



Figure 6. Total WCEC Predicted Noise Impact Contours – Evening/Night-time

**Table 1. Noise Predictions and MOE Criteria for Landfilling Steady-state Sources – Scenario 1**

Point of Reception ID	Point of Reception (PoR) Description	Resulting Landfill Guideline Limit <sup>[1]</sup> (dBA)	Total Landfill Sound Level <sup>[2]</sup> (dBA)	Compliance with Criteria? (Yes/No)	Criteria Comparison (dBA)	
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	55	53	Yes	--
	PR9	2-storey home David Manchester Road	59	47	Yes	--
	NR1	1-storey home at 2485 Carp Road North	55	60	<b>NO</b>	5
	NR2	2-storey home at 2166 Carp Road East	60	45	Yes	--
	NR4	2-storey home at 292 Moonstone Road South	60	48	Yes	--
	NR8	2-storey Terrace Youth Residential Services	57	46	Yes	--
	NR9	2-storey Sensitive Business Operation	64	56	Yes	--
	RR12	2-storey David Manchester Road Central	63	46	Yes	--
	RR14	2-storey at 607 William Mooney Road	61	55	Yes	--
	RR15	2-storey Wilbert Cox Drive	55	52	Yes	--
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	60	43	Yes	--
	NR5	St. Stephen Catholic Elementary School	55	33	Yes	--
	NR6	Huntleigh United Cemetery	55	49	Yes	--
	NR7	Lloydalex Park	55	36	Yes	--
	RR10	2-storey Spruce Ridge Road Central	55	34	Yes	--
	RR11	2-storey David Manchester Road North	60	42	Yes	--
	RR13	2-storey David Manchester Road South	55	42	Yes	--
	RR16	2-storey Carp Road North	55	46	Yes	--
	RR17	2-storey Oak Creek Road	61	46	Yes	--
	RR18	2-storey West Carleton Industrial Park	55	44	Yes	--
	RR19	2-storey Timbermere	55	39	Yes	--
	RR20	2-storey Stittsville	55	35	Yes	--
	RR21	2-storey Jackson Trails	55	38	Yes	--
	RR22	2-storey Fairwinds	55	35	Yes	--
RR23	2-storey Arcadia	55	37	Yes	--	
RR24	2-storey Kanata West	55	35	Yes	--	

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

- 1) The higher of MOE Landfill guideline limit or background sound level (see Table C3.1). This is also referred to as the "baseline noise condition".
- 2) Total landfill sound levels include the combined contribution from construction and landfilling activities, gas-to-energy plant, and the both leachate treatment systems (SBR and evaporator), as a conservative approximation (see Table C3.4a).



**Table 2. Noise Predictions and MOE Criteria for Landfill Pest Control Devices – Scenario 1**

Point of Reception ID	Point of Reception (PoR) Description	Resulting Impulsive Guideline Limit <sup>[1]</sup> (dBAI)	Daytime Partial Level at the PoR [2]						Resulting Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	Daytime Partial Level at the PoR <sup>[2]</sup> Whistle (dBA)	
			Propane Cannon 1 (dBAI)	Propane Cannon 2 (dBAI)	Propane Cannon 3 (dBAI)	Propane Cannon 4 (dBAI)	Propane Cannon 5 (dBAI)	Propane Cannon 6 (dBAI)			
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	70	68	63	63	64		64	60	27
	PR9	2-storey home David Manchester Road	70	63	57	58	58		58	60	22
	NR1	2-storey home at 2485 Carp Road North	70	61	<b>71</b>	69	69		<b>73</b>	60	41
	NR2	2-storey home at 2166 Carp Road East	70	56	58	58	57		57	60	20
	NR4	2-storey home at 292 Moonstone Road South	70	62	57	58	58		57	64	20
	NR8	2-storey Terrace Youth Residential Services	70	57	58	58	58		57	60	20
	NR9	2-storey Sensitive Business Operation	70	59	70	65	65		70	64	34
	RR12	2-storey David Manchester Road Central	70	62	57	57	58		58	60	22
	RR14	2-storey at 607 William Mooney Road	70	69	65	66	67		67	64	30
	RR15	2-storey Wilbert Cox Drive	70	65	63	64	65		65	63	28
	Regional Receptors	PR7	2-storey home at 2096 Carp Road South	70	54	56	56	55		55	61
NR5		St. Stephen Catholic Elementary School	70	46	48	48	47		47	60	13
NR6		Huntleigh United Cemetery	70	56	61	60	60	Equipment Removed	62	60	28
NR7		Lloydalex Park	70	50	50	51	50		50	60	14
RR10		2-storey Spruce Ridge Road Central	70	50	46	47	47		47	60	17
RR11		2-storey David Manchester Road North	70	57	54	54	55		55	60	20
RR13		2-storey David Manchester Road South	70	59	50	51	51		50	60	19
RR16		2-storey Carp Road North	70	56	59	59	59		60	60	23
RR17		2-storey Oak Creek Road	70	51	60	59	54		60	60	23
RR18		2-storey West Carleton Industrial Park	70	56	56	57	56		56	60	19
RR19		2-storey Timbermere	70	53	52	52	52		51	61	15
RR20		2-storey Stittsville	70	48	48	48	48		48	60	13
RR21		2-storey Jackson Trails	70	50	51	51	50		50	60	15
RR22	2-storey Fairwinds	70	46	48	48	47	47		60	18	
RR23	2-storey Arcadia	70	45	49	48	48	53		60	18	
RR24	2-storey Kanata West	70	42	49	44	44	49	60	16		

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

1) The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level (see Table C3.2).

2) Bolded text and highlighted cells are above the existing condition.

### 6.1.4 Cumulative Effects

The cumulative effects of noise are the combined sound level contributions from the baseline noise condition and all proposed WCEC landfill activities. The cumulative effects from the WCEC are presented as the overall sound level increase from existing conditions in **Table 3** and detailed in **Table C3.4b** of **Appendix C3**. The results show that receptors in the Site-Vicinity may experience changes in sound levels of up to 6 dBA in the daytime due to landfilling. Mitigation for potential cumulative effects of greater than 3 dBA is considered, specifically for NR1, as detailed in Section 6.2.

**Table 3. Cumulative Increase in Sound Levels over Existing Conditions – Landfill Operations**

Point of Reception ID	Point of Reception (PoR) Description	Resulting Landfill Guideline Limit <sup>[1]</sup> (dBA)	Cumulative Sound Level <sup>[2]</sup> (dBA)	Overall Increase in Sound Level <sup>[3]</sup> (dBA)	
Site Vicinity Receptors	PR4	2-storey home on Richardson Side Road NNW	55	57	2
	PR9	2-storey home David Manchester Road	59	60	--
	NR1	1-storey home at 2485 Carp Road North	55	61	6
	NR2	2-storey home at 2166 Carp Road East	60	61	--
	NR4	2-storey home at 292 Moonstone Road South	60	62	1
	NR8	2-storey Terrace Youth Residential Services	57	59	1
	NR9	2-storey Sensitive Business Operation	64	65	1
	RR12	2-storey David Manchester Road Central	63	63	--
	RR14	2-storey at 607 William Mooney Road	61	62	1
	RR15	2-storey Wilbert Cox Drive	55	57	2
Regional Receptors	PR7	2-storey home at 2096 Carp Road South	60	61	--
	NR5	St. Stephen Catholic Elementary School	55	55	--
	NR6	Huntleigh United Cemetery	55	56	1
	NR7	Lloydalex Park	55	55	--
	RR10	2-storey Spruce Ridge Road Central	55	55	--
	RR11	2-storey David Manchester Road North	60	60	--
	RR13	2-storey David Manchester Road South	55	55	--
	RR16	2-storey Carp Road North	55	56	1
	RR17	2-storey Oak Creek Road	61	62	--
	RR18	2-storey West Carleton Industrial Park	55	56	1
	RR19	2-storey Timbermere	55	55	--
	RR20	2-storey Stittsville	55	55	--
	RR21	2-storey Jackson Trails	55	55	--
	RR22	2-storey Fairwinds	55	55	--
RR23	2-storey Arcadia	55	55	--	
RR24	2-storey Kanata West	55	55	--	

- Notes: -- All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.
1. The higher of MOE Landfill guideline limit or background sound level (see Table C3.1). This is also referred to as the "baseline noise condition".
  2. Cumulative sound levels include contributions from the baseline noise conditions, total landfill activities and total ancillary facilities.
  3. Change from baseline noise condition.



Regional receptors may experience a cumulative change of up to 1 dBA, assuming minimal influence from other local noise sources. This amount of change is not expected to be noticeable, as background at these locations may have other local sources influencing noise levels and the amount of change predicted is below 3 dBA.

Potential cumulative effects during the evening and night-time periods considered 24/7 operations of the WCEC (including LGTE plant and leachate treatment systems) and the lowest traffic volume hour. Operations of activities from the Preferred Alternative Landfill Footprint occur only during daytime hours (7:00 am to 7:00 pm).

## 6.2 Mitigation and/or Compensation Measures

This assessment assumes that all receptors within the modified property boundary of the WCEC will be removed through purchase/compensation plans. The receptors considered to be within the modified property boundary and therefore not assessed are:

### **On-Site Receptors Removed as per ECR (Existing Conditions Report)**

- 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).

Specific mitigation options were explored for receptor NR1 and all receptors affected by steady-state and impulsive noise sources. Specific mitigation is described below.

### **Noise Controls Included in the Assessment**

The assessment incorporated basic noise controls that were assumed to exist or be maintained at the WCEC. These controls were either integral to the facility design or assumed to be implemented. The specific controls considered include the following:

- All WM trucks should use standard (factory) silencers and be kept in good working order;
- Stationary sources are enclosed in buildings where practical;
- The existing landfill height of approximately 172 m will act as a berm for receptors to the south;



- The finished height of the preferred landfill footprint of approximately 156 m will act as a berm for receptors to the north for sources travelling on the main access road;
- Construction and landfill operations are conducted between the hours of 7:00 am and 7:00 pm to reduce potential impacts; and
- Ancillary facilities, with the exception of the gas-to-energy plant, will operate between 7:00 am and 7:00 pm based on consultation with WM.

#### Specific Mitigation for Landfill Steady-State Sources

The predictive modelling showed that the applicable sound level limit for landfill steady-state sources may be exceeded in the daytime at location NR1. The cumulative effects assessment confirms the effects at both site-vicinity and regional receptors are expected to be between 1 and 6 dBA as shown in **Table 3**. Only receptor NR1 is expected to experience a cumulative increase of more than 3 dBA.

Several aspects of the detailed design have created issues at location NR1. These include the location of the proposed expansion, which resulted in sources being placed closer to this receptor. In addition, more sources will be present at an elevated height on the landfill. Specific effects at NR1 are due to the construction and landfilling activity occurring concurrently in the northern cells.

Investigations of potential mitigation measures indicate that placement of temporary berms at the active working faces could sufficiently control noise levels at NR1. In the worst-case scenario, 7 m berms (i.e., blocking the line of sight and 4 m above the equipment) placed at both the construction and landfilling working faces for operations occurring at grade in cells 1 and 3 (northeastern cells) would result in a daytime noise level of approximately 55 dBA at NR1, which complies with the MOE Landfill criteria. The berm heights at the working faces can gradually decline with increase in separation distance from the receptor as the activities migrate west and south. At a minimum, the berms should block the line of sight and be 1 m above the equipment in northwestern cells (cells 5 and 7).

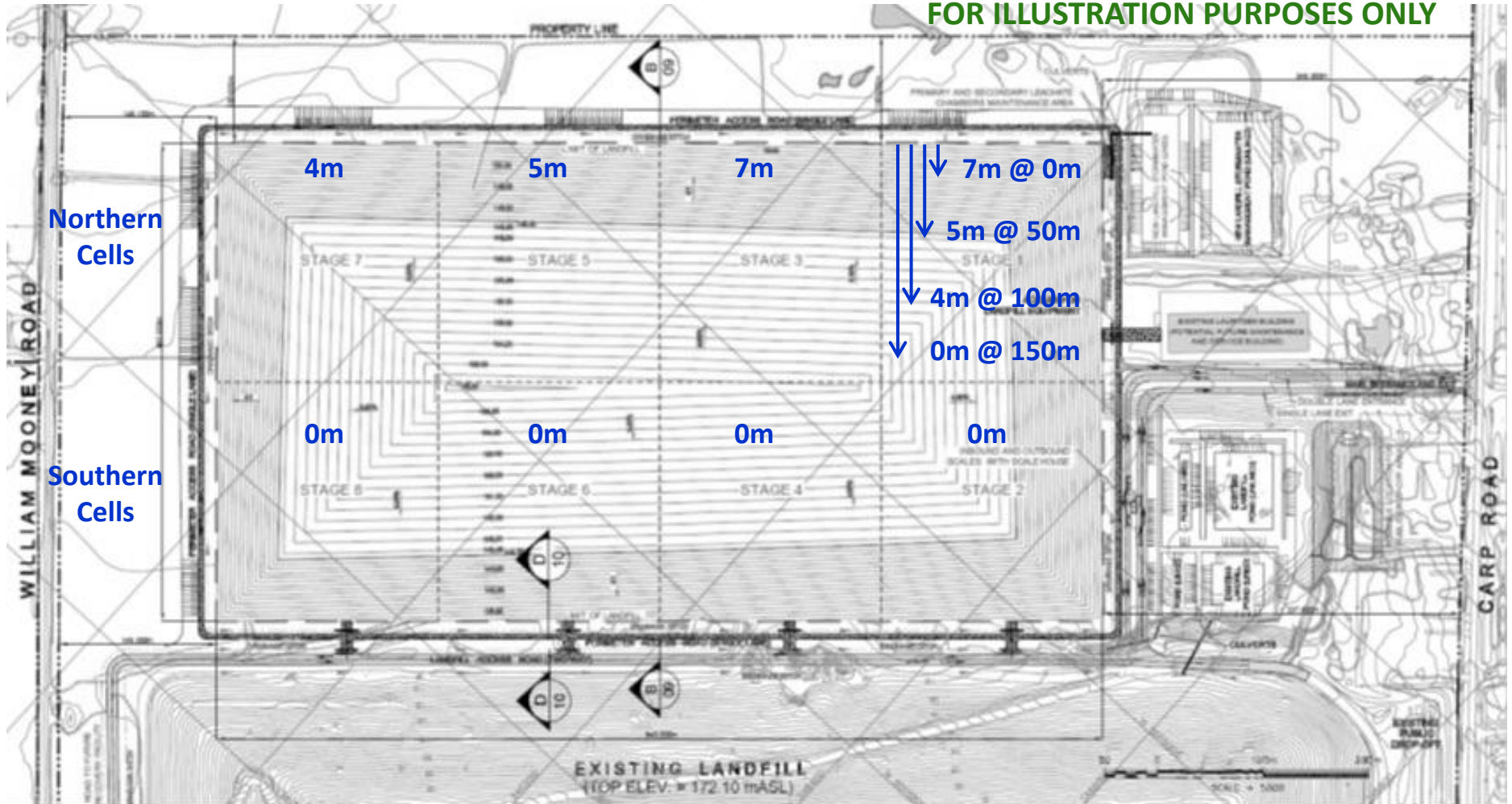
The progression of landfilling from north to south allows the use of the landfill itself as a berm to further reduce noise impacts. Therefore, berms are not required for landfilling or construction activities in the southern cells. In addition, aligning the initial site preparation activities with quarry operations east of Carp (i.e., during summer months) would account for elevated background sound levels.

The plan for progression of the temporary berms is illustrated in **Figure 7**.

A monitoring program to establish background sound levels at NR1 is highly recommended, as results may alter or reduce screening berm requirements. In addition, the effectiveness of the temporary berm approach will be verified during operations through a measurement program.



