCEC Landfill - Ottawa, Ontario

True North

 Project #1100798
 Drawn by: NTN
 Scale: 1:30 000
 Date: Feb. 10, 2012
 Figure: 2





Aerial Photography from Google Earth Professional (c) 2010 Google, 2011 DigitalGlobe

Existing On-site Noise Source Locations

WCEC Landfill - Ottawa, Ontario

True North



Project #1100798

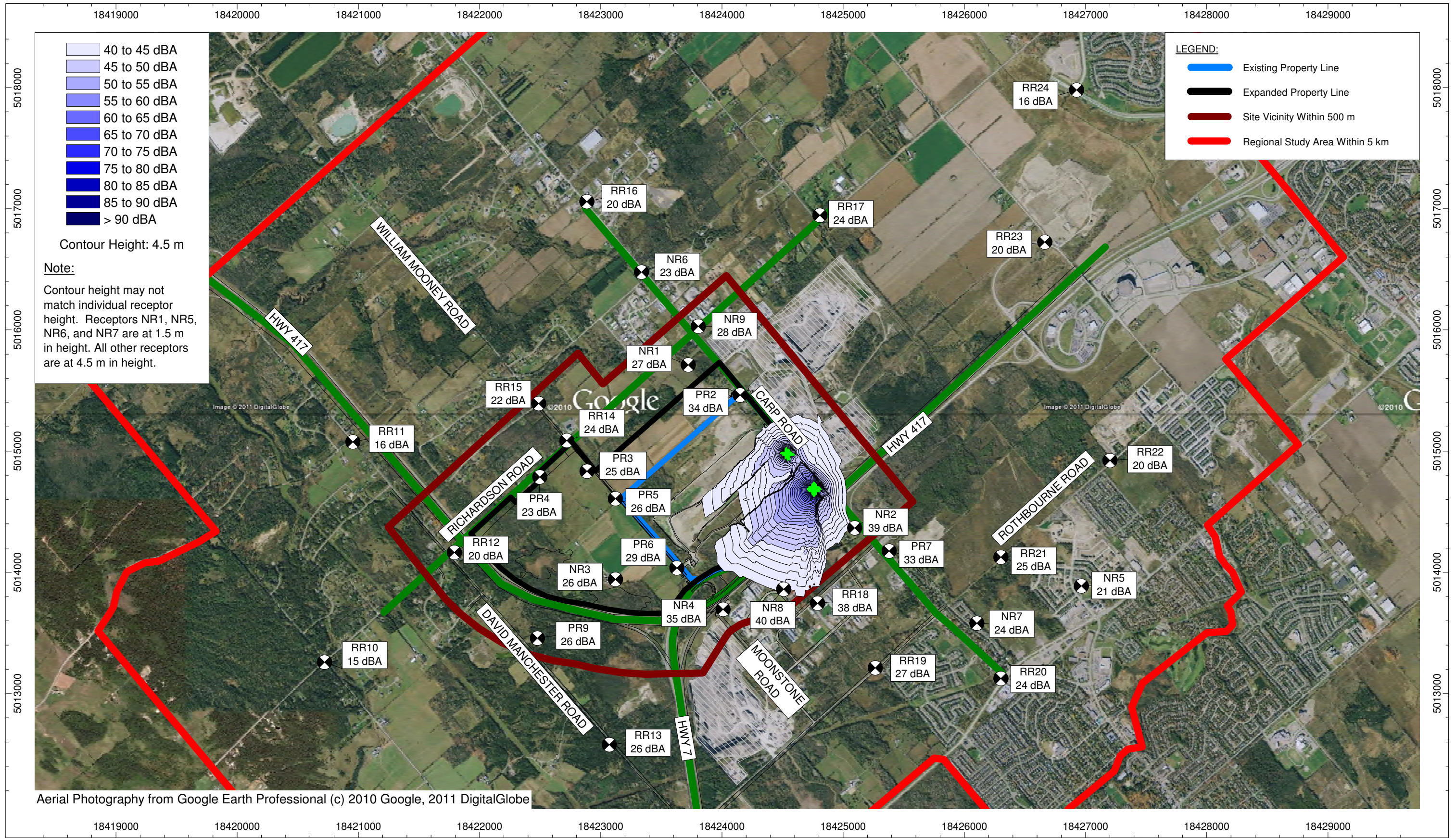
Drawn by: NTN

Figure: **3**

Scale: 1:3000

Date: Feb. 24, 2012





Appendix A1

Draft Work Plan



DRAFT WORK PLAN FOR ENVIRONMENTAL ASSESSMENT

Draft Work Plan for Environmental Assessment of Proposed New Landfill Footprint in Ottawa

Submitted by:
Waste Management of Canada Corporation

June 2010

DRAFT



DRAFT WORK PLAN FOR ENVIRONMENTAL ASSESSMENT

1.0 INTRODUCTION

The purpose of this document is to present the proposed work plan for the environmental assessment (EA) of Waste Management Corporation of Canada's (WM) new landfill footprint at the existing Ottawa Waste Management Facility (Ottawa WMF). Comments from the Government Review Team (GRT) and interested parties are welcome and will be considered in the preparation of the Terms of Reference (TOR).

This proposed work plan, which is part of the TOR, presents the scope of work required to complete the EA, including the scope of technical studies for each of the environmental components, public consultation, effects assessment, mitigation, EA documentation and submission. The work plan also presents proposed schedules for the technical studies. Work plans for the individual technical disciplines are included in **Attachments 1 to 10**.

2.0 EA APPROACH

2.1 Phased Approach

It is proposed that the EA work will be undertaken in three phases as follows:

- Phase 1 – Characterize Existing Environment and Predict Effects of the Proposed Alternatives;
- Phase 2 – Identify Preferred Alternative; and
- Phase 3 – Prepare and Submit EA Documentation.

Consultation with the public, agencies and other stakeholders will be ongoing throughout the EA process.

2.2 Environmental Components

The environmental components that will be evaluated in the EA, sub-components, rationale, indicators and data sources are listed in the attached **Table 1-1 to Table 1-10**.

Environmental Components

- Atmospheric Environment
- Geology and Hydrogeology
- Surface Water
- Biology – Terrestrial and Aquatic
- Cultural Heritage Resources
- Transportation
- Land Use
- Agriculture
- Socio-economic

Technical Criteria

- Site Design and Operations



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2.3 Study Areas

Data for the EA will be collected and analyzed for three generic study areas that will be presented in the TOR, as follows:

- On-site – the lands owned and/or optioned by WM for the proposed new landfill footprint;
- Site Vicinity – the lands in the vicinity of the current Ottawa WMF (within 500 metres (m) of the alternative West Carleton Environmental Centre (WCEC) waste footprints, which will be developed during the EA); and
- Regional – the lands within approximately 1-5 km of the Site, depending on the discipline and the factors which are relevant.

2.4 Time Frame

The EA will consider potential effects on the environment associated within three timeframes as follows:

- Construction;
- Operations (10 years); and
- Post-closure.

3.0 WORK SCOPE

3.1 Phase 1 – Characterize Existing Environment and Predict Effects of Proposed Alternatives

This initial phase of the EA studies comprises four tasks, which involve identifying alternative methods, characterizing existing environmental conditions, determining mitigation measures that will be incorporated into the design of alternatives, and predicting the effects of the alternatives on the environment.

3.1.1 Task 1 - Identifying Alternative Methods for New Landfill Footprint

Preliminary envelopes within the study area (See attached Figure) for potential development of landfill footprint alternatives will be developed during the EA stage and will include possible areas for siting the various non-landfill WCEC components as well. Early in the EA studies, a reasonable number of alternative landfill footprints will be developed by the project team in consultation with the public and GRT. The new landfill footprints will provide approximately 6.5 million cubic metres of air space and will be required to meet all applicable Ministry of the Environment (MOE) requirements. Two distinct development envelopes exist within the study area in relation to the existing Ottawa WMF. These envelopes are referred to by their proximity to the Ottawa WMF, namely to the west of William Mooney Road and to the north of the existing Ottawa WMF. WM is proposing that the height of the new landfill footprint alternatives will be lower than the current landfill height.

The alternative new landfill footprints that will be developed will comprise a range of features and variables, including for example, footprint configuration, location of entrance, access roads, location of WCEC components such as materials recycling facility, construction and demolition facility, organics facility, landfill gas to energy facility, greenhouses, community features, etc.

During the EA, the project team will describe the alternative new landfill footprints and associated facilities in sufficient level of detail (i.e., conceptual designs) for assessment by individual environmental component leads. A draft Concept Design Report (CDR) will be prepared and distributed to each of the environmental component leads for further analysis. The characteristics of the existing and proposed site



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design and engineering system requirements, including in-design mitigation measures, can affect the environment and site activities such as operational and maintenance requirements. These potential effects will be assessed in the EA.

3.1.2 Task 2 - Describing Environment Potentially Affected

The project team will collect information and conduct studies (desktop and field) to describe components and sub-components of the environment identified in the TOR that may be affected by the undertaking. This will be done for each of the alternative method identified in the previous task. The environmental components, subcomponents, rationale, indicators and data sources that will be used in the analysis of each component are presented in **Attachments 1 to 10**.

3.1.3 Task 3 - Identifying Mitigation Measures to be Incorporated in the Design of Each Alternative

Following identification of a reasonable number of alternatives (Task 1) and the characterization of existing environmental conditions (Task 2), the project team will conduct a preliminary assessment of potential effects. Potential mitigation measures to be incorporated into the conceptual design of the alternatives will also be developed. The project team will then finalize the CDD, updating the conceptual designs, including in-design mitigation measures. The CDR will serve as the common basis for conducting the assessment of alternatives.

3.1.4 Task 4 - Predict Environmental Effects for Each Alternative

In this final task for phase 1, the project team will predict the effects of each alternative (i.e., including in-design mitigation measures) on the environment. The assessment will be done for each component of the environment based on the existing environmental conditions (determined in Task 2) and the conceptual designs for each alternative including mitigation (determined in Task 3).

3.2 Phase 2 - Assess Effects and Identify Preferred Alternative

3.2.1 Task 5 - Refine Mitigation Measures and Determine Net Effects

The EA project team will identify linkages (i.e., direct or indirect effects of the undertaking on an environmental component via another component, such as groundwater discharge to surface water). Linkage diagrams will be prepared by the environmental component leads. These diagrams will serve as the basis for conducting an integrated assessment of effects.

Prediction of future environmental conditions associated with each alternative landfill footprint will be undertaken by each discipline lead using modelling and other methods. Assessment of potential effects will be done using appropriate objectives, standards, policies and legislation. Further mitigation measures, if required, will be identified and refined as necessary. The project team will update and revise the conceptual design plans for the alternative footprints. The final conceptual designs will be documented in the final EA Report. The remaining effects or "net effects", if any, will be documented.

3.2.2 Task 6 - Compare Alternatives

At this point, the project team may also consider additional alternative landfill footprints that may have been identified by the public or other parties during the EA process. Should an additional alternative(s) be developed, it would also be subjected to the analysis described in Task 3.

Following the completion of Task 5, the net effects of each Alternative Method, or landfill footprints will be comparatively evaluated using a Reasoned Argument (or Trade-off) Method as a means of selecting the

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recommended Alternative Method. Application of this assessment method will be based on identifying the advantages or disadvantages of each Alternative Method, and then using them to establish preferences among the alternatives. Each alternative will be compared using the criteria, indicators, criteria weighting and data sources presented in the TOR. This analysis will be undertaken by the EA project team. The information generated through the comparison of the short-listed Alternative Methods will be summarized in a series of tables and documented in the EA Report.

3.2.3 Task 7 - Identify Preferred Alternative and Detailed Assessment

In this task, the advantages and disadvantages of the alternative landfill footprints will be described based on the comparative evaluation. The relative importance of the criteria will be as described in the TOR. The outcome of this ranking exercise will be the identification of a preferred alternative.

A comprehensive impact assessment of the preferred alternative(s) will be completed to determine the net effects that will be caused, or that might reasonably be caused, on the environment (i.e., the advantages and disadvantages to the environment). This includes consideration of any mitigation that might be necessary to reduce or eliminate impacts, and the appropriate monitoring, contingency and impact management plans.

3.2.4 Task 8 – Conduct Cumulative Effects Assessment

The assessment of cumulative effects is routinely included in federal environmental assessments, but not in Ontario EAs. WM is proposing to conduct this additional analysis, which will consider the combined or cumulative effects on the environment of “net effects” identified previously, with the effects of other projects that occur during the same timeframe and geographic area. For example, the cumulative effects assessment will consider the combined effects of the new landfill footprint with other WCEC components such as materials, recycling facility, construction and demolition facility, etc.

3.3 Phase 3 - Prepare and Submit EA Documentation

The third and final phase of the EA will be the preparation and submission of the EA documentation. The EA Report will be based on the results of the individual technical studies and the consultation program, which will be documented in Technical Support Documents (TSDs) and a series of consultation reports, respectively.

3.3.1 Task 9 - Prepare EA Reports/TSDs

Key information and findings from the TSDs and consultation reports will be compiled into the EASR by the EA Team. During the preparation of the TSDs and EA Report, the project team will conduct meetings or telephone calls with the MOE, key agencies and other government staff to discuss the EA studies and findings. Input and comments received from the public, aboriginal groups, government agencies and other stakeholders will be considered in the preparation of the final reports.

3.3.2 Task 10 - Submit Draft EA Reports to MOE & GRT

This task is the submission of the EA Reports in draft form to the MOE and includes tracking and follow-up to ensure all reports are received by the GRT. WM propose to hold a meeting with MOE and GRT to review the document as a group and provide a forum for questions on the project and documentation.

3.3.3 Task 11 - Submit Final EA Report to MOE

This task is the formal submission of the revised EA Report, based on comments received from the GRT and the MOE in Task 10.



DRAFT WORK PLAN FOR ENVIRONMENTAL ASSESSMENT

3.3.4 Task 12 - Technical Support During Review Period

The Project Team including WM, AECOM and other sub-consultant staff, will be available for technical support during the review period. This will include answering questions/comments received and documenting responses. It is anticipated that comments and responses will be presented in a separate report.

3.4 Consultation

The detailed work plan for completing the consultation program (Consultation Plan) will be provided as a Supporting Document to the TOR. This will include the proposed consultation approach for First Nations and Aboriginal groups. The following sections provide a summary of the consultation tasks.

3.4.1 Task 13 – EA Open House #1

EA Open House #1 will present the approved TOR and introduce the EA Study Work Plans. An overview of existing environmental conditions will be presented as well as work plans intended to characterize the environment for the EA. The consultation program and opportunities for the public to get involved in the process will be presented.

3.4.2 Task 14 - Workshop #1

Workshop #1 will offer an opportunity for the participants identify and develop new landfill footprints and locations for the various BREC facility components within the constrained areas.

3.4.3 Task 15 - Open House #2

EA Open House #2 will provide an opportunity for attendees to speak directly with WM and the consulting team on the alternative methods and ancillary facilities of proceeding with the new landfill. This will also provide an opportunity to further refine the criteria, indicators and measures proposed as part of the evaluation process. Information on current studies (baseline studies), approval process and planned consultation activities will also be provided.

3.4.4 Task 16 – Workshop #2

Workshop #2 will discuss the comparative evaluation methodology and invite participants to provide input on the relative importance of evaluation criteria;

3.4.4 Task 17 - Open House #3

Open House #3 will present a summary of studies to describe existing environmental conditions. The methodology to present the comparative evaluation of alternative methods and the identification of the preferred alternative will be presented;

3.4.5 Task 18 – Workshop #3

Workshop #3 will invite participants to discuss and provide input to the comparative evaluation of alternative methods and identification of a preferred alternative.



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3.4.5 Task 19 – Open House #4

EA Open House #4 will present the comparative evaluation of alternative methods (landfill footprints) and will identify a preferred alternative method (footprint). Further, this Open House will present the detailed impact assessment results of the preferred alternative for each discipline on the Project Team and the cumulative impact assessments of a new landfill footprint and other projects in the future in the area. Renderings and visualizations of the preferred alternative method will also be presented.

3.4.5 Task 20 – Open House #5

EA Open House #5 will present a summary of the EA Report.

3.4.6 Task 21 - Roundtable Discussions and Special Technical Sessions

Roundtable Discussion Meetings with a small number of people, initiated by either the consulting team or the community, will provide an opportunity to obtain further feedback on the study and community expectations for the landfill. These Roundtable Discussion meetings will be triggered by a request from the interested stakeholders. Special Technical Sessions, if necessary, on specific topics, (e.g., hydrogeology, landfill engineering and leachate management, etc.) for an invited group, will provide more information than what can be presented in an Open House forum.

3.4.7 Task 22 – Aboriginal Consultation

The following Aboriginal communities were contacted during the TOR phase and will be invited to participate in the EA:

- Algonquins of Pikwakanagan
- Algonquins of Bonnechere
- Algonquins of Greater Golden Lakes
- Algonquins of Ottawa (urban)
- Métis Nation of Ontario
- Métis National Council

Consultation activities associated with Aboriginal communities will include the following:

- Letters to each Aboriginal organization inviting them to consultation events, soliciting input and comments, and providing updates on the EA process; and
- Meetings to be held at the request of Aboriginal communities to engage them and obtain feedback on their interests and concerns.

Consultation with Algonquins of Ontario will be co-ordinated through the Algonquins of Ontario Consultation Office.

It is proposed that consultation with the Métis Nation of Ontario reflect the framework set out in the “Metis Consultation and Accommodation: A Guide for Government and Industry on Engaging Métis in Ontario”.

3.4.8 Task 23 - Website, EA Newsletters and Email Blasts

In this task, drafts and final text will be prepared for the WM website, EA Newsletters and email blasts. These communication vehicles are intended to be effective ways of providing information to the public and other stakeholders.



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3.4.9 Task 24 - Agency Coordination and Meetings

To ensure that agency contacts are coordinated and documented fully, AECOM will serve as coordinator to be a one-window point of contact with agencies. It is anticipated that meetings will be required between members of the project team and various regulatory agencies during the preparation of the EA. Further, as mentioned in Task 10, a separate working session with the GRT will be held to review the final EA Report.

4.0 SCHEDULE

The TOR is anticipated to be submitted to the MOE at in mid-June 2010 and it is expected that it will be posted on the EBR for public comment during the months of June and July 2010. A decision by the Minister on the TOR is expected this summer. Assuming that the Minister approves the TOR, the EA is expected to begin in October 2010.

As noted previously, the EA will be undertaken in three phases. Phase 1 is initiation of the EA process, Phase 2 is assessment of effects and identification of a preferred alternative and Phase 3 is preparation and submission of the EA documentation. At the completion of Phase 1 of the EA studies, existing environmental conditions will be characterized and conceptual designs for the landfill footprint development alternatives will be completed, including mitigation measures, as required. The bulk of the work in this phase will be the development of predictions for the various environmental components. At the completion of Phase 2 of the EA, a preferred alternative will be identified. The analysis methods for undertaking the comparative evaluation will be developed during the preparation of the draft TOR, and the detailed comparative evaluation task can be completed after the effects prediction analysis is complete.

In the Phase 3 of the EA, the EA documentation will be prepared, reviewed by the WM team and submitted to the MOE.



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Attachment 2 - Atmosphere Work Plan

The atmospheric environment is comprised of three sub-components: air quality, noise and odour. The following tasks will be undertaken to characterize existing environmental conditions, predict and assess potential environmental effects, determine mitigation measures (if required) and compare alternative methods of carrying out the undertaking:

- Compile and interpret information from existing data sources, including information available from the following resources:
 - Atmospheric studies from the previous EA;
 - Ongoing monitoring assessments for the current landfill;
 - Environment Canada and MOE air quality monitoring data from local stations; and,
 - Review site records related to air emission (odour) and noise complaints;
- Conduct site reconnaissance to confirm site information compiled from existing documentation and finalize location and nature of potential off-site receptors.
- Determine "linkages" with other components and data generation/transfer requirements (e.g., link with natural environment, link with transportation component).
- Consult with the MOE and other members of the GRT to decide on air dispersion / noise modeling approach and protocols to be used in the assessment.
- Based on consultation with MOE, the review of existing information and the project description, identify information gaps and data needs.
- Conduct on-site air quality/ odour sampling to characterize sources of odour and provide data for input to the air quality and odour assessments.
- Conduct noise measurement surveys to determine baseline noise levels at potential sensitive points of reception, and along haul routes, and to determine noise levels from on-site sources, i.e., landfill equipment operations.
- Define baseline conditions for the project, based on available monitoring data.

Upon collection of data required for the assessment of air quality and odour emissions, embark on the following studies:

- **Assessment of Alternatives:** This study will focus on the subject of the Environmental Assessment (i.e., the landfill) and assess emissions from the various alternatives. Emissions from each alternative (including delivery of raw wastes, LFG collection system, haul roads, excavation operations etc.) will be estimated. This will be followed by the execution of an atmospheric dispersion model for each alternative. The results of this study will be predicted maximum air quality and odour effects associated with each of the alternatives. This study will focus on property line and sensitive receptors. Results will be used to assist in ranking of project alternatives.
- **Ontario Regulatory Permitting Assessment:** This study will focus on the final selected alternative based on input from the various technical components, and specifically on the sources at the larger integrated waste management site that require regulatory permitting in Ontario under O.Reg.419/05. These sources include the proposed landfill gas collection system, the material recycling facility, and the organics composting operation. Emission estimates will be generated for each of the sources that will require regulatory permitting. These estimates will be input to an atmospheric dispersion model for the site to predict the maximum off-property effects of operations, and to determine the ability of the site to comply with the MOE's air quality criteria and odour guidelines. This study will be based on the Ontario regulatory receptor grid, and discrete sensitive receptors.
- **Cumulative Assessment:** This study will assess the combined impact of the larger integrated waste management site including sources of emissions that are exempt from regulatory



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permitting, such as roads and aggregate piles and other sources of air emissions within the local area. One option for achieving this will be combining model predictions of the proposed waste management site with available ambient monitoring data. This study will focus on receptors that represent the locations of monitoring stations, or areas of interest identified by the study team.

In support of the air quality and odour studies listed above the following will be completed:

- The development of an AERMOD atmospheric dispersion model for the site, which will be used to predict effects of the proposed operations. Based on the complexity (or simplicity) of local conditions, changes to the selected atmospheric dispersion model may be made. Changes to the dispersion model will be done in consultation with the MOE.
- Development of a site-specific meteorological dataset will be compiled, based on available well established datasets. The sources of the data will be reviewed with the MOE prior to finalization of the modelling dataset.
- Assessment of mitigation measures inherent in the project design and those that may be necessary to improve operations.

Upon collection of data required for the assessment of noise emissions, embark on the following studies:

- **Assessment of Alternatives:** This study will focus on the subject of the Environmental Assessment (i.e., the landfill) and assess emissions from the various alternatives. Emissions from equipment operating within each alternative (including LFG collection system, haul roads, excavation operations etc.) will be based on measurements from the existing landfill or emissions data from the existing database of similar noise sources. This will be followed by the execution of a noise prediction model for each alternative. The results of this study will be predicted worst-case hour operation associated with each of the alternatives. This study will focus on off-site sensitive points of reception. Results will be used to assist in ranking of project alternatives.
- **Ontario Regulatory Permitting Assessment:** This study will focus on the final selected alternative based on input from the various technical components, and specifically on the sources at the larger integrated waste management site that require regulatory permitting in Ontario in accordance with MOE noise guidelines. These sources include the proposed landfill gas collection system, the material recycling facility and the organics composting operation. Source noise emissions will be based on data from the existing database of similar noise sources and/or manufacturer's specifications. This data will be input to a noise prediction model for the site to predict the off-site noise emissions associated with the worst-case hour operations, and to determine the ability of the site to comply with the MOE's noise guidelines.

In support of the noise study listed above the following will be completed:

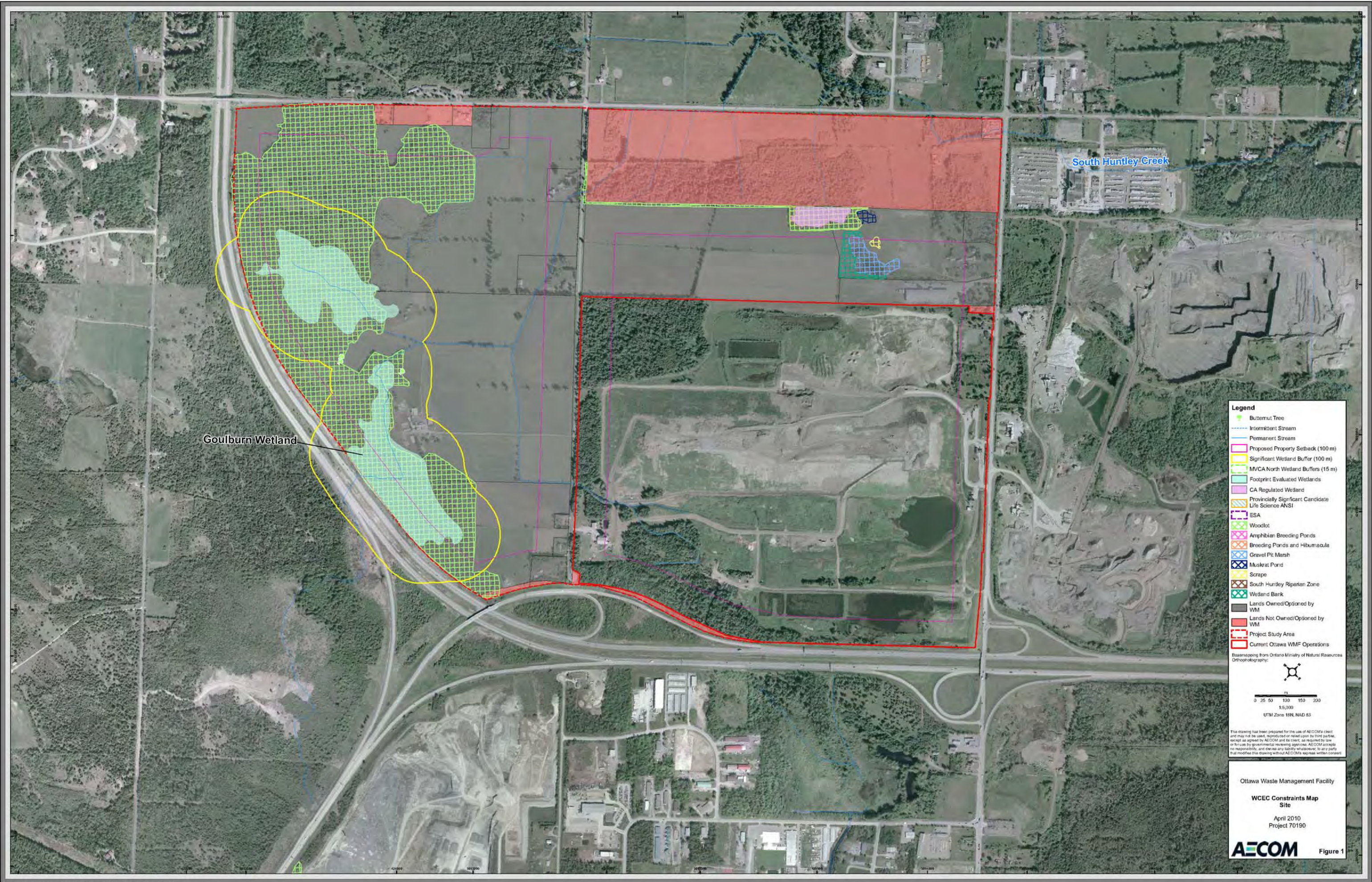
- The development of an ISO 9613 prediction model for the site, which will be used to predict effects of the proposed operations.
- Haul route noise assessment, using STAMSON or other approved prediction models, to predict the effects of the proposed haul route on sensitive points of reception.
- Provide acoustic specifications for mitigation measures inherent in the project design and those that may be necessary to improve operations and ensure compliance with MOE noise guidelines.
- Generate predictions (air quality, odour and noise) for use in non-atmospheric EA components (e.g., terrestrial component).
- Compile and document climate normals for the project site, and document the existing climatic conditions;
- Prepare a monitoring program appropriate for the preferred alternative, and conceptual contingency plan approaches;
- Document the assessments listed above, data sources and assessment results in an Atmospheric Technical Support Document (TSD) that will form an appendix to the EA;
- Participate in meetings with the government review agencies as required; and
- Provide technical support during the review of the draft EA by the regulatory agencies and public.



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TABLE 1-2 – CRITERIA, INDICATORS AND DATA SOURCES

Component	Criteria	Rationale	Indicators	Data Sources
Atmospheric Environment	Air quality	Waste disposal facilities and associated operations can produce gases containing contaminants that degrade air quality if they are emitted to the atmosphere. Construction and operation activities at a waste disposal facility can lead to increased levels of particulates (dust) in the air. Changes in air quality may affect human health.	<ul style="list-style-type: none"> • Modelled air concentrations of indicator compounds (organics, particulates) • Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions) 	<ul style="list-style-type: none"> • Environment Canada or MOE hourly meteorological data and climate normals • Site studies, reports and air quality monitoring data • Aerial photographic mapping and field reconnaissance • Air quality assessment
	Noise	Construction and operation activities at the facility may result in increased noise levels resulting from the site.	<ul style="list-style-type: none"> • Predicted site-related noise • Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions) 	<ul style="list-style-type: none"> • Site equipment noise measurements • Aerial photographic mapping and field reconnaissance • Noise prediction assessment
	Odour	Continued operation of the waste disposal facility may result in changes in the degree and frequency of odours from the site	<ul style="list-style-type: none"> • Predicted odour emissions • Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions) 	<ul style="list-style-type: none"> • Published and odour source data (including previous reports completed on site) • Environment Canada or MOE hourly meteorological data • Odour complaints history • Aerial photographic mapping and field reconnaissance • Odour assessment




Goulburn Wetland

South Huntley Creek

Legend

- Butternut Tree
- Intermittent Stream
- Permanent Stream
- Proposed Property Setback (100 m)
- Significant Wetland Buffer (100 m)
- MVCA North Wetland Buffers (15 m)
- Footprint Evaluated Wetlands
- CA Regulated Wetland
- Provincially Significant Candidate Life Science ANSI
- ESA
- Woodlot
- Amphibian Breeding Ponds
- Breeding Ponds and Hibernacula
- Gravel Pit Marsh
- Muskrat Pond
- Scrape
- South Huntley Riparian Zone
- Wetland Bank
- Lands Owned/Optioned by WM
- Lands Not Owned/Optioned by WM
- Project Study Area
- Current Ottawa WMF Operations

Basemap from Ontario Ministry of Natural Resources Orthophotography


 0 25 50 100 150 200
 1:5,000
 UTM Zone 18N, NAD 83

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Ottawa Waste Management Facility
WCEC Constraints Map
 Site
 April 2010
 Project 70190

Appendix A2

Environmental Noise Descriptors and Terminology



Environmental Noise Descriptors and Terminology

Abnormal noise events

Noises that are sufficiently infrequent as to be uncharacteristic of an area or that occur so close to the microphone as to dominate the measurements in an unrealistic manner. Consideration must be given to deleting occurrences of abnormal noise from the measurements to obtain a reasonably accurate representation of the sound environment. Examples of abnormal noises include a dog barking close to the microphone, a vehicle passing nearby, people talking in the vicinity of the microphone in a quiet environment, or a passing road grader.

Airborne Sound

Sound that reaches the point of interest by propagation through air

Ambient noise or sound

All noises that exist in an area and are not related to a facility under study. Ambient noise may include sound from other existing industrial facilities, transportation sources, animals, and nature. Context for ambient noise should be defined for each project.

Attenuation

The reduction of sound intensity by various means (e.g., air, humidity, porous materials, etc.)

A-weighted sound level

The sound level as measured on a sound level meter using a setting that emphasizes the middle frequency components similar to the frequency response of the human ear.

A-weighting shows that the measured sound pressure levels have been filtered using a frequency weighting network that mimics the response of the human ear.

The resultant sound pressure level with the associated unit "dBA" is therefore a representative of the subjective response of the human ear. The weightings are assigned in a way to reflect the higher sensitivity of human ear to sound in the mid and high frequency band as shown in the curve labelled A-weighting below:

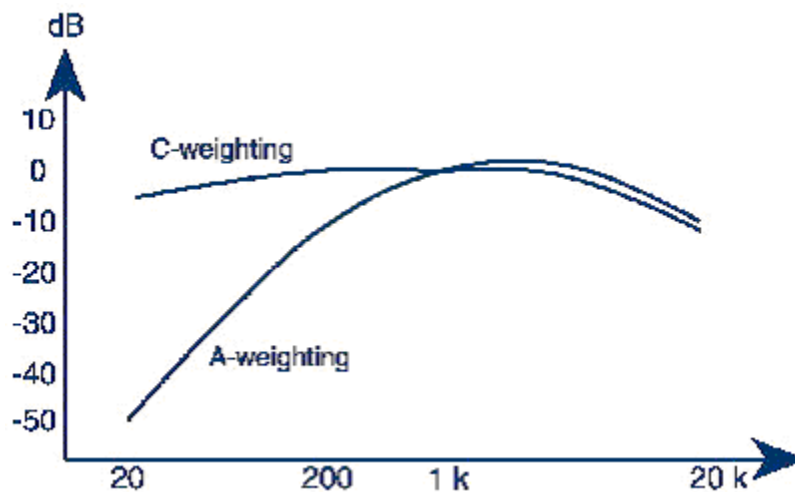


Figure A-1 Sound Weighting Network

Calibration

The procedure used for the adjustment of a sound level meter using a reference source of a known sound pressure level and frequency. Calibration must take place before and after the sound level measurements.

Daytime

Defined as the hours from 07:00 to 22:00.

dB (decibel)

A unit of measure of sound pressure that compresses a large range of numbers into a more meaningful scale. Hearing tests indicate that the lowest audible pressure is approximately 2×10^{-5} Pa (0 dB), while the sensation of pain is approximately 2×10^2 Pa (140 dB). Generally, an increase of 10 dB is perceived as twice as loud.

dBA

The decibel (dB) sound pressure level filtered through the A filtering network to approximate human hearing response at low frequencies.

Dwelling

Any permanently or seasonally occupied residence with the exception of an employee or worker residence, dormitory, or construction camp located within an industrial plant boundary. Trailer parks and campgrounds may qualify as a dwelling unit if it can be demonstrated that they are in regular and consistent use during the applicable season.

Energy equivalent sound level (Leq)

The Leq is the average A-weighted sound level over a specified period of time. It is a single-number representation of the cumulative acoustical energy measured over a time interval. If a sound level is constant over the measurement period, the Leq will equal the constant sound level where f is the fraction of time the constant level L is present.

Far Field

Describes a region in free space where the sound pressure level from a source obeys the inverse-square law (the sound pressure level decreases 6 dB with each doubling of distance from the source). Also, in this region the sound particle velocity is in phase with the sound pressure. Closer to the source where these two conditions do not hold constitutes the "near field" region.

Frequency

The number of times per second that the sine wave of sound or of a vibrating object repeats itself. The unit is expressed in hertz (Hz), formerly in cycles per second (cps).

Human Perception of Sound

The human perception of noise impact is an important consideration in qualifying the noise effects caused by projects. The following table presents a general guideline.

Table A-1 Human Perception of Sound

Increase in Noise Level (dBA)	Perception
1 to 3	Imperceptible to possibly perceptible
4 to 5	just-noticeable difference
6 to 9	marginally significant
10 or more	significant, perceived as a doubling of sound level

Impulsive Noise

Single or multiple sound pressure peak(s) (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 500 millisecond pauses. A sharp sound pressure peak occurring in a short interval of time.

Leq

See Energy equivalent sound level.

Night-time

Defined as the hours from 22:00 to 07:00.

Noise

Generally defined as the unwanted portion of sound.

Noise Level

This is the same as sound level except that it is applied to unwanted sounds, general the sound level at a point of reception.

Sound

A dynamic (fluctuating) pressure.

Sound level meter

An instrument designed and calibrated to respond to sound and to give objective, reproducible measurements of sound pressure level. It normally has several features that would enable its frequency response and averaging times to be changed to make it suitable to simulate the response of the human ear.

Sound Pressure Level (SPL)

The logarithmic ratio of the RMS sound pressure to the sound pressure at the threshold of hearing. The sound pressure level is defined by equation (1) where P is the RMS pressure due to a sound and P₀ is the reference pressure. P₀ is usually taken as 2.0 × 10⁻⁵ Pascals.

$$(1) \text{ SPL (dB)} = 20 \log(P_{RMS}/P_0)$$

Sound Power Level (PWL)

The logarithmic ratio of the instantaneous sound power (energy) of a noise source to that of an international standard reference power. The sound power level is defined by equation (2) where W is the sound power of the source in watts, and W₀ is the reference power of 10⁻¹² watts.

$$(2) \text{ PWL (dB)} = 10 \log(W/W_0)$$

Interrelationships between sound pressure level (SPL) and sound power level (PWL) depend on the location and type of source.

Spectrum

The description of a sound wave's resolution into its components of frequency and amplitude.

Speed of Sound in Air

344 m/s at 70°F (21°C) in air at sea level.

Tonal Components

Most industrial facilities typically exhibit a tonal component. Examples of tonal components are transformer hum, sirens, and piping noise. The EUB ID 99-8 specifies that the test for the presence of tonal components consists of two parts. The first part must demonstrate that the sound

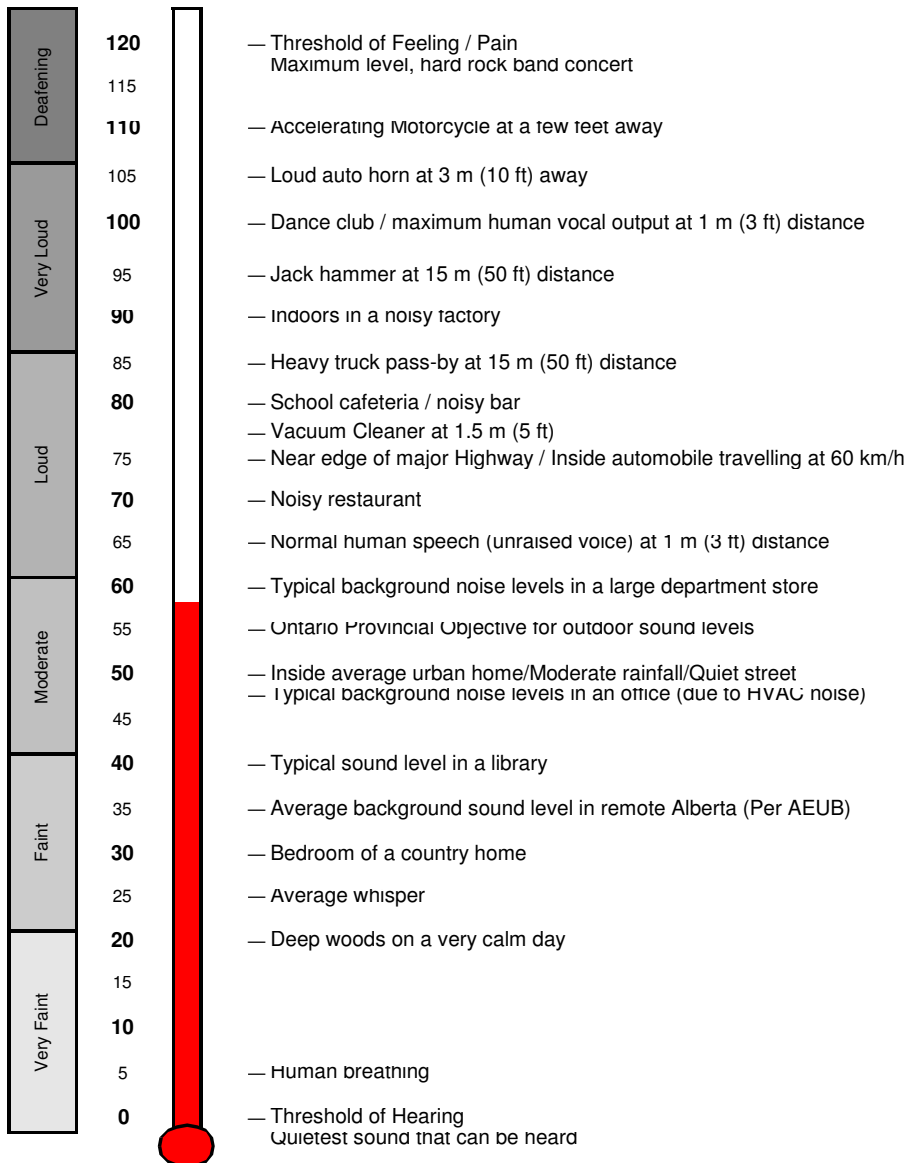
pressure level of any one of the slow-response, A-weighted, 1/3-octave bands between 20 and 16000Hz is 10 dBA or more than the sound pressure level of at least one of the adjacent bands within two 1/3-octave bandwidths. In addition, there must be a minimum of a 5 dBA drop from the band containing the tone within 2 bandwidths on the opposite side. The second part is that the tonal component must be a pronounced peak clearly obvious within the spectrum.