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**Figure 7. Berm Heights at Grade for Construction and Landfilling Activities**

### Controls for Impulsive Sources

The results of the detailed assessment indicate that the MOE Landfill guideline limit for impulsive sources may be exceeded in the daytime at half of the Site-Vicinity receptor locations (NR1 and RR14) after investigation of both operating scenarios. The impulsive noise impacts at the receptors are shown in **Table C3.10** and **C3.11** of **Appendix C3** for Scenarios 1 and 2, respectively. There are no sound level exceedances of greater than 3 dBA occurring at any of the receptors

Impulsive noise sources that show potential to exceed MOE Landfill criteria are propane cannons. Propane cannons are a directional noise source. The current noise modelling predictions assume no directionality on the cannons, which show predicted impacts over the MOE Landfill limits for pest control devices. The degree of potential exceedance for these sources is 3 dBA or less, so careful placement of the cannons to ensure they are pointed away from residences is expected to mitigate any effects. Modelling of the cannons with directionality applied and pointed away from the receptors shows compliance at all locations. The results were sent to the MOE and are provided in **Appendix D2**. This should be verified through measurement during operations.

WM will not be using pyrothechnic bird control devices at the proposed landfill.

The use of trained raptors, such as falcons, and other visual deterrent techniques should be considered as alternative means of bird control.

Noise mitigation needs will vary over the life of activity at the Preferred Alternative Landfill Footprint, depending on the spatial arrangement of equipment, including the landfill height.

## **6.3 Net Effects**

The results indicate that Landfill activity located within the Preferred Alternative Landfill Footprint will generate noise at some of the receptors in the Site Vicinity, but is predicted to comply with the applicable sound level limits once mitigation is applied. The net effects at the nearest and representative receptors are listed in **Table 4**.

Noise levels at some of the representative receptors may be affected by landfill activity, but the amount of change is not expected to be noticeable.





**Table 4. Potential Effects, Proposed Mitigation and Compensation Measures and Resulting Net Effects**

ID Number	Receptor	Potential Effect	Mitigation/ Compensation	Net Effect
1.	PR4	<ul style="list-style-type: none"> <li>Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA</li> </ul>	<ul style="list-style-type: none"> <li>Direct bird cannons or other directional sources toward the landfill – not aimed off-site</li> <li>Screening berms (4 m and 5 m heights) at working faces for the northwestern half of landfill area (see Figure 7)</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
2.	PR9	<ul style="list-style-type: none"> <li>Noise levels expected to comply with applicable criteria, no cumulative effects expected</li> </ul>	<ul style="list-style-type: none"> <li>None recommended</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
3.	NR1	<ul style="list-style-type: none"> <li>Impulsive noise levels may exceed applicable criteria; cumulative effects are greater than 3 dBA but less than 6 dBA which is a clearly noticeable change from existing condition</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance to keep haul trucks in good condition</li> <li>Direct impulsive sources toward the landfill – not aimed off-site</li> <li>Screening berms (7 m height) at working faces for the northeastern half of landfill area (see Figure 7)</li> <li>Efficient traffic flow</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>Suggest purchase as minimal opportunities exist to further reduce noise from landfilling</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>Monitoring of existing noise levels may account for elevated ambient sound levels which can reduce or alter screening berm requirements</li> </ul>	<ul style="list-style-type: none"> <li>Receptor can be mitigated to comply with the applicable criteria. Monitoring of ambient sound levels to verify mitigation effectiveness is recommended.</li> </ul>
4.	NR2	<ul style="list-style-type: none"> <li>Landfill or steady-state noise levels expected to comply with applicable criteria, no cumulative effects expected</li> </ul>	<ul style="list-style-type: none"> <li>Direct bird cannons or other directional sources toward the landfill – not aimed off-site</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
5.	NR4	<ul style="list-style-type: none"> <li>Landfill or steady-state noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA</li> </ul>	<ul style="list-style-type: none"> <li>Direct bird cannons or other directional sources toward the landfill – not aimed off-site</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
6.	NR8	<ul style="list-style-type: none"> <li>Landfill or steady-state noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA</li> </ul>	<ul style="list-style-type: none"> <li>Direct bird cannons or other directional sources toward the landfill – not aimed off-site</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
7.	NR9	<ul style="list-style-type: none"> <li>Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA</li> </ul>	<ul style="list-style-type: none"> <li>None recommended</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>
8.	RR12	<ul style="list-style-type: none"> <li>Noise expected to comply with applicable criteria, no cumulative effects expected</li> </ul>	<ul style="list-style-type: none"> <li>None recommended</li> </ul>	<ul style="list-style-type: none"> <li>No net effects</li> </ul>

**Table 4. Potential Effects, Proposed Mitigation and Compensation Measures and Resulting Net Effects**

ID Number	Receptor	Potential Effect	Mitigation/ Compensation	Net Effect
9.	RR14	• Impulsive noise levels may exceed MOE Landfill Criteria, landfill or steady-state noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA	• Direct bird cannons or other directional sources toward the landfill – not aimed off-site	• No net effects
10.	RR15	• Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA	• None recommended	• No net effects
11.	PR7	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
12.	NR5	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
13.	NR6	• Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA	• None recommended	• No net effects
14.	NR7	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
15.	RR10	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
16.	RR11	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
17.	RR13	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
18.	RR16	• Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA	• None recommended	• No net effects
19.	RR17	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
20.	RR18	• Noise levels expected to comply with applicable criteria, cumulative effects are less than 3 dBA	• None recommended	• No net effects
21.	RR19	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
22.	RR20	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
23.	RR21	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
24.	RR22	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
25.	RR23	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects
26.	RR24	• Noise levels expected to comply with applicable criteria, no cumulative effects expected	• None recommended	• No net effects

## 7. Impact Analysis of Other WCEC Facilities

The following describes the consideration of specific additional facilities in a cumulative effects assessment of Environmental Noise from the WCEC. All data analysis, sound source and modelling conducted for the additional facilities are as described in Section 3.0. Detailed sound level data and model input data are provided in **Appendix C1**.

The background noise condition for the LGTE plant was assessed based on 24/7 operations. Based on discussions with WM, all other ancillary facilities operate only during daytime hours between 7:00 am to 7:00 pm. The resulting background noise condition is provided in **Table C3.3** of **Appendix C3**. The assessment of potential cumulative effects would require that ancillary facilities be assessed with landfill operations. The cumulative effects are summarized in **Table C3.6** of **Appendix C3**.

### 7.1 Materials Recycling/Organics Processing Facility

The MRF will process up to 250 tonnes per day (TPD) of recyclable material from the Residential and IC&I sectors. This facility will operate mostly indoors, with an open air sorting area, and truck traffic bringing waste as well as hauling sorted materials. As part of the existing building retrofit, 8-foot high concrete push walls are used along the entire length of the north and south side. The vehicle traffic associated with the MRF has the potential to add to the cumulative noise levels from the WCEC. Hours of operation occurs between 7:00 am to 7:00 pm.

An analysis of the additional MRF truck traffic at the WCEC site by itself indicates that no effects will occur with the addition of this facility. A summary of the analysis results is provided in **Table C3.5a** of **Appendix C3**. Details on the sound sources and predictions are located in **Appendix C1**.

The effects at NR1 are due to the vehicle traffic arriving at the site via the new entrance off Carp Road, just south of the existing Laurysen Building. The effects at the remaining receptors are due to the activity at the MRF.

The MRF would require an Environmental Compliance Approval (ECA) Permit from the MOE, where the stationary source noise criteria would apply. The permit process would require a review of potential mitigation to limit noise contributions at receptors as per the applicable limit.



## 7.2 Construction Demolition Facility

The CDF will process up to 150 TPD of recyclable material from the construction and demolition sectors. Noise sources associated with this activity are inbound and outbound vehicles, a concrete crusher and a loader used for moving material. The same loader from the MRF will sort the recovered materials from the open air sorting area to a series of containers.

An analysis of the additional CDF noise sources at the WCEC site by itself indicates that no effects will occur with the addition of this facility. A summary of the analysis results is provided in **Table C3.5a** of **Appendix C3**. Details on the sound sources and predictions are located in **Appendix C1**.

The CDF would require an ECA Permit from the MOE, where the stationary source noise criteria would apply. The permit process would require a review of potential mitigation to limit noise contributions at receptors as per the applicable limit.

## 7.3 Organics Processing Facility

The organics processing facility is included in the capacity of the MRF and it will process only leaf and yard waste. Any associated vehicle movements have already been considered as part of the MRF in the cumulative assessment.

## 7.4 Community Lands for Park and Recreation Use

These are buffer lands surrounding the WCEC that will include passive uses such as trail systems. Noise sources that would contribute to cumulative noise effects have not been identified.

## 7.5 Landfill Gas-to-Energy Facility

While the LGTE facility is considered an additional activity, this facility is on the WCEC property. As such, it was already considered in the assessment of landfill activity based on MOE compliance considerations as well as the need to assess the existing environment. The results provided in **Sections 6.2** and **6.3** and in **Appendix C3** indicate the noise contributions from the LGTE facility to the cumulative noise levels at receptors. The LGTE facility is not a significant contributor to noise levels at receptors.



## 7.6 Greenhouse Facility

The greenhouse facility will be a third-party facility that will add some vehicle traffic on site roadways; however, the type of vehicles will be small compared to other facilities. The vehicle mix is expected to consist of mainly passenger traffic with occasional delivery trucks for materials or products. This facility was not deemed to consist of significant noise sources so no specific sources were added to the noise modelling. No cumulative effects are expected from this facility.

## 7.7 Existing Land Uses within the Study Area

The lands surrounding the modified WCEC property boundary contain mixed land use, with some heavy and light industrial operations that may contribute to environmental noise levels in the area. Contributions from industries such as the quarry, concrete and asphalt operations east of Carp Road and south of Highway 417 were excluded from the existing environment.

The future contributions of off-site industries were not quantified in this assessment as the future operating plans, conditions or degree of activity needed to estimate noise levels were not available. Obtaining or using data for these facilities, if it became available, is not expected to result in potentially increased effects. This is due to the way environmental noise is evaluated by the MOE. Any estimate of noise contributions from the existing facilities could have reduced the degree of conservatism in the noise assessment as a higher background noise level result in a higher criteria noise level and thus a potentially greater contribution from a facility.

## 7.8 Cumulative Assessment

The cumulative results indicate that the primary sources of noise that may affect receptors are as follows:

- Construction and landfilling activities for receptor NR1;
- Impulsive sources for receptors NR1 and RR14; and
- MRF and CDF operations for Site-Vicinity receptors.

It is expected that control of cumulative noise effects can be achieved through implementation of the noise controls included in the assessment, with the exception of NR1, where mitigation to below applicable criteria may not be possible due to the proximity of construction and landfilling activity.



Predicted noise modelling for the cumulative assessment was completed for the WCEC assuming 24/7 operation. The overall sound level increase during the evening and night-time periods, as shown in **Table C3.6** of **Appendix C3**, was compared to the baseline noise condition based on lowest hour sound levels due to traffic.

## 8. Monitoring and Commitments for the Undertaking

To ensure that the mitigation measures identified in **Section 6** are implemented as envisioned, a strategy and schedule was developed for monitoring environmental effects. With these mitigation or compensation measures and monitoring requirements in mind, commitments have also been proposed for ensuring that they are carried out as part of the construction, operation, and maintenance of the landfill.

### 8.1 Monitoring Strategy and Schedule

As mentioned, a monitoring strategy and schedule was developed based on the Environmental Noise Impact Assessment carried out for the Preferred Alternative Landfill Footprint to ensure that (1) predicted net negative effects are not exceeded, (2) unexpected negative effects are addressed, and (3) the predicted benefits are realized.

#### 8.1.1 Environmental Effects Monitoring

Specific monitoring with respect to noise should be conducted at the most affected receptors once the landfill is in operation to verify the results of this assessment. The proposed monitoring requirements are summarized in **Table 5**. The monitoring would consist of 24-hr measurements at one of the most affected receptors (NR1). Based on the spatial distribution of sound and these receptors, verifying compliance at these receptors would indicate whether farther or similarly affected receptors would also be compliant.



**Table 5. Proposed Monitoring Requirements**

ID Number/ Potential Effect	Proposed Monitoring Requirement	Associated Licences, Permits or Authorizations
1/PR4	None Recommended	ECA Required
2/PR9	None Recommended	ECA Required
3/NR1	24-hr monitoring for both Steady-state and impulsive noise sources	ECA Required
4/NR2	None Recommended	ECA Required
5/NR4	24-hr monitoring for impulsive noise sources	ECA Required
6/NR8	24-hr monitoring for impulsive noise sources	ECA Required
7/NR9	None Recommended	ECA Required
8/RR12	None Recommended	ECA Required
9/RR14	None Recommended	ECA Required
10/RR15	None Recommended	ECA Required
11/PR7	None Recommended	None Required
12/NR5	None Recommended	None Required
13/NR6	None Recommended	None Required
14/NR7	None Recommended	None Required
15/RR10	None Recommended	None Required
16/RR11	None Recommended	None Required
17/RR13	None Recommended	None Required
18/RR16	None Recommended	None Required
19/RR17	None Recommended	None Required
20/RR18	None Recommended	None Required
21/RR19	None Recommended	None Required
22/RR20	None Recommended	None Required
23/RR21	None Recommended	None Required
24/RR22	None Recommended	None Required
25/RR23	None Recommended	None Required
26/RR24	None Recommended	None Required

### 8.1.2 Development of an Environmental Management Plan

An Environmental Management Plan (EMP) or Plans will be prepared following approval of the undertaking by the Minister of the Environment and prior to construction. The EMP will include a description of the proposed mitigation measures, commitments, and monitoring.



## 8.2 Commitments

The following commitments have been proposed for ensuring that the identified mitigation or compensation measures and monitoring requirements are carried out as part of the construction, operation, and maintenance of the undertaking:

- a) Address significant net effects at Receptor NR1 through temporary berms at working faces.
- b) Ensure propane cannons are directed away from homes.
- c) Use barriers to reduce vehicle movement noise from MRF and CDF to decrease cumulative noise impacts.

## 9. Environmental Noise Approvals Required for the Undertaking

The MOE's modernization of approvals that came into effect October 31, 2011 changed a Certificate of Approval (C of A) into an ECA. The MOE documentation regarding applications for noise approvals have not been revised, and therefore still refer to the C of A.