RELATIONSHIPS BETWEEN EVERYDAY SOUNDS

(dBA)

Sources of Noise

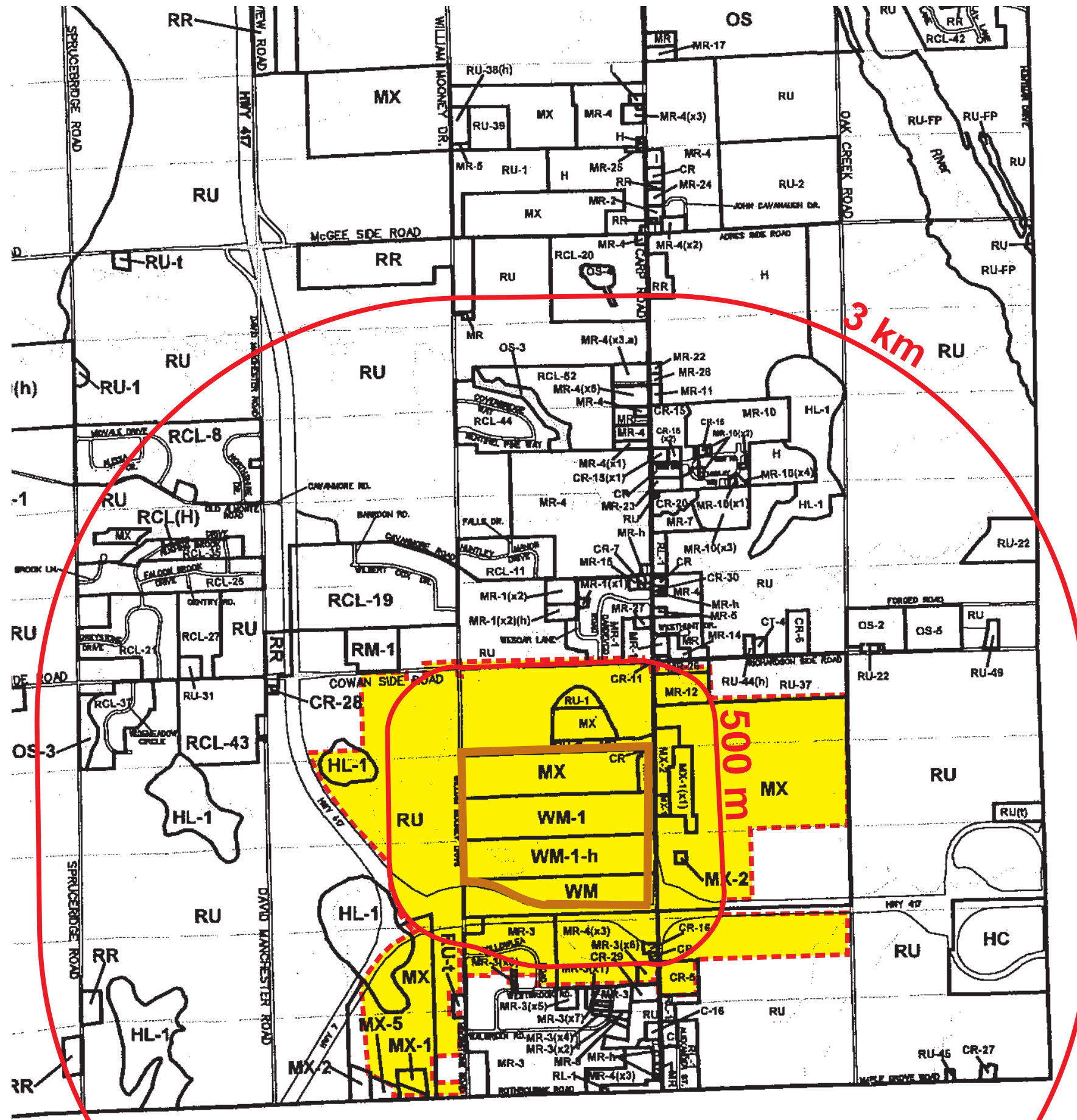





Appendix A3

Zoning



Figure 8
Former Township of
West Carleton
Zoning By-law (1981)



-  Subject Site (On-Site)
-  500 m / 3-km Study Areas (Vicinity)
-  Extent of properties affected by 500 m Study Area

ON-SITE

West Carleton Zoning By-law

In the Township of West Carleton Zoning By-law No. 266 of 1981, as amended, the site is zoned *WM*, *WM-1*, *WM-1h* – *Waste Management Zone* and *MX* – *Extractive Industrial Zone* (Schedule ‘A’ – Map 3). The current zoning designations for the subject site are shown in Figure 8 of this appendix.

Waste Management Zone

The *Waste Management Zone (WM)* permits only a ‘waste management facility’, which specifically excludes landfills:

“Waste Management Facility is a facility used for the transfer and loading, processing, separating, recycling, reuse and composting of solid non-hazardous waste. This definition may include a leachate treatment plant, and a gas control plant accessory to a WM-1 use, but shall not include landfilling.”

The portion of the site where landfilling is currently occurring is zoned *WM-1*, which is an exception zone that permits landfilling in addition to the waste management uses of the *WM* zone. The southerly half of the site is zoned *WM-1h*, which restricts the use of these lands for waste management purposes only. Once the holding designation is removed, landfilling would also be permitted on these lands. The holding designation may be removed only after the project proponent receives a Certificate of Approval from the Ontario Ministry of the Environment, pursuant to the provisions of the Ontario *Environmental Assessment Act*.

Extractive Industrial Zone

The *Extractive Industrial Zone (MX)* permits a narrow range of uses, including a gravel pit, an open storage area, a stone quarry and accessory buildings to these permitted uses. The only form of residential use permitted in this zone is an accessory mobile home to accommodate a security guard. The *MX* zone boundaries are consistent with the boundaries of the *Pits & Quarries* land use designation within the Official Plan of the Township of West Carleton. The zoning has not been updated to reflect the boundaries of the *Sand and Gravel Resource Area* in the Ottawa Official Plan.

Disposal Industrial Zone

The Town of Almonte Landfill Site, which is the only other designated landfill site within the boundaries of the former Township of West Carleton, is zoned *Disposal Industrial Zone (MD)*. As the *Disposal Industrial Zone* predates the *Waste Management Zone*, it was the policy of the former West Carleton planning department that the *WM-1* zoning would be used to designate any additional lands for landfill purposes.

WITHIN 500 METRES

West Carleton Zoning By-law (1981)

In the Township of West Carleton Zoning By-law No. 266 of 1981, as amended (refer Figure 8 of this appendix), the properties that are wholly or partly contained within a 500-metre radius of the landfill site are encompassed by five (5) zones, some of which have associated subzones and exceptions. The applicable zones and subzones are presented in Table B-4.1. The zones reflect the mineral extractive and other industrial activities of the area. Smaller portions of rural commercial and sensitive environment areas are also reflected.

City staff expect that the Draft Comprehensive Zoning By-law (May 2006) will be approved by Council in May 2007, however, it is anticipated that the by-law will be appealed, either wholly or partially. The appeals to the Draft Comprehensive Zoning By-law could take 2 to 3 years to resolve. The West Carleton Zoning By-law will therefore continue to be in effect until this time for those lands or sections of the Zoning By-law under appeal.

**TABLE B-4.1
ZONES WITHIN THE 500 METRE BUFFER**

Zone	Subzone(s)	Zone Name
MX	MX-1, MX-2, MX-5	Extractive Industrial Zone
MR	MR-3, MR-4, MR-12	Rural Industrial Zone
CR	CR-5, CR-16	Rural Commercial Zone
RU	RU-1	Rural Zone
HL	HL-1	Hazard Zone

The *Extractive Industrial (MX) Zone* uses are limited to a gravel pit, open storage area, stone quarry and associated administrative office. Properties within this zone correspond to the *Sand and Gravel Resource Area* and *Limestone Resource Area* of the Ottawa Official Plan, in other words, to the north, east and southwest of the subject site. The exception zones generally permit additional uses related to cement manufacturing and concrete batching.

The *Rural Industrial (MR) Zone* permits a range of mostly heavy industrial uses such as a warehouse, printing establishment, manufacturing plant, maintenance garage, etc. Two uses that potentially conflict with the 500 m buffer requirement of the Ottawa Official Plan are a livestock sales barn or accessory dwelling house. The MR-12 exception zone limits uses to cement manufacturing and accessory uses only. However, the MR-3 and MR-4 exception zones both prohibit certain uses such as residential, livestock sales barn, amongst others. It is unclear whether the exception zone prohibits uses due to the landfill

site and/or the extraction activities to the west and northeast of these zones. However, the exception zones are inconsistently applied if that is the case. The MR Zones both on the subject site and directly north of the site do not carry a similar exception zone to limit residential and livestock-related uses.

The *Rural Commercial (CR) Zone* permits rural commercial uses such as animal hospital, landscaping business, restaurant, automobile service station, and accessory dwelling units. Properties with this zone are located on Carp Road south of Highway 417. The exception zones relate to additional permitted uses and provisions, but no uses potentially incompatible with landfill or mineral extraction activities are prohibited.

The *Rural (RU) Zone* permits detached or accessory dwellings and a limited range of non-residential uses including cemetery, greenhouse, forestry use, nursery, woodlot, communications tower, amongst other similar uses. Properties zoned RU are spread around the 500m study area although concentrated to the north and west of the subject site. The RU-1 exception zone prohibits residential uses, however, the exception zone is limited to a small area to the north of the subject site.

The *Hazard (HL) Zone* does not permit any buildings or structures other than for an existing use. The HL-1 exception zone further permits an existing use.

In conclusion, the zones in the 500m study are generally fairly restrictive and in some cases, the exception zones further restrict uses. However, uses that are incompatible with the landfilling or mineral extraction activities are not consistently prohibited from the zones.



Appendix B1

Sound Power Level Determination



Table B1.1: Noise Source Data - Baseline
WCEC Landfill - Ottawa, Ontario

Notes to Table:

- Wherever possible, the Source ID matches the identifiers used in the ESDM report.
- Sound Power Levels of continuous noise sources, in dBA, do not include sound characteristic adjustments per NPC-104. Values are unadjusted, unmitigated PWLs. Sound Power Levels of impulsive noise sources, in dBA, are A-weighted incorporating an impulsive time weighting.
- Source Location: O = Outside of building, including the roof, I = Inside of building
- Sound Characteristic, per NPC-104
 S = Steady
 Q = Quasi-Steady Impulsive
 I = Impulsive
 B = Buzzing
 T = Tonal
 C = Cyclic
- Noise Control Measures
 S = Silencer
 A = Acoustic lining, plenum
 B = Barrier
 L = Lagging
 E = Acoustic Enclosure
 O = Other
 U = Uncontrolled
- Sound Power Level Data Source
 Man = Manufacturer's Data
 Mea = Measured Directly
 Pre = Previous CofA
 EC = Engineering Calc based on specifications
 Same ### = same type as source no. ###
 Hist = Historical Measured Data
- Due to the size and the varying nature of haul routes, a single coordinate could not be shown.
- PWL shown is PWL per unit length [m].

A-Weighting Network								
-39	-26	-16	-9	-3	0	1	1	-1

Source ID ^[1]	Source Description	Sound Power Level ^[2] (dBA)	Source Location ^[3] (I or O)	Sound Characteristics ^[4] (S,Q,I,B,T,C)	Existing Noise Control Measures ^[5] (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data (dB, if available)								PWL Data Source ^[6]	Relative Height Above Grade (m)	Local Grade Height (m)	Absolute Height Above Grade (m)	Source Co-ordinate (m)			Operating Scenario			
						31.5	63	125	250	500	1000	2000	4000					8000	X	Y	Z	Day	Evening	Night
EXISTING LANDFILL OPERATIONS																								
BLOWER_BLDG	Blower Bldg concentric opening	81	O	S	U	99.5	96.8	83.7	77.1	75.0	73.8	75.4	69.9	61.9	Mea	0.6	128.0	128.6	18424556	5014968	128.6	✓	✓	✓
C_FLARE_motor	Candlestick flare motor 875 cfm	94	O	S	U	88.2	80.3	79.6	84.2	92.4	81.8	81.1	77.3	Mea	1.0	128.3	129.3	18424525	5014981	129.3	✓	✓	✓	
C_FLARE_stk	Candlestick flare exhaust 875 cfm	95	O	S	U	103.1	102.4	96.5	91.8	90.4	91.0	88.8	81.6	77.7	Mea	10.4	128.5	138.9	18424532	5014988	138.9	✓	✓	✓
E_FLARE1_in	Smaller enclosed flare air intake at base	84	O	S	U	95.1	84.4	78.8	76.8	79.5	77.0	72.1	67.5	Mea	1.0	128.0	129.0	18424549	5014975	129.0	✓	✓	✓	
E_FLARE2_in	Larger enclosed flare air intake at base	84	O	S	U	95.1	84.4	78.8	76.8	79.5	77.0	72.1	67.5	Mea	1.0	128.0	129.0	18424541	5014968	129.0	✓	✓	✓	
GEN_IN_left	Energy Bldg sweep of air intakes; left half	93	O	S	U	85.4	94.4	97.2	89.7	87.2	88.1	86.1	81.8	81.5	Mea	4.6	125.0	129.6	18424770	5014690	129.6	✓	✓	✓
GEN_IN_right	Energy Bldg sweep of air intakes; right half	91	O	S	U	88.2	94.8	95.8	87.9	86.4	87.1	84.2	78.9	75.7	Mea	4.7	125.0	129.7	18424762	5014700	129.7	✓	✓	✓
GEN_OH1	Energy Building overhead door 1	95	O	S	U	83.9	92.3	98.2	94.3	90.8	89.8	88.1	82.7	85.2	Mea	1.7	125.0	126.7	18424774	5014686	126.7	✓	✓	✓
GEN_OH2	Energy Building overhead door 2	94	O	S	U	85.1	93.2	95.3	92.2	89.7	89.2	86.9	82.0	82.4	Mea	1.7	125.0	126.7	18424766	5014695	126.7	✓	✓	✓
GEN_OH3	Energy Building overhead door 3	93	O	S	U	86.9	90.3	92.4	89.5	88.2	88.8	85.4	79.0	76.2	Mea	1.7	125.2	126.8	18424758	5014704	126.8	✓	✓	✓
GEN_RAD1	Energy Building Smithco radiator fan 1	100	O	S	U	104.6	110.0	107.9	101.6	95.5	94.3	90.7	89.5	78.2	Mea	3.2	125.0	128.2	18424744	5014687	128.2	✓	✓	✓
GEN_RAD2	Energy Building Smithco radiator fan 2	100	O	S	U	104.6	110.0	107.9	101.6	95.5	94.3	90.7	89.5	78.2	Mea	3.2	125.0	128.2	18424748	5014682	128.2	✓	✓	✓
GEN_RAD3	Energy Building Smithco radiator fan 3	100	O	S	U	104.6	110.0	107.9	101.6	95.5	94.3	90.7	89.5	78.2	Mea	3.2	125.0	128.2	18424752	5014678	128.2	✓	✓	✓
GEN_RAD4	Energy Building Smithco radiator fan 4	100	O	S	U	104.6	110.0	107.9	101.6	95.5	94.3	90.7	89.5	78.2	Mea	3.2	125.0	128.2	18424756	5014673	128.2	✓	✓	✓
GEN_RAD5	Energy Building Smithco radiator fan 5	100	O	S	U	104.6	110.0	107.9	101.6	95.5	94.3	90.7	89.5	78.2	Mea	3.2	125.0	128.2	18424760	5014668	128.2	✓	✓	✓
GEN_STK1	Energy Bldg generator combustion exhaust 1	91	O	S	U	100.0	101.1	97.4	90.7	86.9	85.5	80.4	76.2	77.3	Mea	13.4	125.0	138.4	18424748	5014691	138.4	✓	✓	✓
GEN_STK2	Energy Bldg generator combustion exhaust 2	91	O	S	U	100.0	101.1	97.4	90.7	86.9	85.5	80.4	76.2	77.3	Mea	13.4	125.0	138.4	18424753	5014686	138.4	✓	✓	✓
GEN_STK3	Energy Bldg generator combustion exhaust 3	91	O	S	U	100.0	101.1	97.4	90.7	86.9	85.5	80.4	76.2	77.3	Mea	13.4	125.0	138.4	18424756	5014682	138.4	✓	✓	✓
GEN_STK4	Energy Bldg generator combustion exhaust 4	91	O	S	U	100.0	101.1	97.4	90.7	86.9	85.5	80.4	76.2	77.3	Mea	13.4	125.0	138.4	18424761	5014677	138.4	✓	✓	✓
GEN_STK5	Energy Bldg generator combustion exhaust 5	91	O	S	U	100.0	101.1	97.4	90.7	86.9	85.5	80.4	76.2	77.3	Mea	13.4	125.0	138.4	18424765	5014673	138.4	✓	✓	✓
GEN_WALL1	Energy Bldg wall 1	92	O	S	U	91.5	96.7	98.7	91.5	88.0	87.1	83.8	79.4	78.3	Mea	2.4	125.0	127.4	18424768	5014691	127.4	✓	✓	✓
GEN_WALL2	Energy Bldg wall 2	91	O	S	U	97.2	97.4	97.4	90.2	87.2	87.3	82.6	77.4	73.3	Mea	2.4	125.0	127.4	18424760	5014701	127.4	✓	✓	✓
GEN_WALL3	Energy Bldg wall 3	90	O	S	U	89.0	93.4	97.3	89.6	86.0	84.7	81.7	77.0	78.1	Mea	2.4	125.0	127.4	18424775	5014684	127.4	✓	✓	✓

Table B1.2: SOURCE LEVEL DATA AND SPL TO PWL CONVERSIONS - Version 3.22

WCEC Ottawa Landfill - Ottawa, Ontario

Notes to Table:

- All measurements conducted on **April 19, 2011**, using Larson Davis LD-824 SLM's / RTA's.
- All measurements were consistent with ISO 3744:1994(E) and ISO 3746:1995 measurement standards, and the applicable portions of the MOE Publication NPC-103.
- Calc Type of C, A, or S refer to the source geometry, and represent Cylindrical, Area, or Spherical sources, respectively.
- SPL Ref Distance refers to the radial distance from the microphone to the acoustic centre of a spherical source or the symmetrical axis of a cylindrical source.
- Length refers to the length of a cylindrical source or line source. A length of 1.0 m may be used to define a PWL per metre.
- Net surface area refers to surface area corrected for partition coefficient. Partition coefficient applies only to spherical and cylindrical geometries. Sound power level is estimated using an area correction $10 \log A$.
- Refer to "Spectral Weighting" column for dB or dBA application information.
- Where the radius of a spherical or cylindrical radiator is less than 1/4 wavelength of the octave band being measured, the estimated PWL will be left blank.

A-WEIGHTING (dB) - Applied to total PWL									
-39.4	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0	-1.1	

1/4 WAVELENGTH CRITERION (m)									
2.722	1.361	0.686	0.343	0.172	0.086	0.043	0.021	0.011	

Measurement Reference	Source ID	Source Description	Calc Type ^[3] (A, C, or S)	SPL Ref Distance ^[4] (S or C) (m)	Length ^[5] (C only) (m)	Area (A only) (m ²)	Partition Coefficient (S or C) (%)	Net Surface Area ^[6] (m ²)	Spectral Weighting (A or Flat)	Octave Band Sound Pressure Level Data (dB or dBA) ^[7]										Total (dBA)	Sound Power Level Adjustment		Octave Band Sound Power Level Data ^[8] (dB or dBA) ^[7]										Total (dBA)
										31.5	63	125	250	500	1000	2000	4000	8000	31.5		63	125	250	500	1000	2000	4000	8000					
										(dB)	Purpose																						
110419 824 kit1 NTN PV 1100798 File_002	C_FLARE_stk	Candlestick flare exhaust 875 cfm	S	21.0			50%	2769.5	Flat	68.7	68.0	62.1	57.4	56.0	56.6	54.4	47.2	43.3	60.9			103.1	102.4	96.5	91.8	90.4	91.0	88.8	81.6	77.7	95.3		
110419 824 kit1 NTN PV 1100798 File_003	C_FLARE_motor	Candlestick flare motor 875 cfm	S	2.0			50%	25.1	Flat	71.7	74.2	66.3	65.6	70.2	78.4	67.8	67.1	63.3	79.6				88.2	80.3	79.6	84.2	92.4	81.8	81.1	77.3	93.6		
110419 824 kit1 NTN PV 1100798 File_004	GEN_IN_left	Energy Bldg sweep of air intakes; left half	A			24.0		24.0	Flat	71.6	80.6	83.4	75.9	73.4	74.3	72.3	68.0	67.7	79.2			85.4	94.4	97.2	89.7	87.2	88.1	86.1	81.8	81.5	93.0		
110419 824 kit1 NTN PV 1100798 File_005	GEN_IN_right	Energy Bldg sweep of air intakes; right half	A			24.0		24.0	Flat	74.4	81.0	82.0	74.1	72.6	73.3	70.4	65.1	61.9	77.6			88.2	94.8	95.8	87.9	86.4	87.1	84.2	78.9	75.7	91.4		
110419 824 kit1 NTN PV 1100798 File_006	BLOWER_BLDG	Blower Bldg concentric opening	S	5.6			25%	98.5	Flat	79.6	76.9	63.8	57.2	55.1	53.9	55.5	50.0	42.0	61.0			99.5	96.8	83.7	77.1	75.0	73.8	75.4	69.9	61.9	81.0		
110419 824 kit1 NTN PV 1100798 File_009	E_FLARE_in	Enclosed flare air intake at base	S	2.3			100%	66.4	Flat	84.4	76.9	66.2	60.6	58.6	61.3	58.8	53.9	49.3	65.4				95.1	84.4	78.8	76.8	79.5	77.0	72.1	67.5	83.6		
110419 824 kit1 NTN PV 1100798 File_016	GEN_STK1to5	Energy Bldg generator combustion exhausts 5 of 5	S	94.6			50%	56162.1	Flat	59.5	60.6	56.9	50.2	46.4	45.0	39.9	35.7	36.8	50.1			107.0	108.1	104.4	97.7	93.9	92.5	87.4	83.2	84.3	97.6		
110419 824 kit2 PV 1100798 File_001	GEN_OH1	Energy Bldg sweep of overhead door 1	A			13.0		13.0	Flat	72.8	81.2	87.1	83.2	79.7	78.7	77.0	71.6	74.1	84.2			83.9	92.3	98.2	94.3	90.8	89.8	88.1	82.7	85.2	95.4		
110419 824 kit2 PV 1100798 File_002	GEN_WALL1	Energy Bldg sweep of wall 1	A			43.9		43.9	Flat	75.1	80.3	82.3	75.1	71.6	70.7	67.4	63.0	61.9	75.9			91.5	96.7	98.7	91.5	88.0	87.1	83.8	79.4	78.3	92.3		
110419 824 kit2 PV 1100798 File_003	GEN_OH2	Energy Bldg sweep of overhead door 2	A			13.0		13.0	Flat	74.0	82.1	84.2	81.1	78.6	78.1	75.8	70.9	71.3	83.0			85.1	93.2	95.3	92.2	89.7	89.2	86.9	82.0	82.4	94.1		
110419 824 kit2 PV 1100798 File_004	GEN_WALL2	Energy Bldg sweep of wall 2	A			49.6		49.6	Flat	80.2	80.4	80.4	73.2	70.2	70.3	65.6	60.4	56.3	74.5			97.2	97.4	97.4	90.2	87.2	87.3	82.6	77.4	73.3	91.4		
110419 824 kit2 PV 1100798 File_005	GEN_OH3	Energy Bldg sweep of overhead door 3	A			13.0		13.0	Flat	75.8	79.2	81.3	78.4	77.1	77.7	74.3	67.9	65.1	81.5			86.9	90.3	92.4	89.5	88.2	88.8	85.4	79.0	76.2	92.7		
110419 824 kit2 PV 1100798 File_006	GEN_WALL3	Energy Bldg sweep of wall 3	A			22.8		22.8	Flat	75.4	79.8	83.7	76.0	72.4	71.1	68.1	63.4	64.5	76.6			89.0	93.4	97.3	89.6	86.0	84.7	81.7	77.0	78.1	90.2		
110419 824 kit1 NTN PV 1100798 File_017 - 110419 824 kit1 NTN PV 1100798 File_016	GEN_RAD1to5	Energy Bldg Smithco radiator fans 5 of 5	S	25.0			50%	3925.0	Flat	75.7	81.1	79.0	72.7	66.6	65.4	61.8	60.6	49.3	71.4			111.6	117.0	114.9	108.6	102.5	101.3	97.7	96.5	85.2	107.4		

MEASUREMENT EQUIPMENT



Sound Level Meter 824 Kit 1

Sound Level Meter	
Make and Model	Larson-Davis Model 824 SLM and RTA
Serial No.	824A0450
Pre-amplifier	
Make and Model	Larson-Davis Model PRM902
Serial No.	0836
Microphone	
Make and Model	Larson-Davis Model 2559 precision air-condenser microphone
Serial No.	3020
Calibrator	
Make and Model	Larson-Davis CAL200 precision acoustic calibrator (1000 Hz)
Serial No.	3192

MEASUREMENT EQUIPMENT



Sound Level Meter 824 Kit 2

Sound Level Meter	
Make and Model	Larson-Davis Model 824 SLM and RTA
Serial No.	824A1556
Pre-amplifier	
Make and Model	Larson-Davis Model PRM902
Serial No.	2072
Microphone	
Make and Model	Larson-Davis Model 2559 precision air-condenser microphone
Serial No.	3118
Calibrator	
Make and Model	Larson-Davis CAL200 precision acoustic calibrator (1000 Hz)
Serial No.	3029



Environment
Canada

Environnement
Canada



Hourly Data Report for April 19, 2011

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

OTTAWA MACDONALD-CARTIER INT'L A
ONTARIO

Latitude: 45°19'21.000" N Longitude: 75°40'09.000" W Elevation: 114.00 m

Climate ID: 6106000

WMO ID: 71628

TC ID: YOW

Hourly Data Report for April 19, 2011

<u>T</u> <u>i</u> <u>m</u> <u>e</u>	<u>Temp</u> °C	<u>Dew Point</u> <u>Temp</u> °C	<u>Rel</u> <u>Hum</u> %	<u>Wind</u> <u>Dir</u> 10's deg	<u>Wind</u> <u>Spd</u> km/h	<u>Visibility</u> km	<u>Stn</u> <u>Press</u> kPa	<u>Hmdx</u>	<u>Wind</u> <u>Chill</u>	<u>Weather</u>
00:00	0.6	-2.7	79	28	6	24.1	100.37			Cloudy
01:00	0.7	-3.0	76	35	7	24.1	100.40			Mostly Cloudy
02:00	0.2	-6.4	61	35	15	24.1	100.47			Mainly Clear
03:00	-0.7	-7.1	62	36	13	24.1	100.52	-5		Mainly Clear
04:00	-1.9	-6.9	69	35	11	24.1	100.60	-6		Clear
05:00	-1.8	-6.6	70	32	6	24.1	100.72	-4		Clear
06:00	-1.3	-5.8	71	34	11	24.1	100.81	-5		Mainly Clear
07:00	0.9	-6.4	58	36	11	24.1	100.88			Mainly Clear
08:00	2.0	-7.2	50	4	13	24.1	100.92			Mainly Clear
09:00	2.8	-7.0	48	4	13	24.1	101.00			Mainly Clear
10:00	3.9	-6.4	47	29	6	24.1	100.97			Mainly Clear
11:00	5.1	-5.9	45	33	6	24.1	100.89			Mainly Clear
12:00	5.8	-6.0	42	34	7	24.1	100.88			Mainly Clear
13:00	6.9	-6.2	39	27	7	24.1	100.91			Mainly Clear
14:00	8.3	-6.1	35	4	7	24.1	100.81			Mostly Cloudy
15:00	7.7	-8.4	31	1	11	24.1	100.78			Mostly Cloudy
16:00	8.6	-8.2	30	5	9	24.1	100.70			Mostly Cloudy
17:00	8.3	-8.0	31	7	15	24.1	100.68			Mostly Cloudy
18:00	7.8	-7.0	34	7	11	24.1	100.68			Cloudy
19:00	7.2	-7.3	35	7	11	24.1	100.70			

20:00	6.9	-7.0	36	7	13	25.0	100.72	Cloudy
21:00	6.4	-8.0	35	7	15	25.0	100.71	Cloudy
22:00	5.5	-7.6	38	8	15	25.0	100.72	Cloudy
23:00	5.3	-6.0	44	7	17	25.0	100.58	Cloudy

Legend

M = Missing

E = Estimated

NA = Not Available

‡ = Partner data that is not subject to review by the National Climate Archives

We'd like to hear from you! Please click ["Contact Us"](#) to share your comments and suggestions.
Date Modified: 2012-01-11



Appendix B2

Detailed Traffic Information



Existing Landfill Related Traffic (provided by AECOM)

Material Summary Report

Criteria: 01/01/2009 12:00 AM to 12/31/2009 11:59 PM

Business Unit Name: West Carleton (Ottawa) Landfill(CAN) Amounts are in Canadian Dollars

User: Susan

Date: Apr 01 2011, 7:48:39 AM

Operation Type: All

Customer Name: All

Ticket Type: All

Customer Type: All

PMT Category: All

Material	Material Description	Loads
CDW	C&D WASTE	155
CDW OUT	C&D OUTSIDE GNZ	25
Cont Soil Met-P100034ON	Cont. Soil - Petroleum, PMT is RGC	408
Cont Soil Met-P100034ON	Cont. Soil - Metals	26
Cont Soil Pet-RGC-Metric Ton	Cont. Soil - Petroleum, PMT is RGC	982
Cont Soil Pet-RGC-P100026ON	Cont. Soil - Petroleum, PMT is RGC	3
Cont Soil Pet-RGC-P100028ON	Cont. Soil - Petroleum, PMT is RGC	13
Cont Soil Pet-RGC-P100030ON	Cont. Soil - Petroleum, PMT is RGC	1
Cont Soil Pet-RGC-P100032ON	Cont. Soil - Petroleum, PMT is RGC	1
Cont Soil Pet-RGC-P100040ON	Cont. Soil - Petroleum, PMT is RGC	3
Cont Soil Pet-RGC-P100885ON	Cont. Soil - Petroleum, PMT is RGC	3
Cont Soil Pet-RGC-P100897ON	Cont. Soil - Petroleum, PMT is RGC	76
Cont Soil Pet-RGC-P100898ON	Cont. Soil - Petroleum, PMT is RGC	86
Cont Soil Pet-RGC-P100918ON	Cont. Soil - Petroleum, PMT is RGC	9
Cont Soil RCG-Metric Ton	Cont. Soil - Petroleum-RGC	2
Cont Soil RCG-P100034AON	Unspecified Contaminated Soil, PMT RCG	180
ContSoilPet-P100000ON	Cont. Soil - Petroleum-RGC	67
ContSoilPet-P100012ON	Cont. Soil - Petroleum-RGC	148
ContSoilPet-P100130ON	Cont. Soil - Petroleum-RGC	2
ContSoilPet-P100142ON	Cont. Soil - Petroleum-RGC	16
ContSoilPet-RGC-Metric Ton	Cont. Soil - Petroleum-RGC	3
ELE	ELECTRONICS	5
ICI	ICI WASTE	424
ICI CITY	ICI WITHIN GNZ	227
ICI OUT	ICI OUTSIDE GNZ	48
MSW	MS WASTE	1433
MSW-Metric Ton	MSW Permitted Material, PMT MSW	101
SLUDGE-Metric Ton	MSW Permitted Material, PMT MSW	1
SludgeFilter-Metric Ton	MSW Permitted Material, PMT MSW	302
SludgeIndus-Metric Ton	Sludge Industrial	6
Special Misc-Metric Ton	Cont. Soil - Petroleum, PMT is RGC	14
Special Misc-Metric Ton	Special Waste Misc	1
Spwaste Plant-Metric Ton	Special Waste Plant Waste	2
WOD	WOOD WASTE	8

Total

4781

Roadway Traffic Volume (provided by AECOM)

	2009		2011		2011		2009
	Highway 417		Carp		Richardson		Highway 417
	West of Carp	East of Carp	North of 417	South of 417	West of Carp	East of Carp	West of Hwy 7
AADT	24860	43045	10875	19206	4740	6985	23935
peak hour	2337	4046	1067	1856	557	668	2250
SAWDT	27843	48210	12723	22471	5546	8172	26089

	Ramp 16	Ramp 25	Ramp 35	Ramp 51	Ramp 61	Ramp 62	Ramp 63
AADT	1668	7078	3464	1676	10988	2637	8351
peak hour	242	908	404	246	1255	200	864
SAWDT	1861	8246	4066	1854	12982	3116	9866

AADT: Annual Average Daily Traffic
SAWDT: Summer Average Weekday Traffic

Carp Road

	North of 417		
	Cars	Medium	Heavy
0:00	31	3	0
1:00	20	1	0
2:00	11	1	1
3:00	22	1	1
4:00	24	3	6
5:00	155	25	5
6:00	592	97	8
7:00	864	131	17
8:00	714	148	12
9:00	576	185	11
10:00	538	128	22
11:00	559	134	13
12:00	660	134	17
13:00	648	147	16
14:00	663	138	21
15:00	837	124	15
16:00	931	128	8
17:00	800	77	1
18:00	499	38	2
19:00	328	28	4
20:00	290	13	1
21:00	195	8	0
22:00	159	11	0
23:00	73	4	0

	South of 417		
	Cars	Medium	Heavy
0:00	65	4	1
1:00	46	1	1
2:00	19	3	0
3:00	26	1	0
4:00	48	6	3
5:00	243	36	3
6:00	979	102	8
7:00	1473	104	15
8:00	1518	151	5
9:00	1191	134	9
10:00	925	126	22
11:00	998	100	6
12:00	1191	103	8
13:00	1101	113	11
14:00	1100	130	16
15:00	1477	110	14
16:00	1747	101	8
17:00	1788	55	3
18:00	1260	24	2
19:00	750	13	5
20:00	607	7	2
21:00	500	7	2
22:00	540	8	0
23:00	164	1	0

Richardson Road

	West of Carp		
	Cars	Medium	Heavy
0:00	15	3	0
1:00	5	0	0
2:00	5	1	0
3:00	7	1	0
4:00	6	2	1
5:00	76	11	0
6:00	226	66	1
7:00	353	76	0
8:00	289	45	1
9:00	222	48	1
10:00	179	233	1
11:00	210	37	0
12:00	207	40	1
13:00	200	59	1
14:00	205	47	1
15:00	300	52	2
16:00	395	68	2
17:00	374	24	0
18:00	255	18	0
19:00	160	16	0
20:00	141	8	0
21:00	100	4	0
22:00	91	6	0
23:00	38	3	0

Highway 417 10% night 90% day

hourly volume as % of AADT	
Time	Percentage
0:00	0.74%
1:00	0.41%
2:00	0.31%
3:00	0.27%
4:00	0.42%
5:00	1.69%
6:00	4.95%
7:00	5.77%
8:00	5.44%
9:00	5.61%
10:00	5.76%
11:00	6.29%
12:00	6.21%
13:00	6.35%
14:00	6.72%
15:00	7.29%
16:00	8.26%
17:00	7.54%
18:00	5.74%
19:00	4.31%
20:00	3.63%
21:00	3.07%
22:00	1.95%
23:00	1.26%

Cars: motorcycle, cars, cars with trailer, pickups, pickups with trailer
 Medium: bus, single unit truck with dual rear axle, 3 axle truck with less than 5.49 m spacing between axle 2 and 3, 4 axle truck
 Heavy: Transports, 3 axle truck with greater than 5.69m spacing between axles 2 and 3, 4 axle truck with greater than 1.52m spacing between axles 2 and 3 and less than 1.07m spacing between axles 3 and 4 and 4 axle trucks with greater than 1.52m spacing between axles 2 and 3 and greater than 3.05m spacing between axles 3 and 4, any other trucks with 5 or 6 axles

Roadway Traffic Volume (provided by AECOM)

2009 Highway 417		
East of Carp	West of Carp	West of Highway 7
Vehicles	Vehicles	Vehicles
0:00		199
1:00		88
2:00		81
3:00		109
4:00		122
5:00		591
6:00		1533
7:00		1818
8:00		1585
9:00		1570
10:00		1707
11:00		1840
12:00		1775
13:00		1979
14:00		2117
15:00		2523
16:00		2782
17:00		2618
18:00		2154
19:00		1508
20:00		1122
21:00		864
22:00		705
23:00		462

No data collected by MTO

2009 Highway 7	
South of Highway 417	Vehicles
0:00	74
1:00	70
2:00	67
3:00	94
4:00	275
5:00	901
6:00	1586
7:00	1483
8:00	1110
9:00	827
10:00	803
11:00	790
12:00	812
13:00	781
14:00	875
15:00	850
16:00	874
17:00	869
18:00	813
19:00	546
20:00	425
21:00	324
22:00	255
23:00	161

2011 Richardson Side Road			
	East of Carp		
	Cars	Light	Heavy
6:30-7:30	204	9	39
7:30-8:30	261	6	26
15:00-16:00	206	11	8
16:00-17:00	344	8	22
17:00-18:00	356	4	6

This is the only data available for Richardson Side Road East of Carp

* Traffic data provided by AECOM.

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			1990	T	2450	4450	4250	1500	1.5
			1991	T	2550	4600	4400	1550	1.1
			1992	LT	2300	3150	3100	1750	1.9
			1993	LT	2500	3400	3400	1900	1.4
			1994	LT	2750	3850	3800	2050	1.4
			1995	LT	2850	4250	4000	2000	1.6
			1996	LT	2900	4250	4050	2050	0.9
			1997	LR	2950	4450	3600	2200	0.5
			1998	LR	3250	4800	3850	2300	0.8
			1999	LR	3150	4650	3800	2250	1.1
			2000	LR	3250	4750	3850	2350	1.1
			2001	IR	3500	4500	4050	2850	1.1
			2002	IR	3400	4400	3900	2750	1.1
			2003	IR	3550	4600	4100	2900	0.9
			2004	IR	3400	4300	3850	2750	1.5
			2005	IR	3550	4450	4000	2900	1.0
			2006	IR	3600	4350	3950	3050	0.8
			2007	IR	3450	4200	4150	2900	0.8
6	FOSTER DR-ESPANOLA S LTS-START OF NA ESPANOLA-HWY TRANSFER	3.9							
6	TUDHOPE ST-ESPANOLA-END OF NA	2.7	1988	IT	5900	8500	7800	4350	0.2
			1989	CTR	6550	8300	7900	5600	1.7
			1990	CTR	6850	8500	8000	5900	0.9
			1991	CTR	7000	8800	8700	6000	0.6
			1992	CTR	6600	8100	7800	5700	1.2
			1993	CTR	6700	8400	8100	5600	1.4
			1994	CTR	7100	9100	8650	6000	1.9
			1995	CTR	7200	9200	8850	6050	1.1
			1996	CTR	7350	9400	9050	6200	1.5
			1997	CTR	7650	9800	9400	6450	0.4
			1998	CTR	7700	9800	9400	6500	0.4
			1999	CTR	8050	10100	9750	6800	0.1
			2000	CTR	7750	9750	9400	6550	0.8
			2001	CTR	7850	9900	9500	6600	0.3
			2002	CTR	7950	10000	9600	6700	0.6
			2003	CTR	8050	10100	9750	6850	0.5
			2004	CTR	8050	10000	9600	6850	0.5
			2005	CR	8250	10000	9600	6950	0.2
			2006	CR	8350	10100	9700	7050	0.1
			2007	CR	8450	10200	10200	7100	0.0
6	HWY 17 -HWY END END OF HWY 6								
7	HWY S 417&17 IC	2.5	1988	C	9800	10800	10800	8800	0.1
			1989	IC	10200	11700	11500	9000	0.0
			1990	C	11500	12700	12700	10300	0.4
			1991	IC	10200	11500	11300	9000	0.2

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			1992	IC	11800	13000	12900	10700	0.4
			1993	CTR	12300	15400	14800	10400	0.3
			1994	CTR	12700	16300	15500	10700	0.4
			1995	CTR	12800	16400	15700	10800	0.7
			1996	CTR	12900	16500	15900	10900	0.5
			1997	C	13000	14600	14800	11700	0.6
			1998	C	13300	15000	15000	12000	0.4
			1999	C	13400	15100	15100	12100	0.6
			2000	C	13800	15500	15600	12400	0.4
			2001	C	13800	15600	15600	12400	0.6
			2002	C	13900	15600	15700	12500	0.5
			2003	C	14200	15900	16000	12800	0.5
			2004	C	14200	15900	16000	12800	0.1
			2005	C	14400	16000	16200	12900	0.5
			2006	C	14400	16000	16100	13000	0.3
			2007	C	14700	16300	16600	13200	0.5
7	HAZELDEAN RD -RMOG RD 36 (S)	7.6	1988	CR	10350	13400	12400	8500	0.6
			1989	IC	10700	12300	12000	9500	0.7
			1990	IC	10800	12300	12000	9600	0.5
			1991	C	11800	12900	13000	10700	0.5
			1992	IC	11800	13000	12900	10700	0.5
			1993	CTR	11900	14900	14300	10100	0.7
			1994	CTR	12100	15500	14800	10200	0.8
			1995	CTR	12500	16000	15400	10500	0.7
			1996	CTR	12800	16400	15700	10800	0.6
			1997	C	13100	14700	14900	11800	0.4
			1998	C	13600	15300	15400	12300	0.4
			1999	C	14800	16700	16700	13300	0.4
			2000	C	14700	16500	16600	13200	0.2
			2001	C	15100	17100	17100	13600	0.6
			2002	C	15200	17000	17200	13700	0.5
			2003	C	15800	17700	17900	14200	0.5
			2004	C	15500	17300	17400	14000	0.5
			2005	C	15600	17400	17500	14000	0.6
			2006	C	15500	17200	17400	13900	0.3
			2007	C	16600	18400	18700	14900	0.6
7	DWYER HILL RD(N)-DWYER HILL RD(S)	3.8	1988	CR	10350	13400	12400	8500	0.6
			1989	IC	10850	12400	12200	9600	0.5
			1990	CR	11000	13600	12600	9800	0.9
			1991	C	12350	13500	13700	11200	0.5
			1992	IC	12000	13300	13200	10900	1.0
			1993	T	13600	24600	23900	8400	0.7
			1994	IR	14000	17100	15100	11900	0.5
			1995	IR	14300	17600	15400	12500	0.8

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			2005	UC	63800	67500	74600	59800	0.3
			2006	UC	65800	69600	76900	61900	0.4
			2007	UC	67800	71900	78500	63600	0.5
417	TERRYFOX DR IC	2.4	1988	C	26350	29200	29200	23700	1.0
			1989	C	27550	30500	30800	24700	0.5
			1990	C	29000	32100	32100	26000	0.4
			1991	C	30500	33500	33800	27700	0.4
			1992	C	30400	32800	33700	27900	0.7
			1993	C	30400	32800	33700	28200	0.4
			1994	C	34100	37200	38200	30700	0.2
			1995	UC	35700	37100	40700	33200	0.3
			1996	UC	37200	39600	43500	35300	0.3
			1997	UC	38800	40700	45400	36500	0.4
			1998	UC	40300	42900	47200	38300	0.5
			1999	UC	41500	44200	48600	39400	0.6
			2000	UC	43000	45800	50700	40400	0.5
			2001	UC	44400	47500	52400	41700	0.4
			2002	UC	45800	48800	53900	42900	0.3
			2003	C	48100	53900	54400	43300	0.5
			2004	C	48700	54400	54800	44000	0.4
			2005	C	50100	55800	56200	45000	0.3
			2006	C	50800	56400	56900	45700	0.4
			2007	C	53000	58900	59700	47600	0.4
417	PALLADIUM RD IC	2.1	1997	IC	41100	41100	41100	41100	0.2
			1998	IC	41200	41200	41200	41200	0.4
			1999	IC	41300	46000	46400	36600	0.3
			2000	IC	41400	46200	46500	36700	0.4
			2001	IC	41500	46500	46500	36500	0.4
			2002	IC	42400	47300	47600	37400	0.3
			2003	IC	42200	46800	47300	37100	0.4
			2004	IC	42400	47200	47700	37600	0.6
			2005	IC	42600	47400	47800	37600	0.3
			2006	IC	42800	47500	48000	37900	0.3
			2007	IC	43000	47800	49200	38000	0.6
417	CARP RD IC -OTT/CARL RD 5	0.9	1988	CR	21800	28300	26100	18000	0.7
			1989	CR	22850	29200	27100	19100	0.8
			1990	CR	23000	28500	26400	20600	0.4
			1991	C	24500	30100	28100	22000	0.1
			1992	CR	24900	30600	28300	22400	1.0
			1993	CR	24900	30600	28600	22400	1.0
			1994	CR	24900	30600	28400	22400	0.9
			1995	CR	26100	32400	30800	22100	0.6
			1996	CR	27300	33900	32000	23100	0.3
			1997	CR	28500	35300	33600	24100	0.3