**Report Prepared By:**



Brad Bergeron, A.Sc.T., d.E.T.  
Senior Project Manager

**Report Reviewed By:**



John DeYoe, B.A., d.E.T.  
Project Director





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# Appendix A1

## Assessment to NPC-233 Linkage Table



**ASSESSMENT TO NPC-233 LINKAGE TABLE**

		<b>Explanation/Reference</b>
<b>1.0</b>	<b>Introduction (Project Background and Overview)</b>	
<b>2.0</b>	<b>Facility Description</b>	
	2.1 Operating hours of facility and significant Noise Sources	Section 6.1.2
	2.2 Site Plan identifying all significant Noise Sources	Figures 3a to 4b
<b>3.0</b>	<b>Noise Source Summary</b>	
	3.1 Noise Source Summary Table	Table C1.2 and C1.3 of Appendix C
	3.2 Source noise emissions specifications	Section 3.2.2
	3.3 Source power/capacity ratings	Table C1.2 and C1.3 of Appendix C
	3.4 Noise control equipment description and acoustical specifications	N/A
<b>4.0</b>	<b>Point of Reception Noise Impact Calculations</b>	
	4.1 <i>Point of Reception Noise Impact Table</i>	
	4.2 Point(s) of Reception (POR) list and description	Section 2.1 and 2.2
	4.3 Land-use Zoning Plan	Appendix A4
	4.4 Scaled Area Location Plan	Figure 2
	4.5 Procedure used to assess noise impacts at each POR	Section 2 and 3.2.3
	4.6 List of parameters/assumptions used in calculations	Section 3.2.3
<b>5.0</b>	<b>Acoustic Assessment Summary</b>	
	5.1 <i>Acoustic Assessment Summary Table</i>	
	5.2 Rationale for selecting applicable noise guideline limits	Section 3.3
	5.3 Predictable Worst Case Impacts Operating Scenario	Section 3.2
<b>6.0</b>	<b>Conclusions</b>	
	6.1 Statement of compliance with the selected noise performance limits	Section 7.8, Table 4
<b>7.0</b>	<b>Appendices (Provide details such as)</b>	
	Listing of Insignificant Noise Sources	Section 7.4 and 7.6
	Manufacturer's Noise Specifications	Appendix C
	Calculations	Section 3.2, Appendix C
	Instrumentation	Appendix C
	Meteorology during Sound Level Measurements	Appendix C
	Raw Data from Measurements	Table C1.2 and C1.3 of Appendix C
	Drawings (Facility / Equipment)	Figure 1



# Appendix A2

## Environmental Noise Descriptors & Terminology



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## 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:

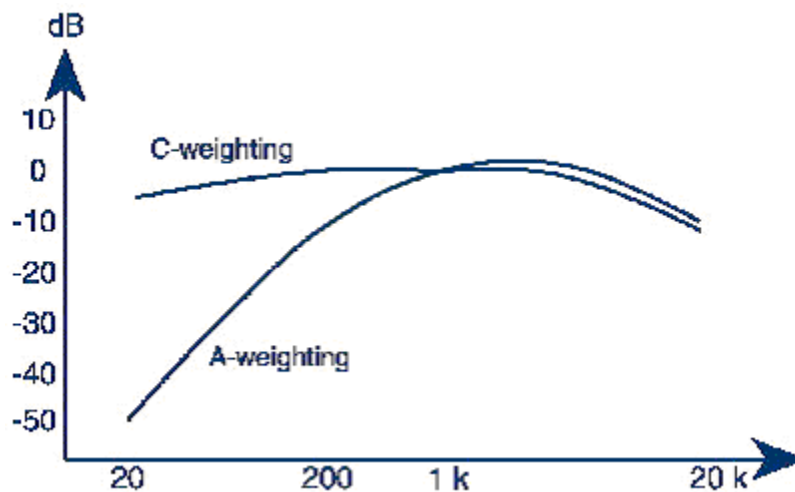


Figure A-1 Sound Weighting Network

### 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.

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**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  $2 \times 10^{-5}$  Pa (0 dB), while the sensation of pain is approximately  $2 \times 10^2$  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 P<sub>0</sub> is the reference pressure. P<sub>0</sub> is usually taken as 2.0 × 10<sup>-5</sup> 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 W<sub>0</sub> is the reference power of 10<sup>-12</sup> 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



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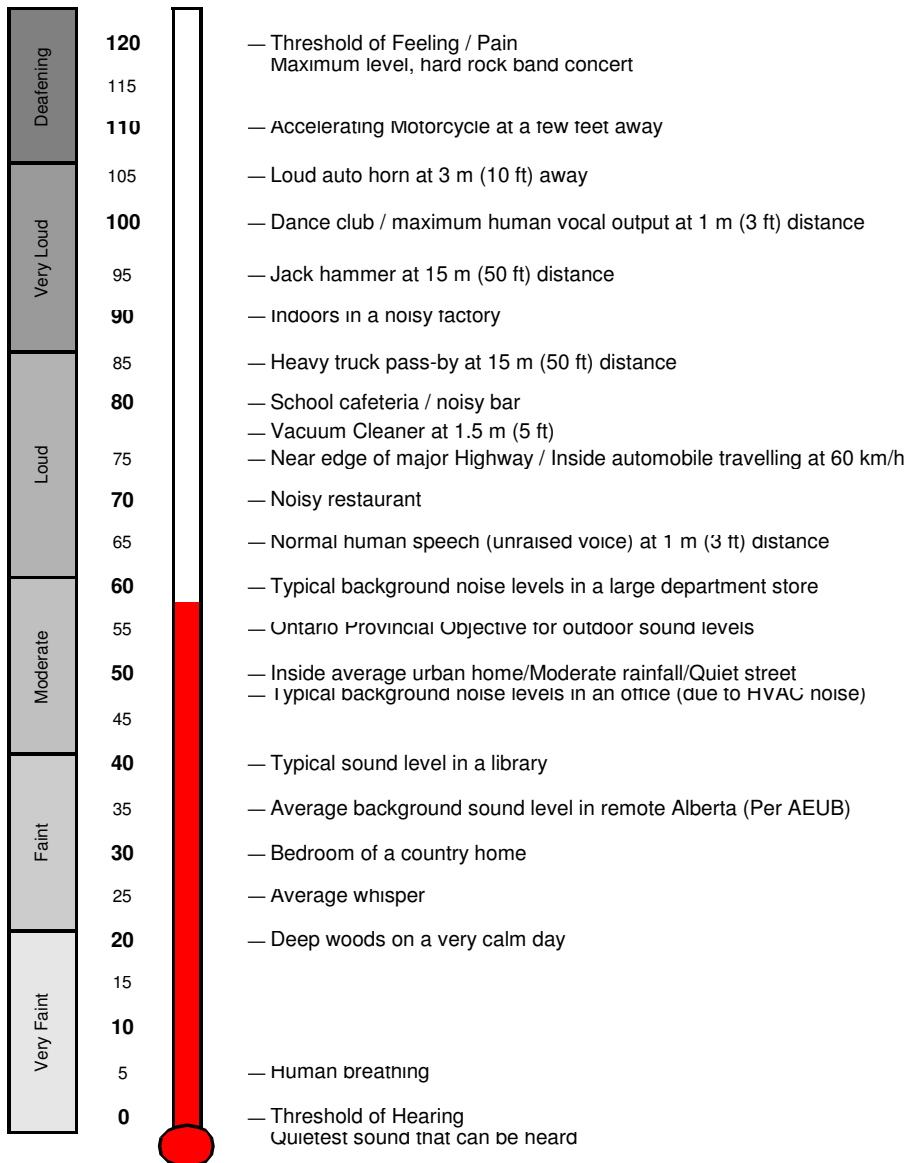
pressure level of any one of the slow-response, A-weighted, 1/3-octave bands between 20 and 16000Hz is 10 dBA or more than the sound pressure level of at least one of the adjacent bands within two 1/3-octave bandwidths. In addition, there must be a minimum of a 5 dBA drop from the band containing the 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



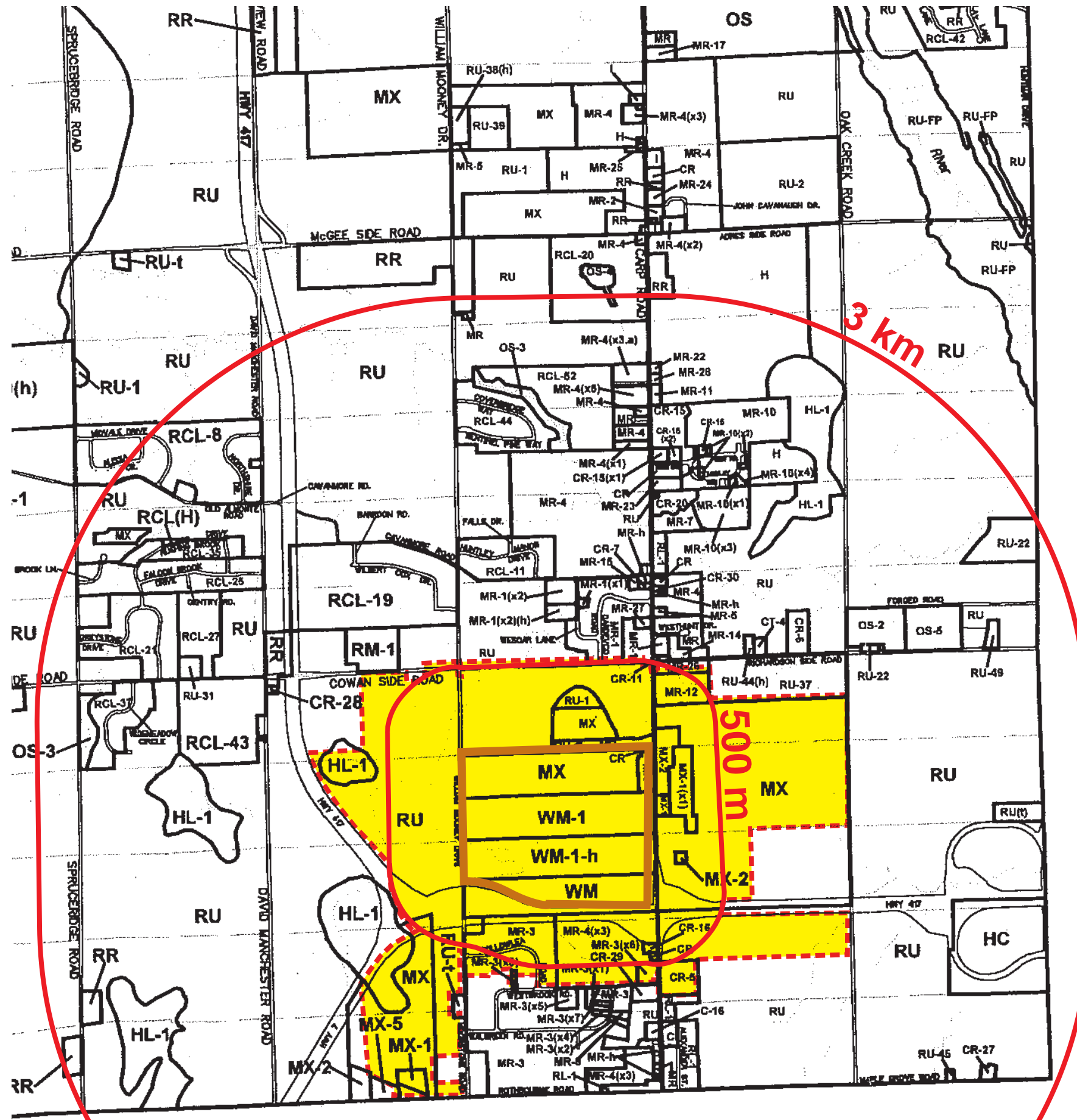





# Appendix A3

## 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 B

## 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.

## 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
<b>1. Limit motor vehicle traffic growth</b>					
(a) Reduce motor vehicle use per capita	Individual automobile use (vehicle-km per capita)	Year	To be determined	TBD	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
<b>2. Increase transit use</b>					
(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)	TBD	High
	Service level (vehicle-km per capita)	Year	City-wide (service statistics, annual)	TBD	High
(c) Increase service speed and reliability	Intersection approaches with transit signal priority (number)	N/A	City-wide (inventory, annual)	TBD	High

**Nghi Nguyen - WM WCEC - revised traffic predictions**

**From:** "Sungaila, Mark" <Mark.Sungaila@aecom.com>  
**To:** "Murphy, Tim - BUR" <TMurphy3@wm.com>, Brad Bergeron <Brad.Bergeron@rwdi...>  
**Date:** 23/01/2012 3:56 PM  
**Subject:** WM WCEC - revised traffic predictions  
**CC:** "Fedec, Larry" <Larry.Fedec@aecom.com>, "Shoniker, Blair" <Blair.Shonike...>

All - below please find the predicted traffic levels associated with the latest revision to the landfill base grades (e.g. max recorded high water level plus influence of sw infiltration ponds, NO additional vertical buffer, latest WESA modeling revision).

**D. TRAFFIC SCENARIOS**

Scenario	Trips/Hour								
	Duration of Construction Period								
	6 months			9 months			12 Months		
	Waste Haulage	Soil Import	Movement on-site soil	Waste Haulage	Soil Import	Movement on-site soil	Waste Haulage	Soil Import	Movement on-site soil
<b>1. Site Preparation Prior to Landfilling</b> construction of Stages 1 and 2, roads required to service Stages 1 and 2, all SWM ponds, new public drop-off area, NO landfilling	0	68	12	0	45	8	0	34	6
<b>2. Routine Phase 1 Operations</b> ongoing landfilling AND construction of any one of stages 3 through 8 (values shown reflect stage 8)	50	34	1	50	23	0	50	17	0
<b>3. Routine Phase 2 Operations</b> ongoing landfilling, NO liner or final cover construction	50	0	0	50	0	0	50	0	0
<b>4. Phase 2 Operations Approaching Closure</b> ongoing landfilling AND final cover construction over half of site footprint	50	19	0	50	13	0	50	9	0

Regards,

**Mark Sungaila, M.A.Sc., P.Eng., PMP**  
 Senior Environmental Engineer  
 D 905-477-8400, ext 226  
 C 416-302-5358  
 E [mark.sungaila@aecom.com](mailto:mark.sungaila@aecom.com)

**AECOM**  
 300 Town Centre Blvd., Suite 300  
 Markham, Ontario  
 L3R 5Z6  
[www.aecom.com](http://www.aecom.com)

# Appendix C1

## Noise Impact Modelling



**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., ponds, 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 C1.2: Noise Source Data - Scenario 1**

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- 1. Wherever possible, the Source ID matches the identifiers used in the ESDM report.
- 2. 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.
- 3. Source Location: O = Outside of building, including the roof, I = Inside of building
- 4. Sound Characteristic, per NPC-104  
 S = Steady  
 Q = Quasi-Steady Impulsive  
 I = Impulsive  
 B = Buzzing  
 T = Tonal  
 C = Cyclic
- 5. Noise Control Measures  
 S = Silencer  
 A = Acoustic lining, plenum  
 B = Barrier  
 L = Lagging  
 E = Acoustic Enclosure  
 O = Other  
 U = Uncontrolled
- 6. 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
- 7. Due to the size and the varying nature of haul routes, a single coordinate could not be shown.
- 8. PWL shown is PWL per unit length [m].