Highway	Location Description	Dist	Year	Patt Type	AADT	SADT	SAWDT	WADT	AR
			1998	CR	29700	36400	34800	25200	0.8
			1999	CR	30700	37700	36000	26000	1.1
			2000	CR	32000	39300	37500	27100	0.6
			2001	CR	33000	40600	38600	33000	0.5
			2002	CR	34100	41900	40000	28900	1.0
			2003	CR	35600	43800	41700	30300	0.9
			2004	CR	36400	44300	42600	30800	0.8
			2005	CR	37500	45500	43700	31600	0.8
			2006	IC	38200	42400	42800	33800	0.9
			2007	IC	39800	44200	45600	35200	0.6
417	HWY 7 &W JCT HWY 17 IC	9.2	1996	C	25200	28400	28700	22700	0.2
			1997	C	26400	29700	30100	23800	0.2
			1998	C	27600	31100	31200	24900	0.2
			1999	C	10600	12000	12000	9550	0.3
			2000	C	12300	13800	13900	11100	0.6
			2001	C	14000	15800	15800	12600	0.4
			2002	C	15700	17600	17700	14100	0.6
			2003	IR	17400	19800	18800	15700	0.7
			2004	IR	19100	21700	20700	17200	0.5
			2005	IR	20800	23600	22500	18900	0.4
			2006	IR	22500	27100	24600	19100	0.4
			2007	IR	16800	20400	20300	14200	0.5
417	Ottawa RD 49 -March Rd	8.7	1996	IR	23200	23200	23200	23200	0.1
			1997	IR	24400	24400	24400	24400	0.1
			1998	IR	25600	25600	25600	25600	0.1
			1999	IR	18200	20600	19500	16200	0.1
			2000	IR	18000	20400	19400	16100	0.4
			2001	IR	17800	20300	19200	15800	0.3
			2002	IR	17600	20000	19000	15800	0.3
			2003	IR	17400	19800	18800	15700	0.8
			2004	IR	17200	19600	18700	15400	0.6
			2005	IR	17000	19300	18400	15400	0.3
			2006	IR	16800	20300	18400	14300	0.4
			2007	IR	14500	17600	17500	12300	0.5
417	PANMURE RD IC	6.8	1997	NEW	22400	22400	22400	22400	0.0
			1998	NEW	23600	23600	23600	23600	0.0
			1999	NEW	24800	24800	24800	24800	0.0
			2000	NEW	26000	26000	26000	26000	0.1
			2001	NEW	27200	27200	27200	27200	0.0
			2002	NEW	27800	27800	27800	27800	0.1
			2003	NEW	29200	29200	29200	29200	0.1
			2004	NEW	30300	30300	30300	30300	0.1
			2005	NEW	31400	31400	31400	31400	0.2
			2006	NEW	32500	32500	32500	32500	0.2

Relative Traffic Growth (City of Ottawa)


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Transportation Master Plan

Annex C - Transportation Performance Objectives and Indicators

Performance Objectives	Performance Indicators	Period of Measurement	Location, Source and Frequency of Measurement	Target	City Influence
1. Limit motor vehicle traffic growth					
(a) Reduce motor vehicle use per capita	Individual automobile use (vehicle-km per capita)	Year	To be determined	<i>TBD</i>	Medium
	Relative growth in traffic volumes (% change in volumes / % change in population)	Afternoon peak period	Aggregated key screenlines (counts, annual)	Less than 1.0	Medium
(b) Increase motor vehicle occupancy rates	Auto occupancy (persons per vehicle)	Afternoon peak period	a) Aggregated key screenlines (counts, annual) b) City-wide (origin/destination survey, every 10 years)	Not less than 1.3 (both screenline and city-wide)	Low
2. Increase transit use					
(a) Increase transit ridership per capita	Transit passenger volumes (rides per capita)	Year	City-wide (counts, counts)	200	High
	Transit modal split (% of motorized trips)	Afternoon peak period	a) Key screenlines (counts, annual) b) City-wide (origin/destination survey, every 10 years)	a) Ref. Figure 3.7 b) 30%	High
(b) Increase service availability	Proximity to employment (% of jobs within 400 m walk of 10-minute headway service in peak periods)	Morning peak period	City-wide (employment survey, every 5 years)	<i>TBD</i>	High
	Service level (vehicle-km per capita)	Year	City-wide (service statistics, annual)	<i>TBD</i>	High
(c) Increase service speed and reliability	Intersection approaches with transit signal priority (number)	<i>N/A</i>	City-wide (inventory, annual)	<i>TBD</i>	High

Appendix C1

Noise Impact Modelling and Results



Table C1.1: Key Parameters Included in the Cadna/A Noise Modelling

WCEC Landfill - Ottawa, Ontario

Parameter	Value	Rationale
Ground Absorption(s)	0.0 and 0.6	Accounts for mix of hard (e.g., asphalt and gravel) and soft (e.g., grass) surfaces between facility and receptors of interest
Temperature	10 °C	Ontario standard conditions
Relative Humidity	70%	Ontario standard conditions
Max. Order of Reflection	0	Reflections from on-site buildings are not considered to be significant
Absorption Coefficient Alpha	0	Not applicable

Table C1.2a: Point of Reception Noise Impact - Scenario 1 Site Vicinity (Steady-State Sources)

Receptors: PR4, PR9, NR1, NR2, NR4

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- "Table A2" in Appendix A of Basic CCoFA Guide.
- "Continuous" noise sources includes sum of steady, quasi-steady impulsive, tonal, cyclical and buzzing noise sources, with appropriate penalties applied, in accordance with documents NPC-104, NPC-205 and/or NPC-232.
- 1. Wherever possible, the Source ID matches the identifiers used in the ESDM report.
- 2. Sound level at PoR predicted based on ISO-9613 algorithms.
- 3. Sound Level units
 dBA = 1-hour energy equivalent sound level ($L_{eq}(1-hr)$), in terms of A-Weighted decibels.
 dBAI = Logarithmic mean impulsive noise level (L_{LM}), in terms of A-Weighted decibels incorporating an impulsive time weighting
- Noise and vibration receptors representative of worst-case potential impacts have been selected. For the purposes of noise and vibration impact assessment, the following land uses (existing or zoned for future use) have been considered:
 - permanent, seasonal, or rental residences
 - hotels, motels and campgrounds
 - nursing / retirement homes
 - hospitals and clinics
 - schools, universities, libraries and daycare centres
 - churches and places of worship

Point of Reception ID	Point of Reception ID	Point of Reception ID	Point of Reception ID	Point of Reception ID
PR4	PR9	NR1	NR2	NR4
Point of Reception Description Site Vicinity 2-storey home on Richardson Side Road NNW	Point of Reception Description Site Vicinity 2-storey home David Manchester Road	Point of Reception Description Site Vicinity 1-storey home at 2485 Carp Road North	Point of Reception Description Site Vicinity 2-storey home at 2166 Carp Road East	Point of Reception Description Site Vicinity 2-storey home at 292 Moonstone Road South
Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z
18422496 5014786 129.5	18422477 5013457 140.1	18423722 5015711 120.0	18425095 5014365 133.6	18424009 5013694 134.5

Source ID ^[1]	Source Description	Point of Reception 1			Point of Reception 2			Point of Reception 3			Point of Reception 4			Point of Reception 5		
		Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)
EXISTING LANDFILL OPERATIONS																
BLOWER_BLDG	Blower Bldg concentric opening	2068	8	dBA	2570	-3	dBA	1117	-2	dBA	808	-5	dBA	1386	-2	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	2038	20	dBA	2552	3	dBA	1085	5	dBA	839	11	dBA	1386	7	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	2046	27	dBA	2563	10	dBA	1086	12	dBA	839	18	dBA	1396	11	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	2061	12	dBA	2568	-3	dBA	1107	-2	dBA	819	2	dBA	1390	-2	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	2053	10	dBA	2558	-3	dBA	1106	-2	dBA	819	2	dBA	1381	-2	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	2277	2	dBA	2604	-24	dBA	1464	-24	dBA	459	-16	dBA	1254	-17	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	2267	-2	dBA	2601	-24	dBA	1451	-24	dBA	472	-16	dBA	1256	-17	dBA
GEN_OH1	Energy Building overhead door 1	2280	21	dBA	2604	-8	dBA	1469	-7	dBA	454	-3	dBA	1252	-2	dBA
GEN_OH2	Energy Building overhead door 2	2271	20	dBA	2601	-10	dBA	1457	-8	dBA	466	-5	dBA	1254	-4	dBA
GEN_OH3	Energy Building overhead door 3	2263	18	dBA	2599	-11	dBA	1445	-10	dBA	478	-7	dBA	1257	-5	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	2250	24	dBA	2579	17	dBA	1447	19	dBA	476	20	dBA	1235	18	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	2254	24	dBA	2580	17	dBA	1453	19	dBA	470	20	dBA	1234	18	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	2258	24	dBA	2581	17	dBA	1459	19	dBA	465	20	dBA	1233	18	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	2263	24	dBA	2583	17	dBA	1466	19	dBA	458	20	dBA	1231	18	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	2267	24	dBA	2584	17	dBA	1471	19	dBA	452	20	dBA	1230	18	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	2254	14	dBA	2585	7	dBA	1448	8	dBA	475	15	dBA	1241	12	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	2259	14	dBA	2586	7	dBA	1454	8	dBA	469	15	dBA	1240	12	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	2263	14	dBA	2587	7	dBA	1459	8	dBA	464	15	dBA	1239	12	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	2267	14	dBA	2589	7	dBA	1466	8	dBA	457	15	dBA	1237	12	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	2272	14	dBA	2590	7	dBA	1472	8	dBA	451	15	dBA	1236	12	dBA
GEN_WALL1	Energy Bldg wall 1	2274	18	dBA	2602	-9	dBA	1461	-8	dBA	462	-4	dBA	1253	-3	dBA
GEN_WALL2	Energy Bldg wall 2	2266	17	dBA	2600	-10	dBA	1449	-9	dBA	474	-4	dBA	1256	-4	dBA
GEN_WALL3	Energy Bldg wall 3	2281	17	dBA	2605	-11	dBA	1471	-10	dBA	452	-6	dBA	1252	-5	dBA

Table C1.2b: Point of Reception Noise Impact - Scenario 1 Site Vicinity (Steady-State Sources)

Receptors: NR8, NR9, RR12, RR14, RR15

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- "Table A2" in Appendix A of Basic CCofA Guide.
- "Continuous" noise sources includes sum of steady, quasi-steady impulsive, tonal, cyclical and buzzing noise sources, with appropriate penalties applied, in accordance with documents NPC-104, NPC-205 and/or NPC-232.
- 1. Wherever possible, the Source ID matches the identifiers used in the ESDM report.
- 2. Sound level at PoR predicted based on ISO-9613 algorithms.
- 3. Sound Level units
 dBA = 1-hour energy equivalent sound level ($L_{eq}(1-hr)$), in terms of A-Weighted decibels.
 dBAI = Logarithmic mean impulsive noise level (L_{LM}), in terms of A-Weighted decibels incorporating an impulsive time weighting
- Noise and vibration receptors representative of worst-case potential impacts have been selected. For the purposes of noise and vibration impact assessment, the following land uses (existing or zoned for future use) have been considered:
 - permanent, seasonal, or rental residences
 - hotels, motels and campgrounds
 - nursing / retirement homes
 - hospitals and clinics
 - schools, universities, libraries and daycare centres
 - churches and places of worship

Point of Reception ID	Point of Reception ID	Point of Reception ID	Point of Reception ID	Point of Reception ID
NR8	NR9	RR12	RR14	RR15
Point of Reception Description Site Vicinity 2-storey Terrace Youth Residential Services	Point of Reception Description Site Vicinity 2-storey Sensitive Business Operation	Point of Reception Description Site Vicinity 2-storey David Manchester Road Central	Point of Reception Description Site Vicinity 2-storey at 607 William Mooney Road	Point of Reception Description Site Vicinity 2-storey Wilbert Cox Drive
Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z	Point of Reception Co-ords (m) X Y Z
18424510 5013860 134.2	18423804 5016030 117.7	18421792 5014164 138.0	18422720 5015088 126.9	18422487.31 5015391.74 126.27

Source ID ^[1]	Source Description	Point of Reception 6			Point of Reception 7			Point of Reception 8			Point of Reception 9			Point of Reception 10		
		Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)
EXISTING LANDFILL OPERATIONS																
BLOWER_BLDG	Blower Bldg concentric opening	1108	-4	dBA	1301	-6	dBA	2879	2	dBA	1839	1	dBA	2112	-11	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	1121	3	dBA	1272	1	dBA	2853	13	dBA	1808	17	dBA	2078	11	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	1128	8	dBA	1271	6	dBA	2862	20	dBA	1815	24	dBA	2084	19	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	1116	-4	dBA	1291	-6	dBA	2874	3	dBA	1832	5	dBA	2103	1	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	1108	-4	dBA	1292	-6	dBA	2865	3	dBA	1825	7	dBA	2097	1	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	869	-25	dBA	1652	-20	dBA	3025	-15	dBA	2088	2	dBA	2389	-14	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	876	-25	dBA	1639	-20	dBA	3018	-9	dBA	2078	2	dBA	2377	-15	dBA
GEN_OH1	Energy Building overhead door 1	866	-10	dBA	1657	-5	dBA	3027	-7	dBA	2092	15	dBA	2393	2	dBA
GEN_OH2	Energy Building overhead door 2	873	-12	dBA	1645	-7	dBA	3021	-8	dBA	2083	18	dBA	2382	1	dBA
GEN_OH3	Energy Building overhead door 3	879	-14	dBA	1633	-9	dBA	3015	-9	dBA	2073	19	dBA	2372	-1	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	859	15	dBA	1639	19	dBA	2998	18	dBA	2063	31	dBA	2364	27	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	856	15	dBA	1645	19	dBA	3001	18	dBA	2068	31	dBA	2369	27	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	853	15	dBA	1651	19	dBA	3004	18	dBA	2072	31	dBA	2374	27	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	849	15	dBA	1658	19	dBA	3008	18	dBA	2078	31	dBA	2380	27	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	846	15	dBA	1663	19	dBA	3011	18	dBA	2082	31	dBA	2385	27	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	864	5	dBA	1639	8	dBA	3003	9	dBA	2067	25	dBA	2367	17	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	861	5	dBA	1645	8	dBA	3007	9	dBA	2072	26	dBA	2373	17	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	858	5	dBA	1650	8	dBA	3010	9	dBA	2076	26	dBA	2377	17	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	854	5	dBA	1657	8	dBA	3013	9	dBA	2082	26	dBA	2383	17	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	851	5	dBA	1663	8	dBA	3016	9	dBA	2086	26	dBA	2388	17	dBA
GEN_WALL1	Energy Bldg wall 1	870	-11	dBA	1650	-6	dBA	3023	-7	dBA	2086	17	dBA	2386	1	dBA
GEN_WALL2	Energy Bldg wall 2	877	-12	dBA	1637	-7	dBA	3017	-8	dBA	2076	19	dBA	2375	0	dBA
GEN_WALL3	Energy Bldg wall 3	865	-13	dBA	1659	-8	dBA	3028	-9	dBA	2094	10	dBA	2395	-1	dBA

Table C1.3: Acoustic Assessment Summary - Existing On-site Stationary Sources

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
2. Worst-case cumulative sound level from all applicable sources operating.
3. MOE NPC-205 Class 2 or NPC-232 Class 3 Sound Level Limits for Stationary Sources.
4. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
5. Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	Total Sound Level at PoR ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Compliance with Performance Limit (Yes/No)	
ON-SITE RECEPTORS	PR2	2-storey home Carp Road Central	Daytime	34	No	50	D	Yes
		Evening	34	No	45	Yes		
		Night-time	34	No	45	Yes		
	PR3	2-storey home at 569 William Mooney Road NNW	Daytime	25	No	50	D	Yes
			Evening	25	No	45		Yes
			Night-time	25	No	45		Yes
	PR5	2-storey home at 505 William Mooney Road NW	Daytime	26	No	50	D	Yes
			Evening	26	No	45		Yes
			Night-time	26	No	45		Yes
	PR6	1-storey home at 381 William Mooney Road	Daytime	29	No	50	D	Yes
			Evening	29	No	45		Yes
			Night-time	29	No	45		Yes
NR3	2-storey home at 427 William Mooney Road West	Daytime	26	No	50	D	Yes	
		Evening	26	No	45		Yes	
		Night-time	26	No	45		Yes	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	Total Sound Level at PoR ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Compliance with Performance Limit (Yes/No)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	23	No	50	D	Yes
		Evening	23	No	45	Yes		
		Night-time	23	No	45	Yes		
	PR9	2-storey home David Manchester Road	Daytime	26	No	50	D	Yes
			Evening	26	No	45		Yes
			Night-time	26	No	45		Yes
	NR1	1-storey home at 2485 Carp Road North	Daytime	27	No	50	D	Yes
			Evening	27	No	45		Yes
			Night-time	27	No	45		Yes
	NR2	2-storey home at 2166 Carp Road East	Daytime	39	No	50	D	Yes
			Evening	39	No	45		Yes
			Night-time	39	No	45		Yes
	NR4	2-storey home at 292 Moonstone Road South	Daytime	35	No	50	D	Yes
			Evening	35	No	45		Yes
			Night-time	35	No	45		Yes
	NR8	2-storey Terrace Youth Residential Services	Daytime	40	No	50	D	Yes
			Evening	40	No	45		Yes
			Night-time	40	No	45		Yes
NR9	2-storey Sensitive Business Operation	Daytime	28	No	50	D	Yes	
		Evening	28	No	45		Yes	
		Night-time	28	No	45		Yes	
RR12	2-storey David Manchester Road Central	Daytime	20	No	50	D	Yes	
		Evening	20	No	45		Yes	
		Night-time	20	No	45		Yes	
RR14	2-storey at 607 William Mooney Road	Daytime	24	No	50	D	Yes	
		Evening	24	No	45		Yes	
		Night-time	24	No	45		Yes	
RR15	2-storey Wilbert Cox Drive	Daytime	22	No	50	D	Yes	
		Evening	22	No	45		Yes	
		Night-time	22	No	45		Yes	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	Total Sound Level at PoR ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Compliance with Performance Limit (Yes/No)	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	33	No	50	D	Yes
		Evening	33	No	45	Yes		
		Night-time	33	No	45	Yes		
	NR5	St. Stephen Catholic Elementary School	Daytime	21	No	50	D	Yes
			Evening	21	No	45		Yes
			Night-time	21	No	45		Yes
	NR6	Huntleigh United Cemetery	Daytime	23	No	50	D	Yes
			Evening	23	No	45		Yes
			Night-time	23	No	45		Yes
	NR7	Lloydalex Park	Daytime	24	No	50	D	Yes
			Evening	24	No	45		Yes
			Night-time	24	No	45		Yes
	RR10	2-storey Spruce Ridge Road Central	Daytime	15	No	45	D	Yes
			Evening	15	No	40		Yes
			Night-time	15	No	40		Yes
	RR11	2-storey David Manchester Road North	Daytime	16	No	50	D	Yes
			Evening	16	No	45		Yes
			Night-time	16	No	45		Yes
	RR13	2-storey David Manchester Road South	Daytime	26	No	50	D	Yes
			Evening	26	No	45		Yes
			Night-time	26	No	45		Yes
	RR16	2-storey Carp Road North	Daytime	20	No	50	D	Yes
			Evening	20	No	45		Yes
			Night-time	20	No	45		Yes
RR17	2-storey Oak Creek Road	Daytime	24	No	50	D	Yes	
		Evening	24	No	45		Yes	
		Night-time	24	No	45		Yes	
RR18	2-storey West Carleton Industrial Park	Daytime	38	No	50	D	Yes	
		Evening	38	No	45		Yes	
		Night-time	38	No	45		Yes	
RR19	2-storey Timbermere	Daytime	27	No	50	D	Yes	
		Evening	27	No	45		Yes	
		Night-time	27	No	45		Yes	
RR20	2-storey Stittsville	Daytime	24	No	50	D	Yes	
		Evening	24	No	45		Yes	
		Night-time	24	No	45		Yes	
RR21	2-storey Jackson Trails	Daytime	25	No	50	D	Yes	
		Evening	25	No	45		Yes	
		Night-time	25	No	45		Yes	
RR22	2-storey Fairwinds	Daytime	20	No	50	D	Yes	
		Evening	20	No	45		Yes	
		Night-time	20	No	45		Yes	
RR23	2-storey Arcadia	Daytime	20	No	50	D	Yes	
		Evening	20	No	45		Yes	
		Night-time	20	No	45		Yes	
RR24	2-storey Kanata West	Daytime	16	No	50	D	Yes	
		Evening	16	No	45		Yes	
		Night-time	16	No	45		Yes	

Table C1.3 Acoustic Assessment Summary - Existing Sources.xlsx/Table C1.3



Appendix C2

Ambient Sound Level Calculations



Table C2.1: Determination of 2009 Landfill Heavy Truck Traffic Volumes
 WCEC Landfill - Ottawa, Ontario

Notes to Table:
 1. Landfill traffic volumes for 2009 year were provided by AECOM.

Operation hours from 2010 NPRI questionnaire:

Hours/day: 9.5
 Operating Time: 7:00 am to 4:30 pm
 Days/week: 5.5
 Weeks/year: 52
 Days/year: 286

Material	Material Description	Loads 1-way	Loads 2-way
CDW	C&D WASTE	155	310
CDW OUT	C&D OUTSIDE GNZ	25	50
Cont Soil Met-P100034ON	Cont. Soil - Petroleum, PMT is RGC	408	816
Cont Soil Met-P100034ON	Cont. Soil - Metals	26	52
Cont Soil Pet-RGC-Metric Ton	Cont. Soil - Petroleum, PMT is RGC	982	1964
Cont Soil Pet-RGC-P100026ON	Cont. Soil - Petroleum, PMT is RGC	3	6
Cont Soil Pet-RGC-P100028ON	Cont. Soil - Petroleum, PMT is RGC	13	26
Cont Soil Pet-RGC-P100030ON	Cont. Soil - Petroleum, PMT is RGC	1	2
Cont Soil Pet-RGC-P100032ON	Cont. Soil - Petroleum, PMT is RGC	1	2
Cont Soil Pet-RGC-P100040ON	Cont. Soil - Petroleum, PMT is RGC	3	6
Cont Soil Pet-RGC-P100885ON	Cont. Soil - Petroleum, PMT is RGC	3	6
Cont Soil Pet-RGC-P100897ON	Cont. Soil - Petroleum, PMT is RGC	76	152
Cont Soil Pet-RGC-P100898ON	Cont. Soil - Petroleum, PMT is RGC	86	172
Cont Soil Pet-RGC-P100918ON	Cont. Soil - Petroleum, PMT is RGC	9	18
Cont Soil RCG-Metric Ton	Cont. Soil - Petroleum-RGC	2	4
Cont Soil RCG-P100034AON	Unspecified Contaminated Soil, PMT RCG	180	360
ContSoilPet-P100000ON	Cont. Soil - Petroleum-RGC	67	134
ContSoilPet-P100012ON	Cont. Soil - Petroleum-RGC	148	296
ContSoilPet-P100130ON	Cont. Soil - Petroleum-RGC	2	4
ContSoilPet-P100142ON	Cont. Soil - Petroleum-RGC	16	32
ContSoilPet-RGC-Metric Ton	Cont. Soil - Petroleum-RGC	3	6
ELE	ELECTRONICS	5	10
ICI	ICI WASTE	424	848
ICI CITY	ICI WITHIN GNZ	227	454
ICI OUT	ICI OUTSIDE GNZ	48	96
MSW	MS WASTE	1433	2866
MSW-Metric Ton	MSW Permitted Material, PMT MSW	101	202
SLUDGE-Metric Ton	MSW Permitted Material, PMT MSW	1	2
SludgeFilter-Metric Ton	MSW Permitted Material, PMT MSW	302	604
SludgeIndus-Metric Ton	Sludge Industrial	6	12
Special Misc-Metric Ton	Cont. Soil - Petroleum, PMT is RGC	14	28
Special Misc-Metric Ton	Special Waste Misc	1	2
Spwaste Plant-Metric Ton	Special Waste Plant Waste	2	4
WOD	WOOD WASTE	8	16
Yearly Traffic:		4781	9562
Daily Traffic:		17	33
Hourly Traffic:		2	4

Table C2.2a: Determination of AADT and Hourly Distribution - Carp Road

WCEC Landfill - Ottawa, Ontario

2011 Carp Road		
	North of 417	South of 417
AADT	12077	21340

Carp Road				
North of 417				
	Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total
0:00	31	3	0	34
1:00	20	1	0	21
2:00	11	1	1	13
3:00	22	1	1	24
4:00	24	3	6	33
5:00	155	25	5	185
6:00	592	97	8	697
7:00	864	131	17	1012
8:00	714	148	12	874
9:00	576	185	11	772
10:00	538	128	22	688
11:00	559	134	13	706
12:00	660	134	17	811
13:00	648	147	16	811
14:00	663	138	21	822
15:00	837	124	15	976
16:00	931	128	8	1067
17:00	800	77	1	878
18:00	499	38	2	539
19:00	328	28	4	360
20:00	290	13	1	304
21:00	195	8	0	203
22:00	159	11	0	170
23:00	73	4	0	77
Total	10189	1707	181	12077
Day	9261	1572	160	10993
Night	928	135	21	1084
Total	10189	1707	181	12077

Carp Road				
South of 417				
	Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total
0:00	65	4	1	70
1:00	46	1	1	48
2:00	19	3	0	22
3:00	26	1	0	27
4:00	48	6	3	57
5:00	243	36	3	282
6:00	979	102	8	1089
7:00	1473	104	15	1592
8:00	1518	151	5	1674
9:00	1191	134	9	1334
10:00	925	126	22	1073
11:00	998	100	6	1104
12:00	1191	103	8	1302
13:00	1101	113	11	1225
14:00	1100	130	16	1246
15:00	1477	110	14	1601
16:00	1747	101	8	1856
17:00	1788	55	3	1846
18:00	1260	24	2	1286
19:00	750	13	5	768
20:00	607	7	2	616
21:00	500	7	2	509
22:00	540	8	0	548
23:00	164	1	0	165
Total	19756	1440	144	21340
Day	18166	1286	128	19580
Night	1590	154	16	1760
Total	19756	1440	144	21340

Notes:

- Traffic data provided by AECOM (MTO 2009 for Highway 417 and 7, April 2011 for Carp Road and Richardson Road).
- [1] Cars: motorcycle, cars, cars with trailer, pickups, pickups with trailer.
- [2] Medium: bus, single unit truck with dual rear axle, 3 axle truck with less than 5.49 m spacing between axle 2 and 3, 4 axle truck.
- [3] Heavy: Transports, 3 axle truck with greater than 5.69m spacing between axles 2 and 3, 4 axle truck with greater than 1.52m spacing between axles 2 and 3 and less than 1.07m spacing between axles 3 and 4 and 4 axle trucks with greater than 1.52m spacing between axles 2 and 3 and greater than 3.05m spacing between axles 3 and 4, any other trucks with 5 or 6 axles.

Table C2b: Determination of AADT and Hourly Distribution - Highway 417 and 7

WCEC Landfill - Ottawa, Ontario

2009 Highway 417				2009 Highway 7	
AADT	East of Carp	West of Carp	West of Hwy 7	AADT	South of Hwy 417
	59434	24860	31852		15665

Highway 417			Highway 417		Highway 7	
	East of Carp	West of Carp	West of Hwy 7	Hourly Volume as % of AADT		South of Hwy 417
	Vehicles	Vehicles	Vehicles			Vehicles
0:00	358	No data collected by MTO	199	0:00	0.74%	74
1:00	197		88	1:00	0.41%	70
2:00	153		81	2:00	0.31%	67
3:00	142		109	3:00	0.27%	94
4:00	259		122	4:00	0.42%	275
5:00	919		591	5:00	1.69%	901
6:00	2925		1533	6:00	4.95%	1586
7:00	3490		1818	7:00	5.77%	1483
8:00	3172		1585	8:00	5.44%	1110
9:00	3296		1570	9:00	5.61%	827
10:00	3482		1707	10:00	5.76%	803
11:00	3756		1840	11:00	6.29%	790
12:00	3885		1775	12:00	6.21%	812
13:00	3891		1979	13:00	6.35%	781
14:00	4098		2117	14:00	6.72%	875
15:00	4386		2523	15:00	7.29%	850
16:00	4743		2782	16:00	8.26%	874
17:00	4360		2618	17:00	7.54%	869
18:00	3720		2154	18:00	5.74%	813
19:00	2713		1508	19:00	4.31%	546
20:00	1958		1122	20:00	3.63%	425
21:00	1669		864	21:00	3.07%	324
22:00	1098		705	22:00	1.95%	255
23:00	764		462	23:00	1.26%	161
Total	59434	N/A	31852	Total	15665	

Day	53717	N/A	28667	Day	12437
Night	5717	N/A	3185	Night	3228
Total	59434		31852	Total	15665

Notes:

- Traffic data provided by AECOM (MTO 2009 for Highway 417 and 7, April 2011 for Carp Road and Richardson Road).
- [1] Cars: motorcycle, cars, cars with trailer, pickups, pickups with trailer.
- [2] Medium: bus, single unit truck with dual rear axle, 3 axle truck with less than 5.49 m spacing between axle 2 and 3, 4 axle truck.
- [3] Heavy: Transports, 3 axle truck with greater than 5.69m spacing between axles 2 and 3, 4 axle truck with greater than 1.52m spacing between axles 2 and 3 and less than 1.07m spacing between axles 3 and 4 and 4 axle trucks with greater than 1.52m spacing between axles 2 and 3 and greater than 3.05m spacing between axles 3 and 4, any other trucks with 5 or 6 axles.

Table C2c: Determination of AADT and Hourly Distribution - Richardson Road

WCEC Landfill - Ottawa, Ontario

2011 Richardson Road		
	West of Carp	East of Carp
AADT	4939	6985

Richardson Road					
West of Carp Road					
	Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total	% Hourly Volume
0:00	15	3	0	18	0.36%
1:00	5	0	0	5	0.10%
2:00	5	1	0	6	0.12%
3:00	7	1	0	8	0.16%
4:00	6	2	1	9	0.18%
5:00	76	11	0	87	1.76%
6:00	226	66	1	293	5.93%
7:00	353	76	0	429	8.69%
8:00	289	45	1	335	6.78%
9:00	222	48	1	271	5.49%
10:00	179	233	1	413	8.36%
11:00	210	37	0	247	5.00%
12:00	207	40	1	248	5.02%
13:00	200	59	1	260	5.26%
14:00	205	47	1	253	5.12%
15:00	300	52	2	354	7.17%
16:00	395	68	2	465	9.41%
17:00	374	24	0	398	8.06%
18:00	255	18	0	273	5.53%
19:00	160	16	0	176	3.56%
20:00	141	8	0	149	3.02%
21:00	100	4	0	104	2.11%
22:00	91	6	0	97	1.96%
23:00	38	3	0	41	0.83%
Total	4059	868	12	4939	100%

Day	3681	781	10	4472
Night	378	87	2	467
Total	4059	868	12	4939

Richardson Road *	
East of Carp	
	% Hourly Volume
0:00	0.36%
1:00	0.10%
2:00	0.12%
3:00	0.16%
4:00	0.18%
5:00	1.76%
6:00	5.93%
7:00	8.69%
8:00	6.78%
9:00	5.49%
10:00	8.36%
11:00	5.00%
12:00	5.02%
13:00	5.26%
14:00	5.12%
15:00	7.17%
16:00	9.41%
17:00	8.06%
18:00	5.53%
19:00	3.56%
20:00	3.02%
21:00	2.11%
22:00	1.96%
23:00	0.83%

* Assume the same % hourly distribution as Richardson Road, West of Carp.

Notes:

- Traffic data provided by AECOM (MTO 2009 for Highway 417 and 7, April 2011 for Carp Road and Richardson Road).
- [1] Cars: motorcycle, cars, cars with trailer, pickups, pickups with trailer.
- [2] Medium: bus, single unit truck with dual rear axle, 3 axle truck with less than 5.49 m spacing between axle 2 and 3, 4 axle truck.
- [3] Heavy: Transports, 3 axle truck with greater than 5.69m spacing between axles 2 and 3, 4 axle truck with greater than 1.52m spacing between axles 2 and 3 and less than 1.07m spacing between axles 3 and 4 and 4 axle trucks with greater than 1.52m spacing between axles 2 and 3 and greater than 3.05m spacing between axles 3 and 4, any other trucks with 5 or 6 axles.

Table C2.3: Determination of Traffic Volume Percent Change for Highway 7 and 417

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 7 - Hwy S 417 & 17 IC.
2. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 417 - Hwy 7 & W JCT Hwy 17 IC.
3. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 417 - Carp Rd IC - OTT/Carl Rd 5.
4. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 417 - Palladium Rd IC.
5. Traffic data provided by AECOM.
6. Default traffic growth for Ottawa is targeted to be less than 1% (as per City of Ottawa 2020 Transportation Master Plan).

Year	AADT	% Change			Comments
		per Year (%)	since 2006/2007 (%)	Resultant (%)	
Hwy 7 - south of Hwy 417 ^[1]					
2006	14400	0.0%	0%	2.1%	Use 2.1% growth per year from 2007 based on AADT change from 2006.
2007	14700	2.1%	2.1%		
2008	N/A	--	--		
2009	N/A	--	--		
Hwy 417 - west of Hwy 7 ^[2]					
2006	22500	8.2%	0%	13.9%	Use 13.9% growth per year from 2009 based on AADT change from 2006 to account for 2007 traffic anomaly.
2007	16800	-25.3%	--		
2008	N/A	--	--		
2009 ^[5]	31852	--	13.9%		
Hwy 417 - b/w Hwy 7 and Carp Rd ^[3]					
2006	38200	1.9%	--	1.0%	Use City of Ottawa's default growth rate of 1% from 2009 to 2012 based on lower AADT in 2009 from 2007.
2007	39800	4.2%	0%		
2008	N/A	--	--		
2009 ^[5]	24860	--	-18.8%		
Hwy 417 - east of Carp Road ^[4]					
2006	42800	0.5%	--	1.0%	Use City of Ottawa's default growth rate of 1% from 2009 to 2012 based on AADT change from 2007.
2007	43000	0.5%	0%		
2008	N/A	--	--		
2009 ^[5]	59434	--	19.1%		

Table C2.4a: Determination of Traffic Volume - Existing

WCEC Landfill - Ottawa, Ontario

EXISTING TRAFFIC INCLUDING LANDFILL ^[1]

Road ID	Road Segment	Year	AADT Including Landfill				Total Vehicle Breakdown ^[3]		AADT Including Landfill			
			Cars	Medium	Heavy	Total	%Medium	%Heavy	Cars	Medium	Heavy	Total
Landfill	Landfill 2-Way Traffic at Weigh Scale	2009 ^[2]	0	0	33	33	0	100	0	0	33	33
Highway 7	South of 417	2009	--	--	--	15665	5	8	13629	783	1253	15665
Highway 417	West of Highway 7	2009	--	--	--	31852	5	15	25482	1593	4778	31852
Highway 417	West of Carp	2009	--	--	--	24860	5	15	19888	1243	3729	24860
Highway 417	East of Carp	2009	--	--	--	59434	5	15	47547	2972	8915	59434
Carp Road	North of 417 - North of Landfill Entrance	2011	10189	1707	181	12077	14	1	10189	1707	181	12077
Carp Road	North of 417 - South of Landfill Entrance	2011	10189	1707	181	12077	14	1	10189	1707	181	12077
Carp Road	South of 417	2011	19756	1440	144	21340	7	1	19756	1440	144	21340
Richardson Road	West of Carp Road	2011	4059	868	12	4939	18	0	4059	868	12	4939
Richardson Road	East of Carp Road	2011	--	--	--	6985	5	8	6077	349	559	6985

Notes:

[1] Traffic data for the Landfill (2009), Highway 417 (2009), Highway 7 (2009), Carp Road (2011), and Richardson Road (2011) provided by AECOM.

[2] Landfill traffic for 2009 are expected to be approximately equivalent to traffic volume in 2011.

[3] In the absence of data, freeways have breakdown of 5 MM/15 HH and 5 MM/8 HH for Regional Roads (per MTO Environmental Guide for Noise, October 2006).

Table C2.4b: Determination of Traffic Volume - Baseline

WCEC Landfill - Ottawa, Ontario

EXISTING TRAFFIC EXCLUDING LANDFILL ^[1]

Road ID	Road Segment	Year	Heavy Truck Traffic Split				AADT Excluding Landfill Traffic			
			North of Landfill		South of Landfill		Cars	Medium	Heavy	Total
			5%	95%	5%	90%				
Landfill	Landfill 2-Way Traffic at Weigh Scale	2012 ^[2]	--	--	--	--	--	--	--	
Highway 7	South of 417	2009	--	--	--	13629	783	1253	15665	
Highway 417	West of Highway 7	2009	--	--	--	25482	1593	4778	31852	
Highway 417	West of Carp	2009	--	--	0	19888	1243	3729	24860	
Highway 417	East of Carp	2009	--	--	29	47547	2972	8886	59405	
Carp Road	North of 417 - North of Landfill Entrance	2011	2	0	--	10189	1707	179	12075	
Carp Road	North of 417 - South of Landfill Entrance	2011	0	31	--	10189	1707	150	12046	
Carp Road	South of 417	2011	--	--	2	19756	1440	142	21338	
Richardson Road	West of Carp Road	2011	0	--	--	4059	868	12	4939	
Richardson Road	East of Carp Road	2011	2	--	--	6077	349	557	6983	

BASELINE TRAFFIC EXCLUDING LANDFILL (2012)

Road ID	Road Segment	Year	Traffic Volume Growth ^[4]		2012 AADT			
			%Growth	#Years	Cars	Medium	Heavy	Total
Landfill	Landfill 2-Way Traffic at Weigh Scale	2012 ^[2]	--	--	--	--	--	--
Highway 7	South of 417	2012	2.1%	3	14498	833	1333	16665
Highway 417	West of Highway 7	2012	13.9%	3	37608	2351	7052	47010
Highway 417	West of Carp	2012	1.0%	3	20491	1281	3842	25613
Highway 417	East of Carp	2012	1.0%	3	48988	3062	9155	61205
Carp Road	North of 417 - North of Landfill Entrance	2012	1.0%	1	10291	1724	181	12196
Carp Road	North of 417 - South of Landfill Entrance	2012	1.0%	1	10291	1724	151	12166
Carp Road	South of 417	2012	1.0%	1	19954	1454	143	21551
Richardson Road	West of Carp Road	2012	1.0%	1	4100	877	12	4988
Richardson Road	East of Carp Road	2012	1.0%	1	6138	353	562	7053

Notes:

- [1] Traffic data for the Landfill (2009), Highway 417 (2009), Highway 7 (2009), Carp Road (2011), and Richardson Road (2011) provided by AECOM.
- [2] Landfill traffic for 2009 are expected to be approximately equivalent to traffic volume in 2011.
- [3] In the absence of data, freeways have breakdown of 5 MM/15 HH and 5 MM/8 HH for Regional Roads (per MTO Environmental Guide for Noise, October 2006).
- [4] Percent growth for Highway 417 and Highway 7 were estimated from MTO Provincial Highways AADT Traffic Volumes 1988 - 2007 and 2009 AADT provided by AECOM.
Traffic growth for Ottawa is targeted to be less than 1% for Carp Road and Richardson Road (as per City of Ottawa 2020 Transportation Master Plan).



Table C2.5: ORNAMENT Calculations

Ontario Road Noise Analysis Method for ENvironment and Transportation
version 2.05

Job No. 1100798
Job Name WCEC Ottawa Landfill

Scenario Baseline (2012)
24-hour Leq(24)

ROAD CHARACTERISTICS

SOURCE-RECEIVER-BARRIER-TOPOGRAPHY CHARACTERISTICS

ID	Description	Time Period	Number of Vehicles			Speed (km/h)	Road Gradient (%)	Two Way? (y/n)	Pavement Type	Road Viewable Angle		Source-Receiver Distance (m)	Ground Type (Hard/Soft)	Topography Type	Source Height (m)	Road Elevation (m asl)	Receptor Height (m)	Receptor Elevation (m asl)	Ground Elevation Change (m)			Barrier Height (m)	Barrier Elevation (m asl)	Barrier-Receiver Distance (m)	Barrier Viewable Angle		No. of Rows of Houses	Density of Houses (% Houses)	Depth of Woods	Adjustment (dB)	Reason For Adjustment	Total Segment Leq (dBA)		
			Autos	Medium	Heavy					θ ₁	θ ₂								Elevation Change e (m)	Hor. Dist a (m)	Hor. Dist b (m)				θ ₁	θ ₂								
24-Hour																																		
PR2	Carp Road - North of 417 - North of Landfill Entrance	24	10291	1724	181	80	0	y	1	-90	90	50	Soft	A	1.1		4.5																50	
PR6	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-90	0	400	Soft	A	2.0		1.5																50	
PR4	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	0	90	39	Soft	A	0.1		4.5																55	
PR7	Carp Road - South of 417	24	19954	1454	143	80	0	y	1	0	90	38	Soft	A	0.1		4.5																60	
PR9	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	-65	70	310	Soft	A	2.0		4.5																58	
NR1	Carp Road - North of 417 - North of Landfill Entrance	24	10291	1724	181	80	0	y	1	0	90	216	Soft	A	1.1		1.5																46	
NR2	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-75	10	300	Soft	A	2.0		4.5																53.8	
	Carp Road - South of 417	24	19954	1454	143	80	0	y	1	-90	0	53	Soft	A	0.1		4.5																57.3	
																																	59	
NR4	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	65	101	Soft	A	2.0		4.5																	63
NR8	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	70	296	Soft	A	2.0		4.5																	56
NR9	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	-90	90	27	Soft	A	1.7		4.5																	63
RR11	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	0	90	188	Soft	A	2.0		4.5																	59
RR12	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	0	70	156	Soft	A	2.0		4.5																	60.2
	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	0	90	32	Soft	A	0.1		4.5																	56.4
																																		62
RR14	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	27	Soft	A	0.1		4.5																	60
RR17	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	0	90	27	Soft	A	1.7		4.5																	61
RR18	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-55	55	560	Soft	A	2.0		4.5																	51

Road Traffic Noise at PR2 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Carp Road - North of 417 - North of Landfill Entrance	12077	34	21	13	24	33	185	697	1012	874	772	688	706	811	811	822	976	1067	878	539	360	304	203	170	77	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Carp Road - North of 417 - North of Landfill Entrance	2	0.28%	0.17%	0.11%	0.20%	0.27%	1.53%	5.77%	8.38%	7.24%	6.39%	5.70%	5.85%	6.72%	6.72%	6.81%	8.08%	8.83%	7.27%	4.46%	2.98%	2.52%	1.68%	1.41%	0.64%	
24 hr Leq value (dBA)	Assign distribution number																									
Carp Road - North of 417 - North of Landfill Entrance	50.1	2	38.4	36.3	34.2	36.9	38.3	45.8	51.5	53.2	52.5	52.0	51.5	51.6	52.2	52.2	52.3	53.0	53.4	52.5	50.4	48.7	47.9	46.2	45.4	42.0
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		38.4	36.3	34.2	36.9	38.3	45.8	51.5	53.2	52.5	52.0	51.5	51.6	52.2	52.2	52.3	53.0	53.4	52.5	50.4	48.7	47.9	46.2	45.4	42.0	

Stationary Noise Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Total Stationary Sources Leq (1)																									

Total of Road + Stationary Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Road+Stationary Leq (1)	38.4	36.3	34.2	36.9	38.3	45.8	51.5	53.2	52.5	52.0	51.5	51.6	52.2	52.2	52.3	53.0	53.4	52.5	50.4	48.7	47.9	46.2	45.4	42.0