A-Weighting Network									
31.5	63	125	250	500	1000	2000	4000	8000	
-39	-26	-16	-9	-3	0	1	1	-1	

Source ID <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup> (dBA)	Source Location <sup>[3]</sup> (I or O)	Sound Characteristics <sup>[4]</sup> (S,Q,I,B,T,C)	Existing Noise Control Measures <sup>[5]</sup> (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data (dB, if available)										PWL Data Source <sup>[6]</sup>	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	✓	✓	✓	
MRF/OPF/CDF																									
WTPF_COMP	WTPF Waste compactor	95	O	S	U	83.0	84.3	83.3	90.6	93.3	84.6	80.9	79.9		Hist	2.5	130.0	132.5	18423745	5014067	132.5	✓	✓	✓	
WTPF_DROP_ICI	WTPF Drop-off truck unloading at IC&I pad	115	O	S	U	113.6	108.1	110.5	112.2	111.2	109.8	108.5	106.1	102.9	Hist	2.0	129.6	131.6	18423781	5014099	131.6	✓	✓	✓	
WTPF_LOADER_ICI	WTPF Loader IC&I	115	O	S	U	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	129.7	132.7	18423779	5014096	132.7	✓	✓	✓	
WTPF_DROP_CD	WTPF Drop-off truck unloading at C&D pad	115	O	S	U	113.6	108.1	110.5	112.2	111.2	109.8	108.5	106.1	102.9	Hist	2.0	129.6	131.6	18423802	5014093	131.6	✓	✓	✓	
WTPF_LOADER_CD	WTPF Loader C&D	115	O	S	U	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	129.7	132.7	18423798	5014085	132.7	✓	✓	✓	
WTPF_CRUSHER	WTPF Portable Concrete Crusher	113	O	S	U	113.5	122.4	116.0	108.4	109.2	107.4	105.3	103.0	99.3	Hist	4.0	129.8	133.8	18423792	5014076	133.8	✓	✓	✓	
WTPF_HR1_inICI	WTPF Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	80 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTPF_HR2_inCD	WTPF Inbound C&D Material Trucks #trips/hr; Entry and Exit	82 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTPF_HR3_outTT	WTPF Outbound Transfer Trailers #trips/hr; Entry and Exit	75 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTPF_HR4_outICI	WTPF Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	73 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTPF_HR5_outCD	WTPF Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	77 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	



Source ID <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup> (dBA)	Source Location <sup>[3]</sup> (I or O)	Sound Characteristics <sup>[4]</sup> (S,Q,I,B,T,C)	Existing Noise Control Measures <sup>[5]</sup> (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data (dB, if available)									PWL Data Source <sup>[6]</sup>	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	
<b>SBR/EVAPORATOR</b>																									
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.5	125.5	18424308	5014735	125.5	✓	✓	✓	
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.4	125.4	18424312	5014738	125.4	✓	✓	✓	
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424321	5014731	125.3	✓	✓	✓	
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424324	5014713	125.3	✓	✓	✓	
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.2	125.2	18424329	5014717	125.2	✓	✓	✓	
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	97	O	S	U	/	107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424337	5014706	125.3	✓	✓	✓	
SS_EVAP_STK1	Evaporator Discharge Stack 1	93	O	S	U	/	98.0	99.0	99.0	98.0	92.0	84.0	79.0	73.0	67.0	Man, EC	22.0	128.0	150.0	18424166	5014598	150.0	✓	✓	✓
SS_EVAP_STK2	Evaporator Discharge Stack 2	93	O	S	U	/	98.0	99.0	99.0	98.0	92.0	84.0	79.0	73.0	67.0	Man, EC	22.0	128.0	150.0	18424170	5014594	150.0	✓	✓	✓
SS_EVAP_CASE	Evaporator Casing Radiated	114	I	S	U	/	93.0	93.0	94.0	96.0	99.0	102.0	105.0	108.0	111.0	Man, EC	10.0	128.0	138.0	18424167	5014595	138.0	✓	✓	✓
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	98	O	S	U	/	93.0	95.0	98.0	100.0	97.0	93.0	87.0	84.0	80.0	Man, EC	1.0	128.0	129.0	18424153	5014596	129.0	✓	✓	✓
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	87	O	S	U	/	91.0	93.0	93.0	92.0	85.0	79.0	75.0	69.0	63.0	Man, EC	1.0	128.0	129.0	18424153	5014596	129.0	✓	✓	✓
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES</b>																									
SS_TRK_IDLE	Idling Truck on Weigh Scale	100	O	S	U	/	99.1	99.1	94.7	90.6	91.9	96.6	95.2	88.3	78.9	Hist	3.5	127.8	131.3	18424023	5015190	131.3	✓	✓	✓
SS1_cs_ldr	Cover Soil - CAT Loader	115	O	S	U	/	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	126.2	129.2	18423373	5014513	129.2	✓	✓	✓
SS1_lwf_cmp1	Landfill Working Face - CAT 826G Compactor	109	O	S	U	/	109.0	111.1	108.7	102.9	106.3	104.7	99.8	96.2	94.3	Hist	3.0	127.0	130.0	18423769	5015341	130.0	✓	✓	✓
SS1_lwf_cmp2	Landfill Working Face - CAT 826G Compactor	109	O	S	U	/	109.0	111.1	108.7	102.9	106.3	104.7	99.8	96.2	94.3	Hist	3.0	127.0	130.0	18423781	5015350	130.0	✓	✓	✓
SS1_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	116	O	S	U	/	110.6	109.8	116.8	117.6	114.2	110.7	105.5	103.9	99.1	Hist	3.0	127.0	130.0	18423763	5015328	130.0	✓	✓	✓
SS1_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	115	O	S	U	/	115.7	115.6	110.1	115.5	114.5	108.7	102.3	99.1	89.8	Hist	3.0	127.0	130.0	18423751	5015351	130.0	✓	✓	✓
SS1_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	115	O	S	U	/	115.7	115.6	110.1	115.5	114.5	108.7	102.3	99.1	89.8	Hist	3.0	127.0	130.0	18423769	5015367	130.0	✓	✓	✓
SS1_ob_stu	Overburden - CAT Soil Truck Unloading	117	O	S	U	/	121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	106.3	Hist	3.0	125.8	128.8	18423286	5014572	128.8	✓	✓	✓
SS1_lwf_grdr	Construction Working Face - Grader	115	O	S	U	/	114.0	116.0	114.0	110.0	110.0	110.0	108.0	104.0	102.0	Hist	3.0	126.1	129.1	18423635	5015217	129.1	✓	✓	✓
SS1_cwf_exc1	Construction Working Face - CAT 330B Excavator	105	O	S	U	/	113.2	109.7	108.6	103.3	102.8	99.3	96.7	91.5	84.7	Hist	3.0	125.8	128.8	18423593	5015235	128.8	✓	✓	✓
SS1_cwf_exc2	Construction Working Face - CAT 330B Excavator	105	O	S	U	/	113.2	109.7	108.6	103.3	102.8	99.3	96.7	91.5	84.7	Hist	3.0	126.0	129.0	18423606	5015245	129.0	✓	✓	✓
SS1_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	115	O	S	U	/	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	125.8	128.8	18423614	5015200	128.8	✓	✓	✓
SS1_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	115	O	S	U	/	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	126.1	129.1	18423615	5015239	129.1	✓	✓	✓
SS1_cwf_scrpr1	Construction Working Face - CAT Scraper 1	117	O	S	U	/	121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	106.3	Hist	3.0	125.7	128.7	18423599	5015210	128.7	✓	✓	✓
SS1_cwf_scrpr2	Construction Working Face - CAT Scraper 2	117	O	S	U	/	121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	106.3	Hist	3.0	125.9	128.9	18423613	5015222	128.9	✓	✓	✓
SS1_cwf_scrpr3	Construction Working Face - CAT Scraper 3	117	O	S	U	/	121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	106.3	Hist	3.0	126.2	129.2	18423627	5015233	129.2	✓	✓	✓
SS1_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	89 <sup>[8]</sup>	O	S	U	/	110.8	113.4	117.9	109.8	111.7	113.3	109.1	104.5	96.2	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓
SS1_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	77 <sup>[8]</sup>	O	S	U	/	120.2	121.6	119.0	109.2	108.6	109.7	104.8	101.2	99.5	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓
SS1_HR3_1st	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	77 <sup>[8]</sup>	O	S	U	/	112.7	114.0	111.8	108.0	110.5	104.1	103.0	100.4	92.7	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓
SS1_HR3_cst	Construction Overburden Haul Truck Route #trips/hr; To and From Stockpile	71 <sup>[8]</sup>	O	S	U	/	112.7	114.0	111.8	108.0	110.5	104.1	103.0	100.4	92.7	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓
SS1_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	83 <sup>[8]</sup>	O	S	U	/	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES</b>																									
Imp1_pc_wh	Pest Control - Whistle	104	O	S, T	U	/	88.0	79.7	77.9	76.6	84.4	90.3	100.0	98.1	88.0	Hist	20.0	127.0	147.0	18423737	5015311	147.0	✓	✓	✓
Imp1_pc_pc1	Pest Control - Propane Cannon 1 (Common Location)	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	125.6	127.1	18423345	5014609	127.1	✓	✓	✓
Imp1_pc_pc2	Pest Control - Propane Cannon 2	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	127.0	128.5	18423869	5015305	128.5	✓	✓	✓
Imp1_pc_pc3	Pest Control - Propane Cannon 3	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	127.3	128.8	18423815	5015196	128.8	✓	✓	✓
Imp1_pc_pc4	Pest Control - Propane Cannon 4	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	126.4	127.9	18423687	5015185	127.9	✓	✓	✓
Imp1_pc_pc5	Pest Control - Propane Cannon 5 (Common Location)	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	124.6	126.1	18424472	5014457	126.1	✓	✓	✓
Imp1_pc_pc6	Pest Control - Propane Cannon 6	141	O	S	U	/	/	/	/	/	140.6	/	/	/	/	Hist	1.5	127.0	128.5	18423723	5015331	128.5	✓	✓	✓

**Table C1.3: Noise Source Data - Scenario 2**

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 <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup> (dBA)	Source Location <sup>[3]</sup> (I or O)	Sound Characteristics <sup>[4]</sup> (S,Q,I,B,T,C)	Existing Noise Control Measures <sup>[5]</sup> (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data (dB, if available)										PWL Data Source <sup>[6]</sup>	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	
																					X	Y	Z	Day	Evening
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	✓	✓	✓	
MRF/OPF/CDF																									
WTFP_COMP	WTFP Waste compactor	95	O	S	U	83.0	84.3	83.3	90.6	93.3	84.6	80.9	79.9	Hist	2.5	130.0	132.5	18423745	5014067	132.5	✓	✓	✓		
WTFP_DROP_ICI	WTFP Drop-off truck unloading at IC&I pad	115	O	S	U	113.6	108.1	110.5	112.2	111.2	109.8	108.5	106.1	102.9	Hist	2.0	129.6	131.6	18423781	5014099	131.6	✓	✓	✓	
WTFP_LOADER_ICI	WTFP Loader IC&I	115	O	S	U	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	129.7	132.7	18423779	5014096	132.7	✓	✓	✓	
WTFP_DROP_CD	WTFP Drop-off truck unloading at C&D pad	115	O	S	U	113.6	108.1	110.5	112.2	111.2	109.8	108.5	106.1	102.9	Hist	2.0	129.6	131.6	18423802	5014093	131.6	✓	✓	✓	
WTFP_LOADER_CD	WTFP Loader C&D	115	O	S	U	111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	83.6	Hist	3.0	129.7	132.7	18423798	5014085	132.7	✓	✓	✓	
WTFP_CRUSHER	WTFP Portable Concrete Crusher	113	O	S	U	113.5	122.4	116.0	108.4	109.2	107.4	105.3	103.0	99.3	Hist	4.0	129.8	133.8	18423792	5014076	133.8	✓	✓	✓	
WTFP_HR1_inCI	WTFP Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	80 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTFP_HR2_inCD	WTFP Inbound C&D Material Trucks #trips/hr; Entry and Exit	82 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTFP_HR3_outTT	WTFP Outbound Transfer Trailers #trips/hr; Entry and Exit	75 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTFP_HR4_outCI	WTFP Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	73 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	
WTFP_HR5_outCD	WTFP Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	77 <sup>[8]</sup>	O	S	U	102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	97.6	Hist	3.0	varies	varies	varies	varies	varies	✓	✓	✓	

Source ID <sup>[1]</sup>	Source Description	Sound Power Level <sup>[2]</sup> (dBA)	Source Location <sup>[3]</sup> (I or O)	Sound Characteristics <sup>[4]</sup> (S,Q,I,B,T,C)	Existing Noise Control Measures <sup>[5]</sup> (S,A,B,L,E,O,U)	1/1 Octave Band Sound Power Level Data (dB, if available)									PWL Data Source <sup>[6]</sup>	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
<b>SBR/EVAPORATOR</b>																								
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.5	125.5	18424308	5014735	125.5	✓	✓	✓
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.4	125.4	18424312	5014738	125.4	✓	✓	✓
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424321	5014731	125.3	✓	✓	✓
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424324	5014713	125.3	✓	✓	✓
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.2	125.2	18424329	5014717	125.2	✓	✓	✓
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	97	O	S	U		107.6	107.6	97.6	92.6	90.6	85.6	80.6	75.6	Man, EC	1.0	124.3	125.3	18424337	5014706	125.3	✓	✓	✓
SS_EVAP_STK1	Evaporator Discharge Stack 1	93	O	S	U		98.0	99.0	99.0	98.0	92.0	84.0	79.0	73.0	Man, EC	22.0	128.0	150.0	18424166	5014598	150.0	✓	✓	✓
SS_EVAP_STK2	Evaporator Discharge Stack 2	93	O	S	U		98.0	99.0	99.0	98.0	92.0	84.0	79.0	73.0	Man, EC	22.0	128.0	150.0	18424170	5014594	150.0	✓	✓	✓
SS_EVAP_CASE	Evaporator Casing Radiated	114	I	S	U		93.0	93.0	94.0	96.0	99.0	102.0	105.0	108.0	Man, EC	10.0	128.0	138.0	18424167	5014595	138.0	✓	✓	✓
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	98	O	S	U		93.0	95.0	98.0	100.0	97.0	93.0	87.0	84.0	Man, EC	1.0	128.0	129.0	18424153	5014596	129.0	✓	✓	✓
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	87	O	S	U		91.0	93.0	93.0	92.0	85.0	79.0	75.0	69.0	Man, EC	1.0	128.0	129.0	18424153	5014596	129.0	✓	✓	✓
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES</b>																								
SS_TRK_IDLE	Idling Truck on Weigh Scale	100	O	S	U		99.1	99.1	94.7	90.6	91.9	96.6	95.2	88.3	Hist	3.5	127.8	131.3	18424023	5015190	131.3	✓	✓	✓
SS2C_cs_ldr	Cover Soil - CAT Loader	115	O	S	U		111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	Hist	3.0	126.2	129.2	18423373	5014513	129.2	✓		
SS2C_lwf_cmp1	Landfill Working Face - CAT 826G Compactor	109	O	S	U		109.0	111.1	108.7	102.9	106.3	104.7	99.8	96.2	Hist	3.0	124.5	127.5	18423222	5014887	127.5	✓		
SS2C_lwf_cmp2	Landfill Working Face - CAT 826G Compactor	109	O	S	U		109.0	111.1	108.7	102.9	106.3	104.7	99.8	96.2	Hist	3.0	124.5	127.5	18423234	5014896	127.5	✓		
SS2C_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	116	O	S	U		110.6	109.8	116.8	117.6	114.2	110.7	105.5	103.9	Hist	3.0	124.6	127.6	18423217	5014874	127.6	✓		
SS2C_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	115	O	S	U		115.7	115.6	110.1	115.5	114.5	108.7	102.3	99.1	Hist	3.0	124.5	127.5	18423205	5014897	127.5	✓		
SS2C_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	115	O	S	U		115.7	115.6	110.1	115.5	114.5	108.7	102.3	99.1	Hist	3.0	124.4	127.4	18423222	5014912	127.4	✓		
SS2C_lwf_grdr	Construction Working Face - Grader	115	O	S	U		114.0	116.0	114.0	110.0	110.0	110.0	108.0	104.0	Hist	3.0	124.6	127.6	18423542	5015144	127.6	✓		
SS2C_cwf_exc1	Construction Working Face - CAT 330B Excavator	105	O	S	U		113.2	109.7	108.6	103.3	102.8	99.3	96.7	91.5	Hist	3.0	124.2	127.2	18423496	5015159	127.2	✓		
SS2C_cwf_exc2	Construction Working Face - CAT 330B Excavator	105	O	S	U		113.2	109.7	108.6	103.3	102.8	99.3	96.7	91.5	Hist	3.0	124.5	127.5	18423510	5015171	127.5	✓		
SS2C_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	115	O	S	U		111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	Hist	3.0	124.3	127.3	18423525	5015129	127.3	✓		
SS2C_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	115	O	S	U		111.6	119.3	121.5	113.5	113.1	110.3	104.5	93.9	Hist	3.0	124.5	127.5	18423520	5015166	127.5	✓		
SS2C_cwf_scrpr1	Construction Working Face - CAT Scraper 1	117	O	S	U		121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	Hist	3.0	124.1	127.1	18423504	5015135	127.1	✓		
SS2C_cwf_scrpr2	Construction Working Face - CAT Scraper 2	117	O	S	U		121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	Hist	3.0	124.4	127.4	18423518	5015147	127.4	✓		
SS2C_cwf_scrpr3	Construction Working Face - CAT Scraper 3	117	O	S	U		121.8	116.5	115.6	109.1	115.8	110.7	109.4	108.6	Hist	3.0	124.6	127.6	18423532	5015158	127.6	✓		
SS2C_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	89 <sup>[8]</sup>	O	S	U		110.8	113.4	117.9	109.8	111.7	113.3	109.1	104.5	Hist	3.0	varies	varies	varies	varies	varies	✓		
SS2C_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	77 <sup>[8]</sup>	O	S	U		120.2	121.6	119.0	109.2	108.6	109.7	104.8	101.2	Hist	3.0	varies	varies	varies	varies	varies	✓		
SS2C_HR3_lst	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	77 <sup>[8]</sup>	O	S	U		112.7	114.0	111.8	108.0	110.5	104.1	103.0	100.4	Hist	3.0	varies	varies	varies	varies	varies	✓		
SS2C_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	80 <sup>[8]</sup>	O	S	U		102.5	109.6	107.2	110.7	106.9	103.7	102.6	100.5	Hist	3.0	varies	varies	varies	varies	varies	✓		
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES</b>																								
Imp2C_pc_wh	Pest Control - Whistle	104	O	S, T	U		88.0	79.7	77.9	76.6	84.4	90.3	100.0	98.1	Hist	20.0	124.5	144.5	18423275	5014912	144.5	✓		
Imp2C_pc_pc1	Pest Control - Propane Cannon 1	141	O	S	U						140.6				Hist	1.5	125.6	127.1	18423345	5014609	127.1	✓		
Imp2C_pc_pc2	Pest Control - Propane Cannon 2	141	O	S	U						140.6				Hist	1.5	124.9	126.4	18423236	5014794	126.4	✓		
Imp2C_pc_pc3	Pest Control - Propane Cannon 3	141	O	S	U						140.6				Hist	1.5	125.0	126.5	18423380	5014840	126.5	✓		
Imp2C_pc_pc4	Pest Control - Propane Cannon 4	141	O	S	U						140.6				Hist	1.5	124.4	125.9	18423386	5014976	125.9	✓		
Imp2C_pc_pc5	Pest Control - Propane Cannon 5	141	O	S	U						140.6				Hist	1.5	124.6	126.1	18424472	5014457	126.1	✓		
Imp2C_pc_pc6	Pest Control - Propane Cannon 6	141	O	S	U						140.6				Hist	1.5	124.4	125.9	18423261	5014930	125.9	✓		

**Table C1.4: 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 <sup>[3]</sup> (A, C, or S)	SPL Ref Distance <sup>[4]</sup> (S or C) (m)	Length <sup>[5]</sup> (C only) (m)	Area (A only) (m <sup>2</sup> )	Partition Coefficient (S or C) (%)	Net Surface Area <sup>[6]</sup> (m <sup>2</sup> )	Spectral Weighting (A or Flat)	Octave Band Sound Pressure Level Data (dB or dBA) <sup>[7]</sup>										Total (dBA)	Sound Power Level Adjustment		Octave Band Sound Power Level Data <sup>[8]</sup> (dB or dBA) <sup>[7]</sup>										Total (dBA)
										31.5	63	125	250	500	1000	2000	4000	8000	(dB)		Purpose	31.5	63	125	250	500	1000	2000	4000	8000			
										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			
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

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

# MEASUREMENT EQUIPMENT

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## Sound Level Meter 824 Kit 2

<b>Sound Level Meter</b>	
Make and Model	Larson-Davis Model 824 SLM and RTA
Serial No.	824A1556
<b>Pre-amplifier</b>	
Make and Model	Larson-Davis Model PRM902
Serial No.	2072
<b>Microphone</b>	
Make and Model	Larson-Davis Model 2559 precision air-condenser microphone
Serial No.	3118
<b>Calibrator</b>	
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			

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

Legend
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M = Missing
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E = Estimated
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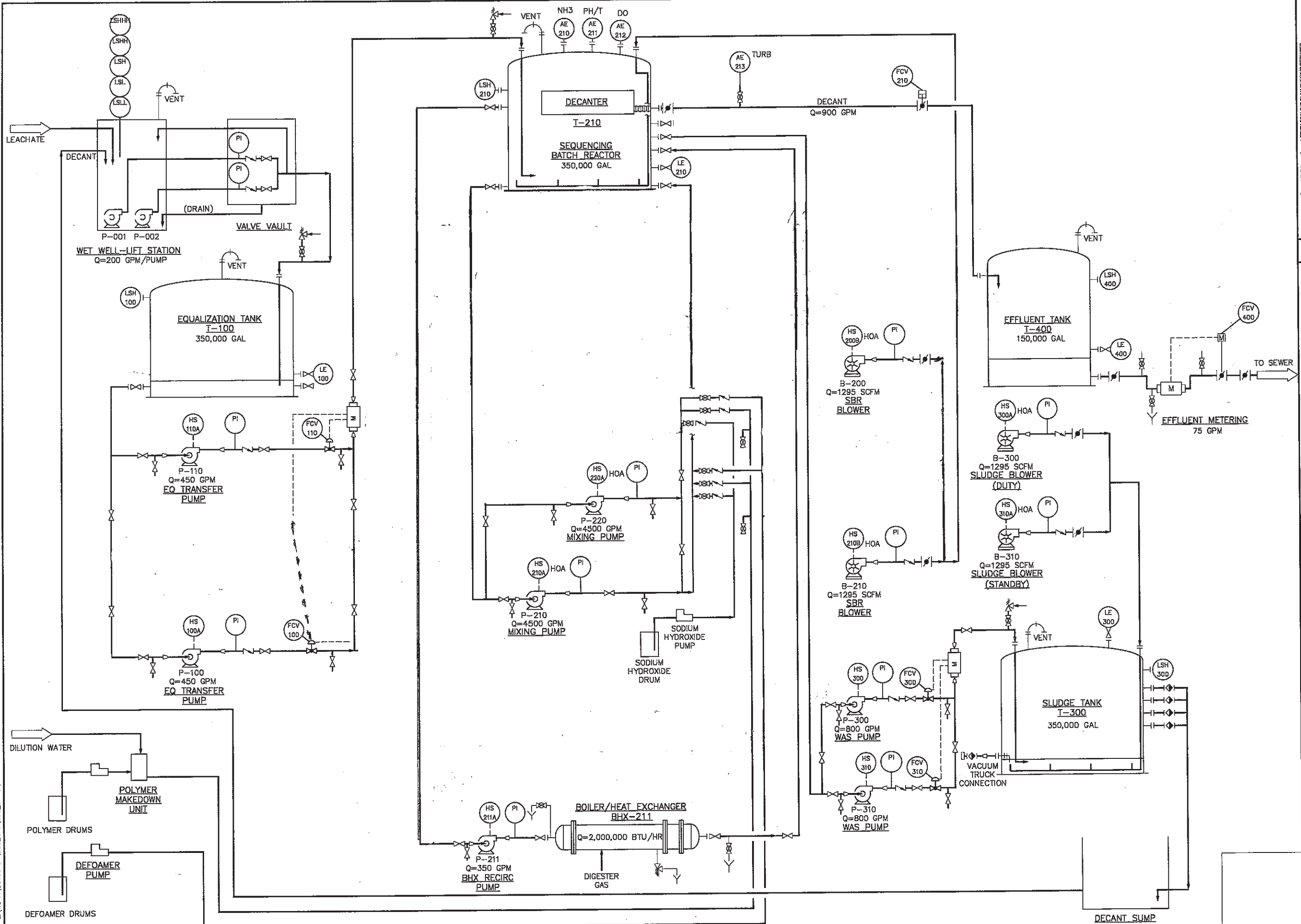
NA = Not Available
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‡ = Partner data that is not subject to review by the National Climate Archives
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We'd like to hear from you! Please click ["Contact Us"](#) to share your comments and suggestions.  
Date Modified: 2012-01-11



Plotted by: rsgarcia  
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 Layout: Spool: Name: 51-D-1  
 Filename: \\WORK\60160\04\1000\_CAD\002\_5WGS\6016014PFD1.DWG



REV	DESCRIPTION	DATE (MM/YY)

VERIFIED SCALE IF PLAN SHEET IS REDUCED  
 1" = 1'-0"

PREPARED BY:  
**AECOM**  
 6555 GLENWOOD HILLS PKWY., SUITE 300, GRAND RAPIDS, MI, 49512, 1-816-942-8800

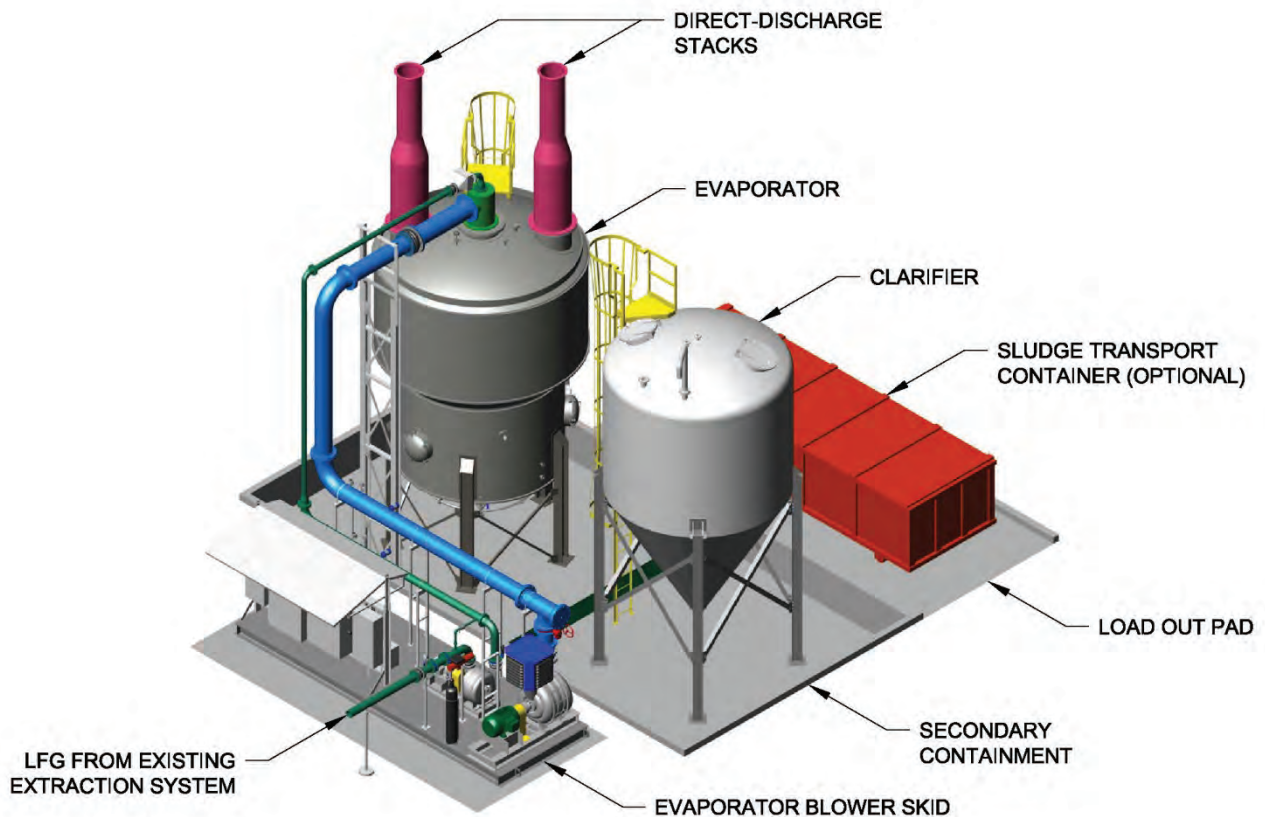
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 AUGUST 2010  
 PROJECT NO.  
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 FILENAME  
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 SHEET NO.  
 DRAWING NO.  
**PFD**

**OTTAWA LANDFILL  
 LEACHATE TREATMENT SYSTEM  
 WASTE MANAGEMENT, INC.**  
 PROCESS FLOW DIAGRAM



## E-Vap® Direct Discharge Leachate Evaporator System

The E-Vap® brand Leachate Evaporator System utilizes a patented submerged combustion technology to reduce leachate water volume by as much as 97%. The process uses landfill gas as the primary fuel for the combustion system. Hot combustion gasses are injected into the leachate reservoir generating water vapor. The water vapor is then directly discharged into the atmosphere, leaving behind a concentrated effluent (residual). Fresh leachate is continuously fed into the evaporator while the residual is drawn off and sent to a Clarifier Tank for further concentration. From here the residual is sent to a roll-off container on an automated schedule, where it can either be reintroduced to the open face of the landfill, or hauled off for disposal. The system is designed for continuous 24-7 operation, while being un-manned during 2<sup>nd</sup> and 3<sup>rd</sup> shifts. Additionally, the system is automated with a touch-screen graphical user interface.



### Process & Operational Data

E-Vap® System Capacity	20,000 gpd	30,000 gpd
Landfill Gas (50% CH <sub>4</sub> )	333 scfm (Approx. 9.1 MM Btu/hr)	500 scfm (Approx. 14 MM Btu/hr)
Leachate Feed, Nominal	14 gpm @ 35 psig	21 gpm @ 35 psig
Estimated Residual Generated	600-1,000 gpd	900-1,500 gpd
Power	250A/480V/3φ/60hz	300A/480V/3φ/60hz
Man Power	1 Part-time Site Operator	1 Part-time Site Operator
Modular Footprint	Overall Footprint – 45' x 50'	Overall Footprint – 45' x 50'

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# CHAPTER 82

## SOUND POWER LEVEL PREDICTIONS FOR INDUSTRIAL MACHINERY

**Robert D. Bruce**  
 CSTI Acoustics  
 Houston, Texas

**Charles T. Moritz**  
 Blachford, Inc.  
 West Chicago, Illinois

**Arno S. Bommer**  
 CSTI Acoustics  
 Houston, Texas

### 1 INTRODUCTION\*

The sound power level is the measure of the sound energy radiated by a sound source expressed in a logarithmic scale relative to  $10^{-12}$  W with a unit of watts. Procedures for calculating the sound power level of industrial machinery are presented in this chapter. The calculated sound power levels can be used for modeling the sound pressure levels in a space or developing purchase specifications for new equipment.

With any project, acoustical data measured and calculated in accordance with recognized standards should be obtained. Many manufacturers provide sound power levels or measured sound pressure level at 1 m from their equipment, and some offer special low-frequency sound power levels when available. If the manufacturer's data are not available, the data must be measured. If this is not practical, then the material in this chapter can be used.

Most of the equations presented in this chapter are based on measured data and tend to be conservative, usually predicting somewhat higher sound pressure levels than are measured in the field. Due to recent efforts in reducing equipment noise, sound pressure levels for some equipment may be significantly (10 dB) quieter than the levels calculated in this chapter.

Some equipment consists of several different sound-producing components such as motors, pumps, blowers, and the like. The sound power levels for each component should be determined and then combined (using correct decibel addition) to get the total sound power levels.

\*Most of this material was published earlier as Chapter 86 of volume 2 of *Encyclopedia of Acoustics*, John Wiley & Sons, Inc. 1997, which utilized formulas from several references, especially Ref. 1. In this chapter, some formulas have been modified to metric units and to give the A-weighted sound power level directly from the equipment parameters.