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45
AMBIENT GUIDELINE LIMIT LEQ(1)		45.0	45.0	45.0	45.0	45.0	45.8	51.5	53.2	52.5	52.0	51.5	51.6	52.2	52.2	52.3	53.0	53.4	52.5	50.4	48.7	47.9	46.2	45.4	45.0

Daytime	50
Evening	45
Night-time	45

Total Leq(day) 63.5 Road Leq(day) 63.5 day = 0700 through 2200
 Total Leq(night) 53.5 Road Leq(night) 53.5 night = 2300 through 0600

Road Traffic Noise at PR6 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Carp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 Traffic Distribution	3	0.74%	0.41%	0.31%	0.27%	0.42%	1.69%	4.95%	5.77%	5.44%	5.61%	5.76%	6.29%	6.21%	6.35%	6.72%	7.29%	8.26%	7.54%	5.74%	4.31%	3.63%	3.07%	1.95%	1.26%	
24 hr Leq value (dBA)	Assign distribution number																									
Highway 417 - West of Carp	50.2	3	42.7	40.1	38.9	38.3	40.2	46.3	50.9	51.6	51.3	51.5	51.6	52.0	51.9	52.0	52.3	52.6	53.2	52.8	51.6	50.3	49.6	48.9	46.9	45.0
Total Road Traffic Leq (1)		42.7	40.1	38.9	38.3	40.2	46.3	50.9	51.6	51.3	51.5	51.6	52.0	51.9	52.0	52.3	52.6	53.2	52.8	51.6	50.3	49.6	48.9	46.9	45.0	

Stationary Noise Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Total Stationary Sources Leq (1)																									

Total of Road + Stationary Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Road+Stationary Leq (1)	42.7	40.1	38.9	38.3	40.2	46.3	50.9	51.6	51.3	51.5	51.6	52.0	51.9	52.0	52.3	52.6	53.2	52.8	51.6	50.3	49.6	48.9	46.9	45.0

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300			
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45			
AMBIENT GUIDELINE LIMIT LEQ(1)		45.0	45.0	45.0	45.0	45.0	46.3	50.9	51.6	51.3	51.5	51.6	52.0	51.9	52.0	52.3	52.6	53.2	52.8	51.6	50.3	49.6	48.9	46.9	45.0			
		Daytime	51	Total Leq(day)				63.5	Road Leq(day)				63.5	day = 0700 through 2200														
		Evening	47	Total Leq(night)				54.0	Road Leq(night)				54.0	night = 2300 through 0600														
		Night-time	45																									

Road Traffic Noise at PR4 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - West of Carp Road	4939	18	5	6	8	9	87	293	429	335	271	413	247	248	260	253	354	465	398	273	176	149	104	97	41	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - West of Carp Road	2	0.36%	0.10%	0.12%	0.16%	0.18%	1.76%	5.93%	8.69%	6.78%	5.49%	8.36%	5.00%	5.02%	5.26%	5.12%	7.17%	9.41%	8.06%	5.53%	3.56%	3.02%	2.11%	1.96%	0.83%	
24 hr Leq value (dBA)	Assign distribution number																									
Richardson Road - West of Carp Road	55.0	2	44.4	38.9	39.7	40.9	41.4	51.3	56.6	58.2	57.1	56.2	58.0	55.8	55.8	56.0	55.9	57.4	58.6	57.9	56.2	54.3	53.6	52.1	51.8	48.0
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		44.4	38.9	39.7	40.9	41.4	51.3	56.6	58.2	57.1	56.2	58.0	55.8	55.8	56.0	55.9	57.4	58.6	57.9	56.2	54.3	53.6	52.1	51.8	48.0	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	44.4	38.9	39.7	40.9	41.4	51.3	56.6	58.2	57.1	56.2	58.0	55.8	55.8	56.0	55.9	57.4	58.6	57.9	56.2	54.3	53.6	52.1	51.8	48.0

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300						
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45						
AMBIENT GUIDELINE LIMIT LEQ(1)		45.0	45.0	45.0	45.0	45.0	51.3	56.6	58.2	57.1	56.2	58.0	55.8	55.8	56.0	55.9	57.4	58.6	57.9	56.2	54.3	53.6	52.1	51.8	48.0						
		<table border="1"> <tr><td>Daytime</td><td>56</td></tr> <tr><td>Evening</td><td>52</td></tr> <tr><td>Night-time</td><td>45</td></tr> </table>		Daytime	56	Evening	52	Night-time	45	Total Leq(day)		68.4	Road Leq(day)		68.4	day = 0700 through 2200															
Daytime	56																														
Evening	52																														
Night-time	45																														
				Total Leq(night)		58.6	Road Leq(night)		58.6	night = 2300 through 0600																					

Road Traffic Noise at PR9 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Highway 7	31852	199	88	81	109	122	591	1533	1818	1585	1570	1707	1840	1775	1979	2117	2523	2782	2618	2154	1508	1122	864	705	462	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Highway 7	2	0.62%	0.28%	0.25%	0.34%	0.38%	1.86%	4.81%	5.71%	4.98%	4.93%	5.36%	5.78%	5.57%	6.21%	6.65%	7.92%	8.73%	8.22%	6.76%	4.73%	3.52%	2.71%	2.21%	1.45%	
24 hr Leq	Assign distribution																									
Road Source	value (dBA)	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Highway 7	58.2	2	50.0	46.4	46.1	47.4	47.8	54.7	58.8	59.6	59.0	58.9	59.3	59.6	59.5	59.9	60.2	61.0	61.4	61.2	60.3	58.8	57.5	56.3	55.5	53.6
Total Road Traffic Leq (1)																										
		50.0	46.4	46.1	47.4	47.8	54.7	58.8	59.6	59.0	58.9	59.3	59.6	59.5	59.9	60.2	61.0	61.4	61.2	60.3	58.8	57.5	56.3	55.5	53.6	

Stationary Noise Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Total Stationary Sources Leq (1)																									

Total of Road + Stationary Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Road+Stationary Leq (1)	50.0	46.4	46.1	47.4	47.8	54.7	58.8	59.6	59.0	58.9	59.3	59.6	59.5	59.9	60.2	61.0	61.4	61.2	60.3	58.8	57.5	56.3	55.5	53.6

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2																									
NPC-205 Leq(1) minimum limit	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45	
AMBIENT GUIDELINE LIMIT LEQ(1)	50.0	46.4	46.1	47.4	47.8	54.7	58.8	59.6	59.0	58.9	59.3	59.6	59.5	59.9	60.2	61.0	61.4	61.2	60.3	58.8	57.5	56.3	55.5	53.6		
Daytime	59					Total Leq(day)	71.6					Road Leq(day)	71.6												day = 0700 through 2200	
Evening	55					Total Leq(night)	62.0					Road Leq(night)	62.0												night = 2300 through 0600	
Night-time	46																									

Road Traffic Noise at NR1 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Carp Road - North of 417 - North of Landfill Entrance	12077	34	21	13	24	33	185	697	1012	874	772	688	706	811	811	822	976	1067	878	539	360	304	203	170	77	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Carp Road - North of 417 - North of Landfill Entrance	2	0.28%	0.17%	0.11%	0.20%	0.27%	1.53%	5.77%	8.38%	7.24%	6.39%	5.70%	5.85%	6.72%	6.72%	6.81%	8.08%	8.83%	7.27%	4.46%	2.98%	2.52%	1.68%	1.41%	0.64%	
24 hr Leq value (dBA)	Assign distribution number																									
Carp Road - North of 417 - North of Landfill Entrance	46.3	2	34.6	32.5	30.4	33.1	34.4	41.9	47.7	49.3	48.7	48.1	47.6	47.7	48.3	48.3	48.4	49.1	49.5	48.7	46.6	44.8	44.1	42.3	41.6	38.1
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		34.6	32.5	30.4	33.1	34.4	41.9	47.7	49.3	48.7	48.1	47.6	47.7	48.3	48.3	48.4	49.1	49.5	48.7	46.6	44.8	44.1	42.3	41.6	38.1	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	34.6	32.5	30.4	33.1	34.4	41.9	47.7	49.3	48.7	48.1	47.6	47.7	48.3	48.3	48.4	49.1	49.5	48.7	46.6	44.8	44.1	42.3	41.6	38.1

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300						
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45						
AMBIENT GUIDELINE LIMIT LEQ(1)		45.0	45.0	45.0	45.0	45.0	45.0	47.7	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	45.0	45.0	45.0	45.0	45.0						
		<table border="1"> <tr> <td>Daytime</td> <td>50</td> </tr> <tr> <td>Evening</td> <td>45</td> </tr> <tr> <td>Night-time</td> <td>45</td> </tr> </table>		Daytime	50	Evening	45	Night-time	45	Total Leq(day)		59.7	Road Leq(day)		59.7	day = 0700 through 2200															
Daytime	50																														
Evening	45																														
Night-time	45																														
Total Leq(night)		49.6	Road Leq(night)		49.6	night = 2300 through 0600																									

Road Traffic Noise at NR2 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Carp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carp Road - South of 417	21340	70	48	22	27	57	282	1089	1592	1674	1334	1073	1104	1302	1225	1246	1601	1856	1846	1286	768	616	509	548	165

Distribution	% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Carp Road - South of 417	2	0.33%	0.22%	0.10%	0.13%	0.27%	1.32%	5.10%	7.46%	7.84%	6.25%	5.03%	5.17%	6.10%	5.74%	5.84%	7.50%	8.70%	8.65%	6.03%	3.60%	2.89%	2.39%	2.57%	0.77%	
Highway 417 Traffic Distribution	3	0.74%	0.41%	0.31%	0.27%	0.42%	1.69%	4.95%	5.77%	5.44%	5.61%	5.76%	6.29%	6.21%	6.35%	6.72%	7.29%	8.26%	7.54%	5.74%	4.31%	3.63%	3.07%	1.95%	1.26%	

Road Source	24 hr Leq value (dBA)	Assign distribution number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Carp	53.8	3	46.3	43.7	42.5	41.9	43.8	49.9	54.5	55.2	55.0	55.1	55.2	55.6	55.5	55.6	55.9	56.2	56.8	56.4	55.2	53.9	53.2	52.5	50.5	48.6
Carp Road - South of 417	57.3	2	46.3	44.6	41.2	42.1	45.4	52.3	58.2	59.8	60.0	59.1	58.1	58.2	59.0	58.7	58.8	59.9	60.5	60.5	58.9	56.7	55.7	54.9	55.2	50.0

Total Road Traffic Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	49.3	47.2	44.9	45.0	47.7	54.3	59.7	61.1	61.2	60.5	59.9	60.1	60.6	60.4	60.6	61.4	62.0	61.9	60.4	58.5	57.6	56.8	56.5	52.4

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	49.3	47.2	44.9	45.0	47.7	54.3	59.7	61.1	61.2	60.5	59.9	60.1	60.6	60.4	60.6	61.4	62.0	61.9	60.4	58.5	57.6	56.8	56.5	52.4

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45

AMBIENT GUIDELINE LIMIT LEQ(1) 49.3 47.2 45.0 45.0 47.7 54.3 59.7 61.1 61.2 60.5 59.9 60.1 60.6 60.4 60.6 61.4 62.0 61.9 60.4 58.5 57.6 56.8 56.5 52.4

Daytime	60
Evening	56
Night-time	45

Total Leq(day) 72.3 Road Leq(day) 72.3 day = 0700 through 2200
 Total Leq(night) 62.2 Road Leq(night) 62.2 night = 2300 through 0600

Road Traffic Noise at NR4 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Carp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 Traffic Distribution	3	0.74%	0.41%	0.31%	0.27%	0.42%	1.69%	4.95%	5.77%	5.44%	5.61%	5.76%	6.29%	6.21%	6.35%	6.72%	7.29%	8.26%	7.54%	5.74%	4.31%	3.63%	3.07%	1.95%	1.26%	
24 hr Leq value (dBA)	Assign distribution number																									
Highway 417 - West of Carp	63.1	3	55.6	53.0	51.8	51.2	53.1	59.1	63.8	64.5	64.2	64.4	64.5	64.8	64.8	64.9	65.1	65.5	66.0	65.6	64.5	63.2	62.5	61.7	59.8	57.9
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		55.6	53.0	51.8	51.2	53.1	59.1	63.8	64.5	64.2	64.4	64.5	64.8	64.8	64.9	65.1	65.5	66.0	65.6	64.5	63.2	62.5	61.7	59.8	57.9	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	55.6	53.0	51.8	51.2	53.1	59.1	63.8	64.5	64.2	64.4	64.5	64.8	64.8	64.9	65.1	65.5	66.0	65.6	64.5	63.2	62.5	61.7	59.8	57.9

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45
AMBIENT GUIDELINE LIMIT LEQ(1)		55.6	53.0	51.8	51.2	53.1	59.1	63.8	64.5	64.2	64.4	64.5	64.8	64.8	64.9	65.1	65.5	66.0	65.6	64.5	63.2	62.5	61.7	59.8	57.9
		Daytime		64		Total Leq(day)		76.4	Road Leq(day)		76.4	day = 0700 through 2200													
		Evening		60		Total Leq(night)		66.9	Road Leq(night)		66.9	night = 2300 through 0600													
		Night-time		51																					

Road Traffic Noise at NR8 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Carp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 Traffic Distribution	3	0.74%	0.41%	0.31%	0.27%	0.42%	1.69%	4.95%	5.77%	5.44%	5.61%	5.76%	6.29%	6.21%	6.35%	6.72%	7.29%	8.26%	7.54%	5.74%	4.31%	3.63%	3.07%	1.95%	1.26%	
24 hr Leq value (dBA)	Assign distribution number																									
Highway 417 - West of Carp	55.9	3	48.4	45.8	44.6	44.0	45.9	52.0	56.6	57.3	57.0	57.2	57.3	57.7	57.6	57.7	58.0	58.3	58.9	58.5	57.3	56.0	55.3	54.6	52.6	50.7
Total Road Traffic Leq (1)		48.4	45.8	44.6	44.0	45.9	52.0	56.6	57.3	57.0	57.2	57.3	57.7	57.6	57.7	58.0	58.3	58.9	58.5	57.3	56.0	55.3	54.6	52.6	50.7	

Stationary Noise Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Total Stationary Sources Leq (1)																									

Total of Road + Stationary Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Road+Stationary Leq (1)	48.4	45.8	44.6	44.0	45.9	52.0	56.6	57.3	57.0	57.2	57.3	57.7	57.6	57.7	58.0	58.3	58.9	58.5	57.3	56.0	55.3	54.6	52.6	50.7

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45
AMBIENT GUIDELINE LIMIT LEQ(1)		48.4	45.8	45.0	45.0	45.9	52.0	56.6	57.3	57.0	57.2	57.3	57.7	57.6	57.7	58.0	58.3	58.9	58.5	57.3	56.0	55.3	54.6	52.6	50.7
		Daytime		57		Total Leq(day)		69.2		Road Leq(day)		69.2		day = 0700 through 2200											
		Evening		53		Total Leq(night)		59.7		Road Leq(night)		59.7		night = 2300 through 0600											
		Night-time		45																					

Road Traffic Noise at NR9 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - East of Carp Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - East of Carp Road	4	0.36%	0.10%	0.12%	0.16%	0.18%	1.76%	5.93%	8.69%	6.78%	5.49%	8.36%	5.00%	5.02%	5.26%	5.12%	7.17%	9.41%	8.06%	5.53%	3.56%	3.02%	2.11%	1.96%	0.83%	
24 hr Leq value (dBA)	Assign distribution number																									
Richardson Road - East of Carp Road	63.4	4	52.8	47.2	48.0	49.3	49.8	59.6	64.9	66.6	65.5	64.6	66.4	64.2	64.2	64.4	64.3	65.7	66.9	66.2	64.6	62.7	62.0	60.4	60.1	56.4
Total Road Traffic Leq (1)																										
		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		52.8	47.2	48.0	49.3	49.8	59.6	64.9	66.6	65.5	64.6	66.4	64.2	64.2	64.4	64.3	65.7	66.9	66.2	64.6	62.7	62.0	60.4	60.1	56.4	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		52.8	47.2	48.0	49.3	49.8	59.6	64.9	66.6	65.5	64.6	66.4	64.2	64.2	64.4	64.3	65.7	66.9	66.2	64.6	62.7	62.0	60.4	60.1	56.4

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300						
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45						
AMBIENT GUIDELINE LIMIT LEQ(1)		52.8	47.2	48.0	49.3	49.8	59.6	64.9	66.6	65.5	64.6	66.4	64.2	64.2	64.4	64.3	65.7	66.9	66.2	64.6	62.7	62.0	60.4	60.1	56.4						
		<table border="1"> <tr> <td>Daytime</td> <td>64</td> </tr> <tr> <td>Evening</td> <td>60</td> </tr> <tr> <td>Night-time</td> <td>47</td> </tr> </table>		Daytime	64	Evening	60	Night-time	47	Total Leq(day)		76.7	Road Leq(day)		76.7	day = 0700 through 2200															
Daytime	64																														
Evening	60																														
Night-time	47																														
		Total Leq(night)		66.9	Road Leq(night)		66.9	night = 2300 through 0600																							

Road Traffic Noise at RR12 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Highway 7	31852	199	88	81	109	122	591	1533	1818	1585	1570	1707	1840	1775	1979	2117	2523	2782	2618	2154	1508	1122	864	705	462
Richardson Road - West of Carp Road	4939	18	5	6	8	9	87	293	429	335	271	413	247	248	260	253	354	465	398	273	176	149	104	97	41

Distribution	% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Highway 7	2	0.62%	0.28%	0.25%	0.34%	0.38%	1.86%	4.81%	5.71%	4.98%	4.93%	5.36%	5.78%	5.57%	6.21%	6.65%	7.92%	8.73%	8.22%	6.76%	4.73%	3.52%	2.71%	2.21%	1.45%	
Richardson Road - West of Carp Road	4	0.36%	0.10%	0.12%	0.16%	0.18%	1.76%	5.93%	8.69%	6.78%	5.49%	8.36%	5.00%	5.02%	5.26%	5.12%	7.17%	9.41%	8.06%	5.53%	3.56%	3.02%	2.11%	1.96%	0.83%	

Road Source	24 hr Leq value (dBA)	Assign distribution number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Highway 417 - West of Highway 7	60.2	2	52.0	48.4	48.1	49.4	49.8	56.7	60.8	61.6	61.0	60.9	61.3	61.6	61.5	61.9	62.2	63.0	63.4	63.2	62.3	60.8	59.5	58.3	57.5	55.6
Richardson Road - West of Carp Road	56.4	4	45.8	40.2	41.0	42.2	42.8	52.6	57.9	59.5	58.5	57.5	59.4	57.1	57.2	57.4	57.2	58.7	59.9	59.2	57.6	55.7	55.0	53.4	53.1	49.3

Total Road Traffic Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	52.9	49.0	48.8	50.1	50.6	58.1	62.6	63.7	62.9	62.6	63.5	62.9	62.8	63.2	63.4	64.4	65.0	64.6	63.6	61.9	60.8	59.5	58.8	56.5

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	52.9	49.0	48.8	50.1	50.6	58.1	62.6	63.7	62.9	62.6	63.5	62.9	62.8	63.2	63.4	64.4	65.0	64.6	63.6	61.9	60.8	59.5	58.8	56.5

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45

AMBIENT GUIDELINE LIMIT LEQ(1) 52.9 49.0 48.8 50.1 50.6 58.1 62.6 63.7 62.9 62.6 63.5 62.9 62.8 63.2 63.4 64.4 65.0 64.6 63.6 61.9 60.8 59.5 58.8 56.5

Daytime	63
Evening	59
Night-time	49

Total Leq(day) 75.1 Road Leq(day) 75.1 day = 0700 through 2200
 Total Leq(night) 65.4 Road Leq(night) 65.4 night = 2300 through 0600

Road Traffic Noise at RR14 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - West of Carp Road	4939	18	5	6	8	9	87	293	429	335	271	413	247	248	260	253	354	465	398	273	176	149	104	97	41	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - West of Carp Road	2	0.36%	0.10%	0.12%	0.16%	0.18%	1.76%	5.93%	8.69%	6.78%	5.49%	8.36%	5.00%	5.02%	5.26%	5.12%	7.17%	9.41%	8.06%	5.53%	3.56%	3.02%	2.11%	1.96%	0.83%	
24 hr Leq value (dBA)	Assign distribution number																									
Richardson Road - West of Carp Road	60.3	2	49.7	44.2	45.0	46.2	46.7	56.6	61.8	63.5	62.4	61.5	63.3	61.1	61.1	61.3	61.2	62.7	63.9	63.2	61.5	59.6	58.9	57.3	57.0	53.3
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		49.7	44.2	45.0	46.2	46.7	56.6	61.8	63.5	62.4	61.5	63.3	61.1	61.1	61.3	61.2	62.7	63.9	63.2	61.5	59.6	58.9	57.3	57.0	53.3	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	49.7	44.2	45.0	46.2	46.7	56.6	61.8	63.5	62.4	61.5	63.3	61.1	61.1	61.3	61.2	62.7	63.9	63.2	61.5	59.6	58.9	57.3	57.0	53.3

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45
AMBIENT GUIDELINE LIMIT LEQ(1)		49.7	45.0	45.0	46.2	46.7	56.6	61.8	63.5	62.4	61.5	63.3	61.1	61.1	61.3	61.2	62.7	63.9	63.2	61.5	59.6	58.9	57.3	57.0	53.3
		Daytime		61		Total Leq(day)		73.7		Road Leq(day)		73.7		day = 0700 through 2200											
		Evening		57		Total Leq(night)		63.9		Road Leq(night)		63.9		night = 2300 through 0600											
		Night-time		45																					

Road Traffic Noise at PR7 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Carp Road - South of 417	21340	70	48	22	27	57	282	1089	1592	1674	1334	1073	1104	1302	1225	1246	1601	1856	1846	1286	768	616	509	548	165