### 2 POWER SOURCES

#### 2.1 Boilers<sup>1</sup>

**Main Steam Boilers** Main steam boilers of a power plant radiate igniter, flow, and combustion noise from their surfaces. The A-weighted sound power level for main steam boilers (between 125 and 800 MWe) can be calculated using Eq. (1) where MWe is the electrical generating rating of the unit. The unweighted octave band sound power levels can be obtained by subtracting the values shown in Table 1.

$$L_w = 72 + 15 \log MWe \text{ dB} \quad (1)$$

**Auxiliary Boilers** The noise produced by auxiliary boilers is often due primarily to the blower and the burner, not the walls of the boiler. An estimate of the A-weighted sound power level for auxiliary boilers between 0.5 and 20 MW can be calculated using Eq. (2). The unweighted octave band sound power levels can be obtained by subtracting the values shown in Table 1. For boilers rated in other units, 1 MW = 102 bhp = 1600 kg steam/h.

$$L_w = 94 + 4 \log MW \text{ dB} \quad (2)$$

#### 2.2 Electric Motors

**Motors under 750 kW<sup>2</sup>** Totally enclosed fan-cooled (TEFC) motors are the most common type of electric motors. They are generally cylindrical in shape with a fan at one end, the output shaft at the other end, and fins along the body. The A-weighted sound power level for TEFC motors can be calculated using the following equations:

$$< 40 \text{ kW} : L_w = 16 + 17 \log kW + 15 \log \text{rpm} + 10 \log S \text{ dB} \quad (3)$$

$$\geq 40 \text{ kW} : L_w = 27 + 10 \log kW + 15 \log \text{rpm} + 10 \log S \text{ dB} \quad (4)$$

Table 1 Octave Band Sound Power Level Adjustments

Source	31.5	63	125	250	500	1000	2000	4000	6000
Main steam boiler	-8	-7	-2	4	5	7	9	9	9
Auxiliary boiler	-3	-3	-2	0	3	6	9	12	15
TEFC motors under 750 kW	13	13	10	8	5	5	6	11	15
Drip-proof motors under 750 kW	5	5	3	3	2	5	8	14	19
Gas turbine casing	8	5	3	2	2	2	2	2	2
Gas turbine exhaust	8	4	2	2	3	5	7	11	17
Gas turbine intake	19	18	17	17	14	8	3	3	6
Reciprocating engines (<600 rpm)	8	8	2	1	3	5	8	14	24
Reciprocating engines (600-1500 rpm)	11	6	4	5	4	4	6	10	16
Reciprocating engines w/blower (600-1500 rpm)	21	15	17	13	2	3	9	14	25
Reciprocating engines (>1500 rpm)	20	12	5	5	6	4	5	11	18
Reciprocating engine turbocharged air inlet	1	8	10	10	9	6	5	6	14
Reciprocating engine exhaust	-7	-3	-9	-5	3	7	13	23	31
Steam turbines	6	2	1	4	5	5	7	8	12
Steam turbine generator units	-3	-9	-7	-2	2	6	9	17	23
Transformers	3	-3	-5	0	0	6	11	16	23
Centrifugal air compressor casing	8	8	9	11	11	9	5	6	10
Centrifugal air compressor air inlet	18	16	14	10	8	6	5	10	16
Rotary and reciprocating air compressors	9	13	8	9	11	8	3	6	13
Feed pumps (1-9 MW)	7	1	3	4	5	6	7	8	12
Feed pumps (9.5-18 MW)	18	12	14	10	4	4	6	18	22
Centrifugal fan <sup>a</sup>	11	9	7	8	9	9	13	17	24
Centrifugal fan casing <sup>a</sup>	3	6	7	11	16	18	22	26	33
Axial-flow fans <sup>a</sup>	8	7	6	5	5	5	7	11	12
Propeller fans <sup>a</sup>	12	12	9	2	4	5	8	14	16
Gas recirculation fan casing	-2	-5	-8	-5	6	8	13	15	19
Generators	7	4	3	3	3	5	7	10	15
Gears	13	10	7	7	7	7	7	7	7
Motor-driven pumps	11	10	9	7	7	4	7	11	17
Cooling towers (full speed)	-1	-4	-4	-1	2	6	9	12	20
Cooling towers (half speed)	4	1	1	5	5	6	6	9	15
Chillers with reciprocating compressor	-	19	11	7	1	4	9	14	-
Centrifugal chillers, internal geared	-	8	5	6	7	8	5	8	-
Centrifugal chillers, direct drive	-	8	6	7	3	4	7	12	-
Centrifugal chillers, > 1000 tons	-	11	11	8	8	4	6	19	-
Chillers with rotary-screw compressor	20	14	10	-2	1	5	10	15	17
Diesel-powered, mobile equipment	-	6	1	-2	3	5	8	14	20

<sup>a</sup> Equations (29)-(32) are for the unweighted sound power levels. Subtracting the values in this table will yield the unweighted octave band sound power levels. After making the adjustments described in the text for the blade passage frequency [calculated in Equation (28)], the A-weighted sound power level can be calculated.

where kW is the nameplate motor rating (1 kW = 1.34 hp), rpm is the speed at which the motor is operating, and  $S$  is the conformal surface area (in square metres) at 1 m from the motor (see the Appendix to this chapter for the equation for the conformal surface area). For TEFC motors between 300 and 750 kW, use the value 300 kW in Eq. (4). The unweighted octave band sound power levels can be obtained by subtracting the values shown in Table 1.

For drip-proof motors, the A-weighted sound power level can be calculated using the following equations:

$$<40 \text{ kW: } L_w = 8 + 17 \log \text{ kW} \\ + 15 \log \text{ rpm} + 10 \log S \text{ dB (5)}$$

$$\geq 40 \text{ kW: } L_w = 19 + 10 \log \text{ kW} \\ + 15 \log \text{ rpm} + 10 \log S \text{ dB (6)}$$

For drip-proof motors between 300 and 750 kW use the value 300 kW in Eq. (6).

The unweighted octave band sound power level can be obtained by subtracting the values shown in Table 1.

**Motors between 750 and 4000 kW<sup>1</sup>** The sound power level for large drip-proof electric motors (between 750 and 4000 kW) can be estimated by using Table 2.

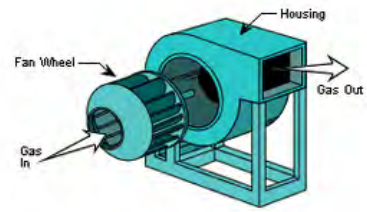
### 2.3 Gas Turbines<sup>2</sup>

Manufacturers of gas turbines often have sound power level data for the exhaust and inlet. Obtaining accurate casing data can be difficult due to contributions from the inlet, exhaust, or other equipment. The A-weighted sound power level for gas turbines can be estimated using Eqs. (7) to (9). The unweighted octave band sound power level for each of these sources can be obtained by subtracting the values shown in

**Table C1.4: Centrifugal Blower - Backward Swept or Radial Swept Tip Blade**

Nov. 17, 2011.

Blower Flow Rate:	6,000 cfm	169.9 m <sup>3</sup> /min
Static Pressure (incl. 2" for Filter):	15.0 in W.G.	3736.3 Pa
No. of Blades:	10	
RPM	1800	
Blade Pass Frequency:	300 Hz	250 Hz OB
Wheel Diameter (expected)	30 in	
Wheel Hoop Speed (tip speed)	14,137 fpm	
Motor Power Rating (draw)	20 hp	



**Theoretical PWL for Blower Inlet with Filter**

Item	Levels at Octave Band Centre Frequencies									Overall dBA	Overall dBC
	31.5	63	125	250	500	1000	2000	4000	8000		
Nominal Fan PWL (Crocker 10+10logQ+20logP)	104	104	104	104	104	104	104	104	104	110.7	112.5
Octave Band Correction Based on Crocker (modified)	11	9	7	7	8	10	14	17	21		
BPF Adjustment (add) 2@1/2X; 5@1X; 3@2X; 1@3X	0	0	2	5	3	1	0	0	0		
Basic Disposable Filter Attenuation (2" Farr Filter or Similar)	0	0	1	2	2	2	3	3	3		
<b>Estimated Blower Inlet PWL w/ filter</b>	<b>93</b>	<b>95</b>	<b>98</b>	<b>100</b>	<b>97</b>	<b>93</b>	<b>87</b>	<b>84</b>	<b>80</b>	<b>98.2</b>	<b>104.1</b>

**Theoretical PWL for Blower Case**

Item	Levels at Octave Band Centre Frequencies									Overall dBA	Overall dBC
	31.5	63	125	250	500	1000	2000	4000	8000		
Nominal Fan PWL (Based on Crocker with 3 dB adjustment: 4+10logQ+20logP)	98	98	98	98	98	98	98	98	98	104.7	106.5
OB Correction - Based on Crocker (p. 874) (modified)	7	5	7	11	16	20	23	29	35		
BPF Adjustment (add)	0	0	2	5	3	1	0	0	0		
<b>Estimated Blower Casing PWL</b>	<b>91</b>	<b>93</b>	<b>93</b>	<b>92</b>	<b>85</b>	<b>79</b>	<b>75</b>	<b>69</b>	<b>63</b>	<b>87.2</b>	<b>97.7</b>

**Theoretical PWL for Blower Outlet - Flow-through Source to Boiler Stack**

Item	Levels at Octave Band Centre Frequencies									Overall dBA	Overall dBC
	31.5	63	125	250	500	1000	2000	4000	8000		
Nominal Fan PWL (Crocker with 5-dB adjustment: 15+10logQ+20logP)	109	109	109	109	109	109	109	109	109	115.7	117.5
Octave Band Correction Based on Crocker (modified, shiflet down by 1 OB)	9	7	7	8	10	14	17	21	25		
BPF Adjustment (add) 2@1/2X; 5@1X; 3@2X; 1@3X	0	0	2	5	3	1	0	0	0		
<b>Estimated Blower Outlet PWL</b>	<b>100</b>	<b>102</b>	<b>104</b>	<b>106</b>	<b>102</b>	<b>96</b>	<b>92</b>	<b>88</b>	<b>84</b>	<b>102.9</b>	<b>109.9</b>
Flow Path Attenuation (3 elbows + evaporator)	2	3	5	8	10	12	13	15	17		
<b>Estimated Boiler Stack Exit PWL</b>	<b>98</b>	<b>99</b>	<b>99</b>	<b>98</b>	<b>92</b>	<b>84</b>	<b>79</b>	<b>73</b>	<b>67</b>	<b>93.2</b>	<b>103.8</b>

Reference: Malcolm J. Crocker, John Wiley & Sons, "Handbook of Noise and Vibration Control", 2007.

# 988H

## Wheel Loader



### Engine

Engine Model	Cat® C18 ACERT®	
Gross Power	414 kW	555 hp
Flywheel Power	373 kW	501 hp

### Operating Specifications

Operating Weight	49 546 kg	109,249 lb
Rated Payload	11.4 tonnes	12.5 tons

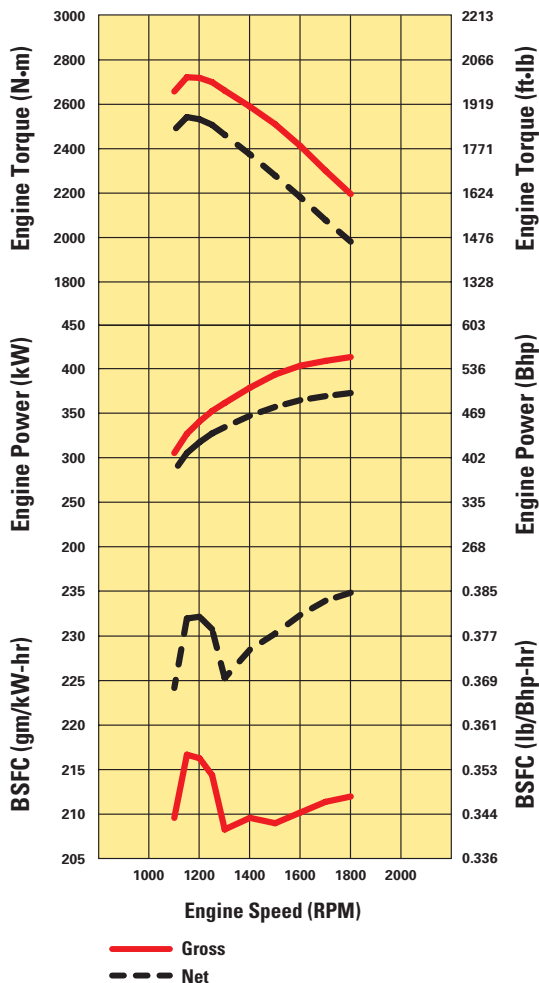
### Buckets

Bucket Capacities	6.3 m <sup>3</sup> –7.0 m <sup>3</sup>	8.2 yd <sup>3</sup> –9.2 yd <sup>3</sup>
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## Engine

Engine Model	Cat C18 ACERT®	
Gross Power	414 kW	555 hp
Flywheel Power	373 kW	501 hp
Net Power – EEC 80/1269	373 kW	501 hp
Net Power – ISO 9249	373 kW	501 hp
Gross Power – ISO 3046-2	388 kW	520 hp
Bore	145 mm	5.7 in
Stroke	183 mm	7.2 in
Displacement	18.1 L	1,104.5 in <sup>3</sup>

- These ratings apply at 1,800 rpm when tested under the specific standard conditions for the specified standard.
- Power rating conditions based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 in Hg) dry barometer, using 35° API gravity fuel having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 30° C (86° F) [reference a fuel density of 838.9 g/L (7.001 lb/gal)].
- Net power advertised is the power available when the engine is equipped with alternator, air cleaner, muffler and hydraulic fan drive.
- No derating required up to 3048 m (10,000 ft) altitude.
- Direct-electric, 24-volt starting system with 100 amp alternator and four high performance maintenance-free batteries with 1,000 cold cranking amps.



## Operating Specifications

Rated Payload	11.4 tonnes	12.5 tons
Operating Weight	49 546 kg	109,249 lb
Rated Payload – Standard	11.4 tonnes	12.5 tons

## Transmission

Converter Drive – Forward 1	6.7 kph	4.2 mph
Converter Drive – Forward 2	11.8 kph	7.3 mph
Converter Drive – Forward 3	20.8 kph	12.9 mph
Converter Drive – Forward 4	36 kph	22.3 mph
Converter Drive – Reverse 1	7.6 kph	4.7 mph
Converter Drive – Reverse 2	13.5 kph	8.4 mph
Converter Drive – Reverse 3	23.7 kph	14.7 mph
Direct Drive – Forward 1	Lock-up disabled	
Direct Drive – Forward 2	12.3 kph	7.7 mph
Direct Drive – Forward 3	21.9 kph	13.6 mph
Direct Drive – Forward 4	38.6 kph	24 mph
Direct Drive – Reverse 1	7.9 kph	4.9 mph
Direct Drive – Reverse 2	14.1 kph	8.8 mph
Direct Drive – Reverse 3	25.1 kph	15.6 mph

- Travel speeds based on two percent rolling resistance and 35/65-33 tires.

## Hydraulic Cycle Time

Raise	9.4 Seconds
Dump	2.4 Seconds
Lower Float Down (Empty)	3.8 Seconds
Total Hydraulic Cycle Time	15.6 Seconds

## Service Refill Capacities

Fuel Tank	712 L	188 gal
Cooling System	103 L	27.2 gal
Crankcase	60 L	15.9 gal
Transmission	70 L	18.5 gal
Differentials and Final Drives – Front	186 L	49 gal
Differentials and Final Drives – Rear	186 L	49 gal
Hydraulic System (factory fill)	470 L	124.2 gal
Hydraulic System (tank only)	267 L	70.5 gal

## Buckets

Bucket Capacities	6.3 m <sup>3</sup> –7.0 m <sup>3</sup>	8.2 yd <sup>3</sup> –9.2 yd <sup>3</sup>
Max. Bucket Capacity	7 m <sup>3</sup>	9.2 yd <sup>3</sup>



## Axles

Maximum Single-Wheel Rise and Fall	568 mm	22.4 in
Front	Fixed	
Rear	Oscillating $\pm 13^\circ$	

## Brakes

Brakes	Meet SAE ISO 3450:1996
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## Cab

Cab – ROPS/FOPS	Meets SAE and ISO standards
Sound Performance	Meets ANSI, SAE and ISO standards

- Cat cab with integrated Rollover Protective Structure (ROPS) and Falling Object Protective Structure (FOPS) is standard.
- ROPS meets SAE J1040 APR99 and ISO 3471:1994 criteria.
- FOPS meets SAE J231 JAN 81 and ISO 3449:1992 Level II criteria.
- The operator sound exposure  $Leq$  (equivalent sound pressure level) measured according to the work cycle procedures specified in ANSI/SAE J1166 OCT 98 is 77 dB(A), for the cab offered by Caterpillar, when properly installed, maintained and tested with the doors and windows closed.
- Hearing protection may be needed when operating with an open operator station and cab (when not properly maintained or doors/windows open) for extended periods or in noisy environment.
- The exterior sound pressure level for the standard machine measured at a distance of 15 m (49.2 ft) according to the test procedures specified in SAE J88 JUN 86 mid-gear-moving operation is 81 dB(A).
- The sound power level is 115 dB(A) measured according to the dynamic test procedure and conditions specified in ISO 6395:1998/AMD. 1:1996 for a standard machine configuration.
- For “CE” marked configurations, the labeled sound power level is 110 dB(A) measured according to the test procedures and conditions specified in 2000/14/EC.

## Steering

Steering	Meets SAE and ISO standards
Total Steering Angle	$86^\circ$

- Full hydraulic, load-sensing steering system meets SAE J1511 FEB94 and ISO 5010:1992 specified standards.
- Center point frame articulation.
- Front and rear wheels track.

## Loader Hydraulic System

Main Hydraulic System Output at 2,010 rpm and 6900 kPa (1,000 psi)	492 L/min	130 gal/min
Relief Valve Setting	31 000 kPa	4,500 psi
Cylinders, Double Acting: Lift, Bore and Stroke	220 × 911 mm	8.7 × 35.9 in
Cylinder, Double Acting: Tilt, Bore and Stroke	220 × 1770 mm	8.7 × 69.7 in
Pilot System, Gear-Type Pump Output at 2,010 rpm and 2500 kPa (363 psi)	76 L/min	20.1 gal/min
Relief Valve Setting (low idle)	2400 kPa	348.1 psi

- With SAE 10W oil at  $66^\circ\text{C}$  ( $150^\circ\text{F}$ ).

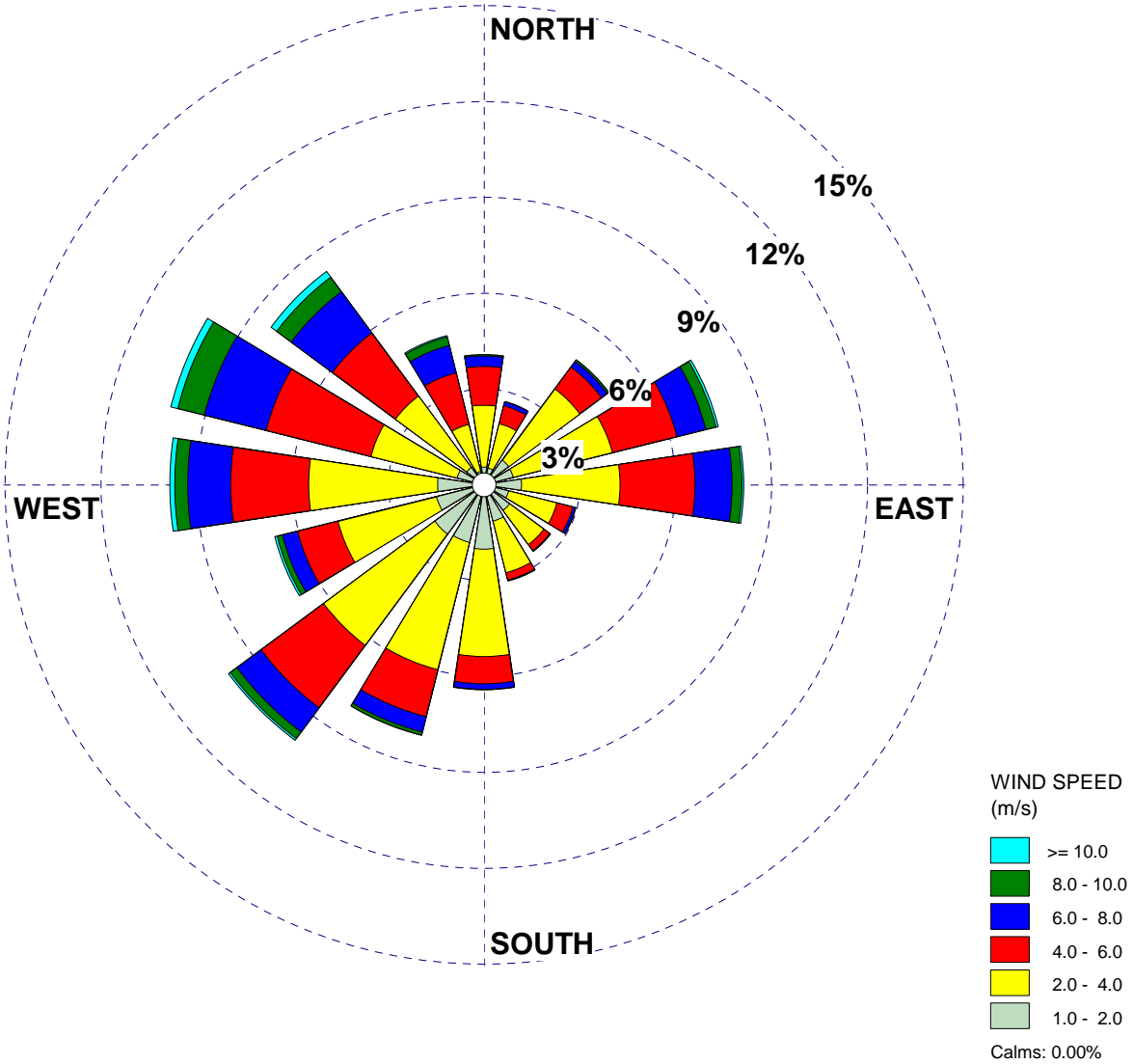


WIND ROSE PLOT:

**Station #61060 - OTTAWA, ON**

DISPLAY:

**Wind Speed  
Direction (blowing from)**



COMMENTS:

Wind Rose from MOE-provided met data used in the AQ modelling for WCEC EA

DATA PERIOD:

**Start Date: 1/1/2006 - 00:00  
End Date: 12/31/2010 - 23:00**

COMPANY NAME:

MODELER:

CALM WINDS:

**0.00%**

TOTAL COUNT:

**43779 hrs.**

AVG. WIND SPEED:

**3.71 m/s**

DATE:

**4/16/2012**

PROJECT NO.:

**110798**

# 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
<b>Yearly Traffic:</b>		<b>4781</b>	<b>9562</b>
<b>Daily Traffic:</b>		<b>17</b>	<b>33</b>
<b>Hourly Traffic:</b>		<b>2</b>	<b>4</b>

**Table C2.2a: Determination of Traffic Volume and Hourly Distribution - Carp Road**

WCEC Landfill - Ottawa, Ontario

2011 Carp Road	
North of 417	South of 417
Total Volume	21340

	Carp Road			
	North of 417			
	Cars <sup>[1]</sup>	Medium <sup>[2]</sup>	Heavy <sup>[3]</sup>	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
<b>Total</b>	<b>10189</b>	<b>1707</b>	<b>181</b>	<b>12077</b>
<b>Day</b>	<b>9261</b>	<b>1572</b>	<b>160</b>	<b>10993</b>
<b>Night</b>	<b>928</b>	<b>135</b>	<b>21</b>	<b>1084</b>
<b>Total</b>	<b>10189</b>	<b>1707</b>	<b>181</b>	<b>12077</b>

	Carp Road			
	South of 417			
	Cars <sup>[1]</sup>	Medium <sup>[2]</sup>	Heavy <sup>[3]</sup>	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
<b>Total</b>	<b>19756</b>	<b>1440</b>	<b>144</b>	<b>21340</b>
<b>Day</b>	<b>18166</b>	<b>1286</b>	<b>128</b>	<b>19580</b>
<b>Night</b>	<b>1590</b>	<b>154</b>	<b>16</b>	<b>1760</b>
<b>Total</b>	<b>19756</b>	<b>1440</b>	<b>144</b>	<b>21340</b>

## 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 C2.2b: Determination of Traffic Volume and Hourly Distribution - Hwy 417 and 7**  
 WCEC Landfill - Ottawa, Ontario

2009 Highway 417				** AADT	2009 Highway 7	
East of Carp	West of Carp**	West of Hwy 7	South of Hwy 417		Total Volume	
Total Volume	59434	24860	31852		Total Volume	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%	0:00	74
1:00	197		88	1:00	0.41%	1:00	70
2:00	153		81	2:00	0.31%	2:00	67
3:00	142		109	3:00	0.27%	3:00	94
4:00	259		122	4:00	0.42%	4:00	275
5:00	919		591	5:00	1.69%	5:00	901
6:00	2925		1533	6:00	4.95%	6:00	1586
7:00	3490		1818	7:00	5.77%	7:00	1483
8:00	3172		1585	8:00	5.44%	8:00	1110
9:00	3296		1570	9:00	5.61%	9:00	827
10:00	3482		1707	10:00	5.76%	10:00	803
11:00	3756		1840	11:00	6.29%	11:00	790
12:00	3885		1775	12:00	6.21%	12:00	812
13:00	3891		1979	13:00	6.35%	13:00	781
14:00	4098		2117	14:00	6.72%	14:00	875
15:00	4386		2523	15:00	7.29%	15:00	850
16:00	4743		2782	16:00	8.26%	16:00	874
17:00	4360		2618	17:00	7.54%	17:00	869
18:00	3720		2154	18:00	5.74%	18:00	813
19:00	2713		1508	19:00	4.31%	19:00	546
20:00	1958		1122	20:00	3.63%	20:00	425
21:00	1669		864	21:00	3.07%	21:00	324
22:00	1098		705	22:00	1.95%	22:00	255
23:00	764		462	23:00	1.26%	23:00	161
<b>Total</b>	59434	N/A	31852	<b>Total</b>	15665		

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

Notes:

- Traffic data provided by AECOM (MTO 2009 for Highway 417 and 7, April 2011 for Carp Road and Richards)
- [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 C2.2c: Determination of Traffic Volume and Hourly Distribution - Richardson Road**

WCEC Landfill - Ottawa, Ontario

2011 Richardson Road		**AADT
West of Carp	East of Carp**	
Total Volume	4939	6985

Richardson Road					
West of Carp Road					
	Cars <sup>[1]</sup>	Medium <sup>[2]</sup>	Heavy <sup>[3]</sup>	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%
<b>Total</b>	4059	868	12	4939	100%

<b>Day</b>	<b>3681</b>	<b>781</b>	<b>10</b>	<b>4472</b>
<b>Night</b>	<b>378</b>	<b>87</b>	<b>2</b>	<b>467</b>
<b>Total</b>	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 417 - Hwy 7 & W JCT Hwy 17 IC.
  2. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 417 - Carp Rd IC - OTT/Carl Rd 5.
  3. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 417 - Palladium Rd IC.
  4. Values taken from MTO Provincial Highways - Traffic Volumes 1988 - 2007 for Hwy 7 - Hwy S 417 & 17 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 (%)	
<b>Hwy 7 - south of Hwy 417 <sup>[4]</sup></b>					
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	--	--		
<b>Hwy 417 - west of Hwy 7 <sup>[1]</sup></b>					
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 <sup>[5]</sup>	31852	--	13.9%		
<b>Hwy 417 - b/w Hwy 7 and Carp Rd <sup>[2]</sup></b>					
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 <sup>[5]</sup>	24860	--	-18.8%		
<b>Hwy 417 - east of Carp Road <sup>[3]</sup></b>					
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 <sup>[5]</sup>	59434	--	19.1%		

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

WCEC Landfill - Ottawa, Ontario

**EXISTING TRAFFIC INCLUDING LANDFILL <sup>[1]</sup>**

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

## 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] Freeways have breakdown of 5 MM/15 HH and 5 MM/8 HH for Regional Roads (as per MTO Environmental Guide for Noise October 2006)

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

WCEC Landfill - Ottawa, Ontario

**EXISTING TRAFFIC EXCLUDING LANDFILL <sup>[1]</sup>**

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 <sup>[2]</sup>	--	--	--	--	--	--	--	
Highway 7	South of 417	2009	--	--	--	--	13629	783	1253	<b>15665</b>
Highway 417	West of Highway 7	2009	--	--	--	--	25482	1593	4778	<b>31852</b>
Highway 417	West of Carp	2009	--	--	--	0	19888	1243	3729	<b>24860</b>
Highway 417	East of Carp	2009	--	--	--	29	47547	2972	8886	<b>59405</b>
Carp Road	North of 417 - North of Landfill Entrance	2011	2	0	--	--	10189	1707	179	<b>12075</b>
Carp Road	North of 417 - South of Landfill Entrance	2011	0	31	--	--	10189	1707	150	<b>12046</b>
Carp Road	South of 417	2011	--	--	2	--	19756	1440	142	<b>21338</b>
Richardson Road	West of Carp Road	2011	0	--	--	--	4059	868	12	<b>4939</b>
Richardson Road	East of Carp Road	2011	2	--	--	--	6077	349	557	<b>6983</b>

**BASELINE TRAFFIC EXCLUDING LANDFILL (2012)**

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

## 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] Freeways have breakdown of 5 MM/15 HH and 5 MM/8 HH for Regional Roads (as 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 <sub>1</sub>	θ <sub>2</sub>								Elevation Change e (m)	Hor. Dist a (m)	Hor. Dist b (m)				θ <sub>1</sub>	θ <sub>2</sub>						
24-Hour																																
PR4	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	-35	0	770	Soft	A	2.0		4.5															47.2
	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	-90	-35	900	Soft	A	2.0		4.5															45.6
	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	42	Soft	A	0.1		4.5													-10.0	self shielding	47.2
																													<b>52</b>			
PR7	Carp Road - South of 417	24	19954	1454	143	80	0	y	1	0	90	38	Soft	A	0.1		4.5															<b>60</b>
PR9	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	-65	70	310	Soft	A	2.0		4.5															<b>58</b>
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															<b>46</b>
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
																													<b>59</b>			
NR4	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	65	101	Soft	A	2.0		4.5															<b>63</b>
NR8	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	70	296	Soft	A	2.0		4.5															<b>56</b>
NR9	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	-90	90	27	Soft	A	1.7		4.5															<b>63</b>
RR11	Highway 417 - West of Highway 7	24	37608	2351	7052	100	0	y	1	0	90	188	Soft	A	2.0		4.5															<b>59</b>
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
																													<b>62</b>			
RR14	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	27	Soft	A	0.1		4.5															<b>60</b>
RR17	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	0	90	27	Soft	A	1.7		4.5															<b>61</b>
RR18	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-55	55	560	Soft	A	2.0		4.5															<b>51</b>

## 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
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	49	2	40.8	37.2	36.9	38.1	38.6	45.5	49.6	50.4	49.8	49.7	50.1	50.4	50.3	50.7	51.0	51.8	52.2	52.0	51.1	49.6	48.3	47.1	46.3	44.4
Richardson Road - West of Carp Road	47	4	36.6	31.1	31.9	33.1	33.6	43.5	48.8	50.4	49.3	48.4	50.2	48.0	48.0	48.2	48.1	49.6	50.8	50.1	48.4	46.5	45.8	44.3	43.9	40.2

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
	42.2	38.2	38.1	39.3	39.8	47.6	52.2	53.4	52.6	52.1	53.2	52.4	52.3	52.7	52.8	53.8	54.6	54.1	53.0	51.3	50.2	48.9	48.3	45.8

### 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
	42.2	38.2	38.1	39.3	39.8	47.6	52.2	53.4	52.6	52.1	53.2	52.4	52.3	52.7	52.8	53.8	54.6	54.1	53.0	51.3	50.2	48.9	48.3	45.8

### 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 47.6 52.2 53.4 52.6 52.1 53.2 52.4 52.3 52.7 52.8 53.8 54.6 54.1 53.0 51.3 50.2 48.9 48.3 45.8