Distribution		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
% Traffic Distribution	number	0.33%	0.22%	0.10%	0.13%	0.27%	1.32%	5.10%	7.46%	7.84%	6.25%	5.03%	5.17%	6.10%	5.74%	5.84%	7.50%	8.70%	8.65%	6.03%	3.60%	2.89%	2.39%	2.57%	0.77%
Carp Road - South of 417	2																								

Road Source	24 hr Leq value (dBA)	Assign distribution number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Carp Road - South of 417	59.6	2	48.6	46.9	43.6	44.5	47.7	54.6	60.5	62.2	62.4	61.4	60.4	60.6	61.3	61.0	61.1	62.2	62.8	62.8	61.2	59.0	58.0	57.2	57.5	52.3

Total Road Traffic Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	48.6	46.9	43.6	44.5	47.7	54.6	60.5	62.2	62.4	61.4	60.4	60.6	61.3	61.0	61.1	62.2	62.8	62.8	61.2	59.0	58.0	57.2	57.5	52.3

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	48.6	46.9	43.6	44.5	47.7	54.6	60.5	62.2	62.4	61.4	60.4	60.6	61.3	61.0	61.1	62.2	62.8	62.8	61.2	59.0	58.0	57.2	57.5	52.3

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45

AMBIENT GUIDELINE LIMIT LEQ(1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	48.6	46.9	45.0	45.0	47.7	54.6	60.5	62.2	62.4	61.4	60.4	60.6	61.3	61.0	61.1	62.2	62.8	62.8	61.2	59.0	58.0	57.2	57.5	52.3

Daytime	60
Evening	57
Night-time	45

Total Leq(day)	73.1	Road Leq(day)	73.1	day = 0700 through 2200
Total Leq(night)	62.6	Road Leq(night)	62.6	night = 2300 through 0600

Road Traffic Noise at RR11 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Highway 7	31852	199	88	81	109	122	591	1533	1818	1585	1570	1707	1840	1775	1979	2117	2523	2782	2618	2154	1508	1122	864	705	462	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Highway 7	2	0.62%	0.28%	0.25%	0.34%	0.38%	1.86%	4.81%	5.71%	4.98%	4.93%	5.36%	5.78%	5.57%	6.21%	6.65%	7.92%	8.73%	8.22%	6.76%	4.73%	3.52%	2.71%	2.21%	1.45%	
24 hr Leq value (dBA)	Assign distribution number																									
Highway 417 - West of Highway 7	2	51.1	47.6	47.2	48.5	49.0	55.8	60.0	60.7	60.1	60.1	60.4	60.8	60.6	61.1	61.4	62.1	62.6	62.3	61.5	59.9	58.6	57.5	56.6	54.8	
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		51.1	47.6	47.2	48.5	49.0	55.8	60.0	60.7	60.1	60.1	60.4	60.8	60.6	61.1	61.4	62.1	62.6	62.3	61.5	59.9	58.6	57.5	56.6	54.8	

Stationary Noise Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Total Stationary Sources Leq (1)																									

Total of Road + Stationary Sources

	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Road+Stationary Leq (1)	51.1	47.6	47.2	48.5	49.0	55.8	60.0	60.7	60.1	60.1	60.4	60.8	60.6	61.1	61.4	62.1	62.6	62.3	61.5	59.9	58.6	57.5	56.6	54.8

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2																									
NPC-205 Leq(1) minimum limit	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45		
AMBIENT GUIDELINE LIMIT LEQ(1)	51.1	47.6	47.2	48.5	49.0	55.8	60.0	60.7	60.1	60.1	60.4	60.8	60.6	61.1	61.4	62.1	62.6	62.3	61.5	59.9	58.6	57.5	56.6	54.8		
Daytime	60																									
Evening	57																									
Night-time	47																									
Total Leq(day)	72.7																									
Total Leq(night)	63.2																									
Road Leq(day)	72.7																									
Road Leq(night)	63.2																									
day = 0700 through 2200																										
night = 2300 through 0600																										

Road Traffic Noise at RR17 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - East of Carp Road	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Richardson Road - East of Carp Road	4	0.36%	0.10%	0.12%	0.16%	0.18%	1.76%	5.93%	8.69%	6.78%	5.49%	8.36%	5.00%	5.02%	5.26%	5.12%	7.17%	9.41%	8.06%	5.53%	3.56%	3.02%	2.11%	1.96%	0.83%	
24 hr Leq value (dBA)	Assign distribution number																									
Richardson Road - East of Carp Road	60.6	4	50.0	44.5	45.2	46.5	47.0	56.9	62.1	63.8	62.7	61.8	63.6	61.4	61.4	61.6	61.5	63.0	64.1	63.5	61.8	59.9	59.2	57.6	57.3	53.6
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		50.0	44.5	45.2	46.5	47.0	56.9	62.1	63.8	62.7	61.8	63.6	61.4	61.4	61.6	61.5	63.0	64.1	63.5	61.8	59.9	59.2	57.6	57.3	53.6	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	50.0	44.5	45.2	46.5	47.0	56.9	62.1	63.8	62.7	61.8	63.6	61.4	61.4	61.6	61.5	63.0	64.1	63.5	61.8	59.9	59.2	57.6	57.3	53.6

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300						
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45						
AMBIENT GUIDELINE LIMIT LEQ(1)		50.0	45.0	45.2	46.5	47.0	56.9	62.1	63.8	62.7	61.8	63.6	61.4	61.4	61.6	61.5	63.0	64.1	63.5	61.8	59.9	59.2	57.6	57.3	53.6						
		<table border="1"> <tr><td>Daytime</td><td>61</td></tr> <tr><td>Evening</td><td>57</td></tr> <tr><td>Night-time</td><td>45</td></tr> </table>		Daytime	61	Evening	57	Night-time	45	Total Leq(day)		74.0	Road Leq(day)		74.0	day = 0700 through 2200															
Daytime	61																														
Evening	57																														
Night-time	45																														
				Total Leq(night)		64.2	Road Leq(night)		64.2	night = 2300 through 0600																					

Road Traffic Noise at RR18 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 - West of Carp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Distribution																										
% Traffic Distribution	number	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
Highway 417 Traffic Distribution	3	0.74%	0.41%	0.31%	0.27%	0.42%	1.69%	4.95%	5.77%	5.44%	5.61%	5.76%	6.29%	6.21%	6.35%	6.72%	7.29%	8.26%	7.54%	5.74%	4.31%	3.63%	3.07%	1.95%	1.26%	
24 hr Leq value (dBA)	Assign distribution number																									
Highway 417 - West of Carp	50.9	3	43.4	40.9	39.7	39.1	41.0	47.0	51.7	52.4	52.1	52.2	52.3	52.7	52.7	52.8	53.0	53.4	53.9	53.5	52.3	51.1	50.3	49.6	47.6	45.7
Total Road Traffic Leq (1)		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		43.4	40.9	39.7	39.1	41.0	47.0	51.7	52.4	52.1	52.2	52.3	52.7	52.7	52.8	53.0	53.4	53.9	53.5	52.3	51.1	50.3	49.6	47.6	45.7	

Stationary Noise Sources

Total Stationary Sources Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	

Total of Road + Stationary Sources

Road+Stationary Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	43.4	40.9	39.7	39.1	41.0	47.0	51.7	52.4	52.1	52.2	52.3	52.7	52.7	52.8	53.0	53.4	53.9	53.5	52.3	51.1	50.3	49.6	47.6	45.7

Guideline Limits

Receptor Class per MOE Publication NPC-205/NPC-232:	2	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300						
NPC-205 Leq(1) minimum limit		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	45	45	45	45	45						
AMBIENT GUIDELINE LIMIT LEQ(1)		45.0	45.0	45.0	45.0	45.0	47.0	51.7	52.4	52.1	52.2	52.3	52.7	52.7	52.8	53.0	53.4	53.9	53.5	52.3	51.1	50.3	49.6	47.6	45.7						
		<table border="1"> <tr><td>Daytime</td><td>52</td></tr> <tr><td>Evening</td><td>48</td></tr> <tr><td>Night-time</td><td>45</td></tr> </table>		Daytime	52	Evening	48	Night-time	45	Total Leq(day)		64.3	Road Leq(day)		64.3	day = 0700 through 2200															
Daytime	52																														
Evening	48																														
Night-time	45																														
				Total Leq(night)		54.8	Road Leq(night)		54.8	night = 2300 through 0600																					

Table C2.7a: Resulting Guideline Limits - Landfilling Operations

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
2. MOE Noise Guidelines for Landfill Sites.
3. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
4. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
5. Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
6. The higher of MOE Landfill guideline limit or performance limit. This is also referred to as the "baseline noise condition".

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Landfill Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Landfill Guideline Limit ^[6] (dBA)	
ON-SITE RECEPTORS	PR2	2-storey home Carp Road Central	Daytime	55	No	50	C	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	PR3	2-storey home at 569 William Mooney Road NNW	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	PR5	2-storey home at 505 William Mooney Road NW	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	PR6	1-storey home at 381 William Mooney Road	Daytime	55	No	51	C	55
			Evening	45	No	47		47
			Night-time	45	No	45		45
NR3	2-storey home at 427 William Mooney Road West	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Landfill Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Landfill Guideline Limit ^[6] (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	55	No	56	C	56
		Evening	45	No	52	52		
		Night-time	45	No	45	45		
	PR9	2-storey home David Manchester Road	Daytime	55	No	59	C	59
			Evening	45	No	55		55
			Night-time	45	No	46		46
	NR1	1-storey home at 2485 Carp Road North	Daytime	55	No	50	C	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR2	2-storey home at 2166 Carp Road East	Daytime	55	No	60	C	60
			Evening	45	No	56		56
			Night-time	45	No	45		45
	NR4	2-storey home at 292 Moonstone Road South	Daytime	55	No	64	C	64
			Evening	45	No	60		60
			Night-time	45	No	51		51
	NR8	2-storey Terrace Youth Residential Services	Daytime	55	No	57	C	57
			Evening	45	No	53		53
			Night-time	45	No	45		45
NR9	2-storey Sensitive Business Operation	Daytime	55	No	64	C	64	
		Evening	45	No	60		60	
		Night-time	45	No	47		47	
RR12	2-storey David Manchester Road Central	Daytime	55	No	63	C	63	
		Evening	45	No	59		59	
		Night-time	45	No	49		49	
RR14	2-storey at 607 William Mooney Road	Daytime	55	No	61	C	61	
		Evening	45	No	57		57	
		Night-time	45	No	45		45	
RR15	2-storey Wilbert Cox Drive	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Landfill Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Landfill Guideline Limit ^[6] (dBA)	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	55	No	60	C	60
		Evening	45	No	57	57		
		Night-time	45	No	45	45		
	NR5	St. Stephen Catholic Elementary School	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR6	Huntleigh United Cemetery	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR7	Lloydalex Park	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	RR10	2-storey Spruce Ridge Road Central	Daytime	55	No	45	D	55
			Evening	45	No	40		45
			Night-time	45	No	40		45
	RR11	2-storey David Manchester Road North	Daytime	55	No	60	C	60
			Evening	45	No	57		57
			Night-time	45	No	47		47
	RR13	2-storey David Manchester Road South	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
	RR16	2-storey Carp Road North	Daytime	55	No	50	D	55
			Evening	45	No	45		45
			Night-time	45	No	45		45
RR17	2-storey Oak Creek Road	Daytime	55	No	61	C	61	
		Evening	45	No	57		57	
		Night-time	45	No	45		45	
RR18	2-storey West Carleton Industrial Park	Daytime	55	No	52	C	55	
		Evening	45	No	48		48	
		Night-time	45	No	45		45	
RR19	2-storey Timbermere	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR20	2-storey Stittsville	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR21	2-storey Jackson Trails	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR22	2-storey Fairwinds	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR23	2-storey Arcadia	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR24	2-storey Kanata West	Daytime	55	No	50	D	55	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	

Table C7b: Resulting Guideline Limits - Pest Control Devices

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. Pest control devices are only planned during daytime hours from 0700-1900h.
2. MOE Noise Guidelines for Landfill Sites with pest control devices.
3. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
4. Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
5. Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
6. The higher of MOE Impulsive/Quasi-Steady Landfill guideline limit or performance limit. This is also referred to as the "baseline noise condition".

Summary of 'Impulsive' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Impulsive Guideline Limit ^[2] (dBAI)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Impulsive Guideline Limit ^[6] (dBAI)	
ON-SITE RECEPTORS	PR2	2-storey home Carp Road Central	Daytime	70	No	50	C	70
	PR3	2-storey home at 569 William Mooney Road	Daytime	70	No	50	D	70
	PR5	2-storey home at 505 William Mooney Road NW	Daytime	70	No	50	D	70
	PR6	1-storey home at 381 William Mooney Road	Daytime	70	No	51	C	70
	NR3	2-storey home at 427 William Mooney Road West	Daytime	70	No	50	D	70
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	70	No	56	C	70
	PR9	2-storey home David Manchester Road	Daytime	70	No	59	C	70
	NR1	1-storey home at 2485 Carp Road North	Daytime	70	No	50	C	70
	NR2	2-storey home at 2166 Carp Road East	Daytime	70	No	60	C	70
	NR4	2-storey home at 292 Moonstone Road South	Daytime	70	No	64	C	70
	NR8	2-storey Terrace Youth Residential Services	Daytime	70	No	57	C	70
	NR9	2-storey Sensitive Business Operation	Daytime	70	No	64	C	70
	RR12	2-storey David Manchester Road Central	Daytime	70	No	63	C	70
	RR14	2-storey at 607 William Mooney Road	Daytime	70	No	61	C	70
	RR15	2-storey Wilbert Cox Drive	Daytime	70	No	50	D	70
	REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	70	No	60	C
NR5		St. Stephen Catholic Elementary School	Daytime	70	No	50	D	70
NR6		Huntleigh United Cemetery	Daytime	70	No	50	D	70
NR7		Lloydalex Park	Daytime	70	No	50	D	70
RR10		2-storey Spruce Ridge Road Central	Daytime	70	No	45	D	70
RR11		2-storey David Manchester Road North	Daytime	70	No	60	C	70
RR13		2-storey David Manchester Road South	Daytime	70	No	50	D	70
RR16		2-storey Carp Road North	Daytime	70	No	50	D	70
RR17		2-storey Oak Creek Road	Daytime	70	No	61	C	70
RR18		2-storey West Carleton Industrial Park	Daytime	70	No	52	C	70
RR19		2-storey Timbermere	Daytime	70	No	50	D	70
RR20		2-storey Stittsville	Daytime	70	No	50	D	70
RR21		2-storey Jackson Trails	Daytime	70	No	50	D	70
RR22	2-storey Fairwinds	Daytime	70	No	50	D	70	
RR23	2-storey Arcadia	Daytime	70	No	50	D	70	
RR24	2-storey Kanata West	Daytime	70	No	50	D	70	

Summary of 'Quasi-Steady Impulsive' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Quasi-Steady Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Quasi-Steady Guideline Limit ^[6] (dBA)		
ON-SITE RECEPTORS	PR2	2-storey home Carp Road Central	Daytime	60	No	50	C	60	
	PR3	2-storey home at 569 William Mooney Road	Daytime	60	No	50	D	60	
	PR5	2-storey home at 505 William Mooney Road NW	Daytime	60	No	50	D	60	
	PR6	1-storey home at 381 William Mooney Road	Daytime	60	No	51	C	60	
	NR3	2-storey home at 427 William Mooney Road West	Daytime	60	No	50	D	60	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	60	No	56	C	60	
	PR9	2-storey home David Manchester Road	Daytime	60	No	59	C	60	
	NR1	1-storey home at 2485 Carp Road North	Daytime	60	No	50	C	60	
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	No	60	C	60	
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	No	64	C	64	
	NR8	2-storey Terrace Youth Residential Services	Daytime	60	No	57	C	60	
	NR9	2-storey Sensitive Business Operation	Daytime	60	No	64	C	64	
	RR12	2-storey David Manchester Road Central	Daytime	60	No	63	C	63	
	RR14	2-storey at 607 William Mooney Road	Daytime	60	No	61	C	61	
	RR15	2-storey Wilbert Cox Drive	Daytime	60	No	50	D	60	
	REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	No	60	C	60
		NR5	St. Stephen Catholic Elementary School	Daytime	60	No	50	D	60
		NR6	Huntleigh United Cemetery	Daytime	60	No	50	D	60
NR7		Lloydalex Park	Daytime	60	No	50	D	60	
RR10		2-storey Spruce Ridge Road Central	Daytime	60	No	45	D	60	
RR11		2-storey David Manchester Road North	Daytime	60	No	60	C	60	
RR13		2-storey David Manchester Road South	Daytime	60	No	50	D	60	
RR16		2-storey Carp Road North	Daytime	60	No	50	D	60	
RR17		2-storey Oak Creek Road	Daytime	60	No	61	C	61	
RR18		2-storey West Carleton Industrial Park	Daytime	60	No	52	C	60	
RR19		2-storey Timbermere	Daytime	60	No	50	D	60	
RR20		2-storey Stittsville	Daytime	60	No	50	D	60	
RR21		2-storey Jackson Trails	Daytime	60	No	50	D	60	
RR22		2-storey Fairwinds	Daytime	60	No	50	D	60	
RR23		2-storey Arcadia	Daytime	60	No	50	D	60	
RR24		2-storey Kanata West	Daytime	60	No	50	D	60	

Table C2.7c: Resulting Guideline Limits - Stationary Sources

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
- MOE NPC-205 Class 2 or NPC-232 Class 3 Sound Level Limits for Stationary Sources.
- Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
- Applicable worst-case NPC-205 / NPC-232 / ORNAMENT road traffic modelling sound level limit.
- Performance limit (aka guideline limit) based on following:
 - C = Calculated based on road traffic volumes in compliance with NPC-206 requirements.
 - M = Measured based on monitoring for a minimum 48 hour period, in accordance with NPC-233 requirements.
 - D = Default guideline minima per NPC-205 / NPC-232, as applicable (e.g., 50 dBA daytime for NPC-205)
- The higher of MOE NPC-205/232 guideline limit or performance limit. This is also referred to as the "baseline noise condition".

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Stationary Source Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Stationary Source Guideline Limit ^[6] (dBA)	
ON-SITE RECEPTORS	PR2	2-storey home Carp Road Central	Daytime	50	No	50	C	50
		Evening	45	No	45	45		
		Night-time	45	No	45	45		
	PR3	2-storey home at 569 William Mooney Road NNW	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	PR5	2-storey home at 505 William Mooney Road NW	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	PR6	1-storey home at 381 William Mooney Road	Daytime	50	No	51	C	51
			Evening	45	No	47		47
			Night-time	45	No	45		45
	NR3	2-storey home at 427 William Mooney Road West	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Stationary Source Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Stationary Source Guideline Limit ^[6] (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	50	No	56	C	56
		Evening	45	No	52	52		
		Night-time	45	No	45	45		
	PR9	2-storey home David Manchester Road	Daytime	50	No	59	C	59
			Evening	45	No	55		55
			Night-time	45	No	46		46
	NR1	1-storey home at 2485 Carp Road North	Daytime	50	No	50	C	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR2	2-storey home at 2166 Carp Road East	Daytime	50	No	60	C	60
			Evening	45	No	56		56
			Night-time	45	No	45		45
	NR4	2-storey home at 292 Moonstone Road South	Daytime	50	No	64	C	64
			Evening	45	No	60		60
			Night-time	45	No	51		51
	NR8	2-storey Terrace Youth Residential Services	Daytime	50	No	57	C	57
			Evening	45	No	53		53
			Night-time	45	No	45		45
	NR9	2-storey Sensitive Business Operation	Daytime	50	No	64	C	64
			Evening	45	No	60		60
			Night-time	45	No	47		47
RR12	2-storey David Manchester Road Central	Daytime	50	No	63	C	63	
		Evening	45	No	59		59	
		Night-time	45	No	49		49	
RR14	2-storey at 607 William Mooney Road	Daytime	50	No	61	C	61	
		Evening	45	No	57		57	
		Night-time	45	No	45		45	
RR15	2-storey Wilbert Cox Drive	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period ^[1]	MOE Stationary Source Guideline Limit ^[2] (dBA)	Verified by Acoustic Audit ^[3] (Yes/No)	Performance Limit ^[4] (dBA)	Performance Limit Source ^[5]	Resulting Stationary Source Guideline Limit ^[6] (dBA)	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	50	No	60	C	60
		Evening	45	No	57	57		
		Night-time	45	No	45	45		
	NR5	St. Stephen Catholic Elementary School	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR6	Huntleigh United Cemetery	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	NR7	Lloydalex Park	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	RR10	2-storey Spruce Ridge Road Central	Daytime	45	No	45	D	45
			Evening	40	No	40		40
			Night-time	40	No	40		40
	RR11	2-storey David Manchester Road North	Daytime	50	No	60	C	60
			Evening	45	No	57		57
			Night-time	45	No	47		47
	RR13	2-storey David Manchester Road South	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
	RR16	2-storey Carp Road North	Daytime	50	No	50	D	50
			Evening	45	No	45		45
			Night-time	45	No	45		45
RR17	2-storey Oak Creek Road	Daytime	50	No	61	C	61	
		Evening	45	No	57		57	
		Night-time	45	No	45		45	
RR18	2-storey West Carleton Industrial Park	Daytime	50	No	52	C	52	
		Evening	45	No	48		48	
		Night-time	45	No	45		45	
RR19	2-storey Timbermere	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR20	2-storey Stittsville	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR21	2-storey Jackson Trails	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR22	2-storey Fairwinds	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR23	2-storey Arcadia	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	
RR24	2-storey Kanata West	Daytime	50	No	50	D	50	
		Evening	45	No	45		45	
		Night-time	45	No	45		45	