Daytime	52
Evening	48
Night-time	45

Total Leq(day) 64.6 Road Leq(day) 64.6 day = 0700 through 2200  
 Total Leq(night) 54.9 Road Leq(night) 54.9 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	
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>	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		
<b>Daytime</b>	<b>59</b>					Total Leq(day)	71.6					Road Leq(day)	71.6												day = 0700 through 2200	
<b>Evening</b>	<b>55</b>					Total Leq(night)	62.0					Road Leq(night)	62.0												night = 2300 through 0600	
<b>Night-time</b>	<b>46</b>																									

### 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						
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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		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	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
<b>Total Road Traffic Leq (1)</b>			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

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)																							

#### 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

<b>Daytime</b>	<b>60</b>
<b>Evening</b>	<b>56</b>
<b>Night-time</b>	<b>45</b>

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																									
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		
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>	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		
<b>Daytime</b>	<b>64</b>																									
<b>Evening</b>	<b>60</b>																									
<b>Night-time</b>	<b>51</b>																									
Total Leq(day)	76.4																									
Total Leq(night)	66.9																									
Road Leq(day)	76.4																									
Road Leq(night)	66.9																									
day = 0700 through 2200																										
night = 2300 through 0600																										

### 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
<b>Total Road Traffic Leq (1)</b>		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		
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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		
		<b>Daytime</b>	<b>57</b>	Total Leq(day)		69.2	Road Leq(day)		69.2	day = 0700 through 2200																	
		<b>Evening</b>	<b>53</b>	Total Leq(night)		59.7	Road Leq(night)		59.7	night = 2300 through 0600																	
		<b>Night-time</b>	<b>45</b>																								

### 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)																										
		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

	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)	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
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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

Daytime	64
Evening	60
Night-time	47

Total Leq(day)	76.7	Road Leq(day)	76.7	day = 0700 through 2200
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)	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

<b>Daytime</b>	<b>63</b>	Total Leq(day)	75.1	Road Leq(day)	75.1	day = 0700 through 2200
<b>Evening</b>	<b>59</b>	Total Leq(night)	65.4	Road Leq(night)	65.4	night = 2300 through 0600
<b>Night-time</b>	<b>49</b>					

### 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						
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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						
		<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)		73.7	Road Leq(day)		73.7	day = 0700 through 2200															
Daytime	61																														
Evening	57																														
Night-time	45																														
				Total Leq(night)		63.9	Road Leq(night)		63.9	night = 2300 through 0600																					

### 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																										
% 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%	
24 hr Leq value (dBA)	Assign distribution number																									
Carp Road - South of 417	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)																										
		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

	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)	48.6	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
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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
		<b>Daytime</b>		<b>60</b>		Total Leq(day)		73.1		Road Leq(day)		73.1		day = 0700 through 2200											
		<b>Evening</b>		<b>57</b>		Total Leq(night)		62.6		Road Leq(night)		62.6		night = 2300 through 0600											
		<b>Night-time</b>		<b>45</b>																					

### 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

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
	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	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						
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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						
		<table border="1"> <tr><td>Daytime</td><td>60</td></tr> <tr><td>Evening</td><td>57</td></tr> <tr><td>Night-time</td><td>47</td></tr> </table>		Daytime	60	Evening	57	Night-time	47	Total Leq(day)		72.7	Road Leq(day)		72.7	day = 0700 through 2200															
Daytime	60																														
Evening	57																														
Night-time	47																														
				Total Leq(night)		63.2	Road Leq(night)		63.2	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)																										
		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

	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	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
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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
		<b>Daytime</b>		<b>61</b>		Total Leq(day)		74.0		Road Leq(day)		74.0		day = 0700 through 2200											
		<b>Evening</b>		<b>57</b>		Total Leq(night)		64.2		Road Leq(night)		64.2		night = 2300 through 0600											
		<b>Night-time</b>		<b>45</b>																					



### 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
<b>Total Road Traffic Leq (1)</b>		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

	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)	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								
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		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 Total Leq(night) 54.8		Road Leq(day) 64.3 Road Leq(night) 54.8		day = 0700 through 2200 night = 2300 through 0600																			
Daytime	52																																
Evening	48																																
Night-time	45																																

# Appendix C3

## Baseline Conditions & Noise Impacts



**Table C3.1: Resulting Guideline Limits - Landfilling Operations**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

- Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
- MOE Noise Guidelines for Landfill Sites.
- 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 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 <sup>[1]</sup>	MOE Landfill Guideline Limit <sup>[2]</sup> (dBA)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Landfill Guideline Limit <sup>[6]</sup> (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	55	No	52	C	55
		Evening	45	No	48	48		
		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	60	M	60
			Evening	45	No	59		59
			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 <sup>[1]</sup>	MOE Landfill Guideline Limit <sup>[2]</sup> (dBA)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Landfill Guideline Limit <sup>[6]</sup> (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 C3.2: 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 <sup>[1]</sup>	MOE Impulsive Guideline Limit <sup>[2]</sup> (dBAI)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Impulsive Guideline Limit <sup>[6]</sup> (dBAI)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	70	No	52	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	60	M	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	70
	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 <sup>[1]</sup>	MOE Quasi-Steady Guideline Limit <sup>[2]</sup> (dBA)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Quasi-Steady Guideline Limit <sup>[6]</sup> (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	60	No	52	C	<b>60</b>
	PR9	2-storey home David Manchester Road	Daytime	60	No	59	C	<b>60</b>
	NR1	1-storey home at 2485 Carp Road North	Daytime	60	No	50	C	<b>60</b>
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	No	60	C	<b>60</b>
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	No	60	C	<b>60</b>
	NR8	2-storey Terrace Youth Residential Services	Daytime	60	No	57	C	<b>60</b>
	NR9	2-storey Sensitive Business Operation	Daytime	60	No	64	C	<b>64</b>
	RR12	2-storey David Manchester Road Central	Daytime	60	No	63	C	<b>63</b>
	RR14	2-storey at 607 William Mooney Road	Daytime	60	No	61	C	<b>61</b>
	RR15	2-storey Wilbert Cox Drive	Daytime	60	No	50	D	<b>60</b>
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	No	60	C	<b>60</b>
	NR5	St. Stephen Catholic Elementary School	Daytime	60	No	50	D	<b>60</b>
	NR6	Huntleigh United Cemetery	Daytime	60	No	50	D	<b>60</b>
	NR7	Lloydalex Park	Daytime	60	No	50	D	<b>60</b>
	RR10	2-storey Spruce Ridge Road Central	Daytime	60	No	45	D	<b>60</b>
	RR11	2-storey David Manchester Road North	Daytime	60	No	60	C	<b>60</b>
	RR13	2-storey David Manchester Road South	Daytime	60	No	50	D	<b>60</b>
	RR16	2-storey Carp Road North	Daytime	60	No	50	D	<b>60</b>
	RR17	2-storey Oak Creek Road	Daytime	60	No	61	C	<b>61</b>
	RR18	2-storey West Carleton Industrial Park	Daytime	60	No	52	C	<b>60</b>
	RR19	2-storey Timbermere	Daytime	60	No	50	D	<b>60</b>
	RR20	2-storey Stittsville	Daytime	60	No	50	D	<b>60</b>
	RR21	2-storey Jackson Trails	Daytime	60	No	50	D	<b>60</b>
	RR22	2-storey Fairwinds	Daytime	60	No	50	D	<b>60</b>
RR23	2-storey Arcadia	Daytime	60	No	50	D	<b>60</b>	
RR24	2-storey Kanata West	Daytime	60	No	50	D	<b>60</b>	

**Table C3.3: 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 <sup>[1]</sup>	MOE Stationary Source Guideline Limit <sup>[2]</sup> (dBA)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Stationary Source Guideline Limit <sup>[6]</sup> (dBA)
SITE VICINITY RECEPTORS	PR4	Daytime	50	No	52	C	52
		Evening	45	No	48		48
		Night-time	45	No	45		45
	PR9	Daytime	50	No	59	C	59
		Evening	45	No	55		55
		Night-time	45	No	46		46
	NR1	Daytime	50	No	50	C	50
		Evening	45	No	45		45
		Night-time	45	No	45		45
	NR2	Daytime	50	No	60	C	60
		Evening	45	No	56		56
		Night-time	45	No	45		45
	NR4	Daytime	50	No	60	M	60
		Evening	45	No	59		59
		Night-time	45	No	51		51
NR8	Daytime	50	No	57	C	57	
	Evening	45	No	53		53	
	Night-time	45	No	45		45	
NR9	Daytime	50	No	64	C	64	
	Evening	45	No	60		60	
	Night-time	45	No	47		47	
RR12	Daytime	50	No	63	C	63	
	Evening	45	No	59		59	
	Night-time	45	No	49		49	
RR14	Daytime	50	No	61	C	61	
	Evening	45	No	57		57	
	Night-time	45	No	45		45	
RR15	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 <sup>[1]</sup>	MOE Stationary Source Guideline Limit <sup>[2]</sup> (dBA)	Verified by Acoustic Audit <sup>[3]</sup> (Yes/No)	Performance Limit <sup>[4]</sup> (dBA)	Performance Limit Source <sup>[5]</sup>	Resulting Stationary Source Guideline Limit <sup>[6]</sup> (dBA)	
REGIONAL RECEPTORS	PR7	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	



**Table C3.4a: Total Landfill Sound Levels - Scenario 1 (Steady-State Sources)**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

- All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.
- Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
  - The higher of MOE Landfill guideline limit or background sound level. This is also referred to as the "baseline noise condition".
  - Preferred Alternative Landfill Footprint (PALF) noise sources include construction and landfilling activities, and the combined leachate treatment system (SBR and evaporator), as a conservative approximation.
  - Comparison of total sound level to the resulting guideline limit.

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup>	PALF Source Contribution <sup>[3]</sup>	Existing Gas-to-Energy Source Contribution	Total Landfill Sound Level	Criteria Comparison <sup>[4]</sup>	
			(dBA)	(dBA)	(dBA)	(dBA)		
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	55	53	23	53	--
		Evening	48	24	23	26	--	
		Night-time	45	24	23	26	--	
	PR9	2-storey home David Manchester Road	Daytime	59	47	26	47	--
			Evening	55	25	26	29	--
			Night-time	46	25	26	29	--
	NR1	1-storey home at 2485 Carp Road North	Daytime	55	60	27	60	5
			Evening	45	22	27	28	--
			Night-time	45	22	27	28	--
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	44	39	45	--
			Evening	56	35	39	41	--
			Night-time	45	35	39	41	--
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	48	35	48	--
			Evening	59	35	35	38	--
			Night-time	51	35	35	38	--
	NR8	2-storey Terrace Youth Residential Services	Daytime	57	45	40	46	--
			Evening	53	37	40	42	--
			Night-time	45	37	40	42	--
NR9	2-storey Sensitive Business Operation	Daytime	64	56	28	56	--	
		Evening	60	23	28	29	--	
		Night-time	47	23	28	29	--	
RR12	2-storey David Manchester Road Central	Daytime	63	46	20	46	--	
		Evening	59	20	20	23	--	
		Night-time	49	20	20	23	--	
RR14	2-storey at 607 William Mooney Road	Daytime	61	55	24	55	--	
		Evening	57	23	24	26	--	
		Night-time	45	23	24	26	--	
RR15	2-storey Wilbert Cox Drive	Daytime	55	52	22	52	--	
		Evening	45	22	22	25	--	
		Night-time	45	22	22	25	--	

## Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup>	PALF Source Contribution <sup>[3]</sup>	Existing Gas-to-Energy Source Contribution	Total Landfill Sound Level	Criteria Comparison <sup>[4]</sup>	
			(dBA)	(dBA)	(dBA)	(dBA)		
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	42	33	43	--
		Evening	57	32	33	36	--	
		Night-time	45	32	33	36	--	
	NR5	St. Stephen Catholic Elementary School	Daytime	55	33	21	33	--
			Evening	45	20	21	23	--
			Night-time	45	20	21	23	--
	NR6	Huntleigh United Cemetery	Daytime	55	49	23	49	--
			Evening	45	21	23	25	--
			Night-time	45	21	23	25	--
	NR7	Lloydalex Park	Daytime	55	36	24	36	--
			Evening	45	22	24	26	--
			Night-time	45	22	24	26	--
	RR10	2-storey Spruce Ridge Road Central	Daytime	55	34	15	34	--
			Evening	45	15	15	18	--
			Night-time	45	15	15	18	--
	RR11	2-storey David Manchester Road North	Daytime	60	42	17	42	--
			Evening	57	17	17	20	--
			Night-time	47	17	17	20	--
	RR13	2-storey David Manchester Road South	Daytime	55	42	26	42	--
			Evening	45	24	26	28	--
			Night-time	45	24	26	28	--
	RR16	2-storey Carp Road North	Daytime	55	46	20	46	--
			Evening	45	19	20	23	--
			Night-time	45	19	20	23	--
RR17	2-storey Oak Creek Road	Daytime	61	46	24	46	--	
		Evening	57	21	24	26	--	
		Night-time	45	21	24	26	--	
RR18	2-storey West Carleton Industrial Park	Daytime	55	43	38	44	--	
		Evening	48	34	38	39	--	
		Night-time	45	34	38	39	--	
RR19	2-storey Timbermere	Daytime	55	39	27	39	--	
		Evening	45	27	27	30	--	
		Night-time	45	27	27	30	--	
RR20	2-storey Stittsville	Daytime	55	35	24	35	--	
		Evening	45	22	24	26	--	
		Night-time	45	22	24	26	--	
RR21	2-storey Jackson Trails	Daytime	55	38	25	38	--	
		Evening	45	25	25	28	--	
		Night-time	45	25	25	28	--	
RR22	2-storey Fairwinds	Daytime	55	35	20	35	--	
		Evening	45	19	20	23	--	
		Night-time	45	19	20	23	--	
RR23	2-storey Arcadia	Daytime	55	37	20	37	--	
		Evening	45	20	20	23	--	
		Night-time	45	20	20	23	--	
RR24	2-storey Kanata West	Daytime	55	35	16	35	--	
		Evening	45	15	16	19	--	
		Night-time	45	15	16	19	--	

**Table C3.4b: Cumulative Landfill and Overall Increase in Sound Levels - Scenario 1 (Steady-State Sources)**

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- Cumulative or additive noise levels are determined from modelled output. All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
2. The higher of MOE Landfill guideline limit or background sound level. This is also referred to as the "baseline noise condition".
3. Total landfill sound level includes Preferred Alternative Landfill Footprint (PALF) noise sources, construction and landfilling activities, the combined leachate treatment system (SBR and evaporator), and the Gas-to-Energy plant.
4. Cumulative sound levels include contributions from the baseline noise conditions and total landfill activities.
5. Change from baseline noise condition.

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup> (dBA)	Total Landfill Sound Level <sup>[3]</sup> (dBA)	Cumulative Sound Level <sup>[4]</sup> (dBA)	Overall Increase in Sound Level <sup>[5]</sup> (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	55	53	57	2
		Evening	48	26	48	--	
		Night-time	45	26	45	--	
	PR9	2-storey home David Manchester Road	Daytime	59	47	60	--
			Evening	55	29	55	--
			Night-time	46	29	46	--
	NR1	1-storey home at 2485 Carp Road North	Daytime	55	60	61	6
			Evening	45	28	45	--
			Night-time	45	28	45	--
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	45	61	--
			Evening	56	41	57	--
			Night-time	45	41	47	1
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	48	61	--
			Evening	59	38	59	--
			Night-time	51	38	52	--
	NR8	2-storey Terrace Youth Residential Services	Daytime	57	46	58	--
			Evening	53	42	54	--
			Night-time	45	42	47	2
NR9	2-storey Sensitive Business Operation	Daytime	64	56	65	1	
		Evening	60	29	60	--	
		Night-time	47	29	47	--	
RR12	2-storey David Manchester Road Central	Daytime	63	46	63	--	
		Evening	59	23	59	--	
		Night-time	49	23	49	--	
RR14	2-storey at 607 William Mooney Road	Daytime	61	55	62	1	
		Evening	57	26	57	--	
		Night-time	45	26	45	--	
RR15	2-storey Wilbert Cox Drive	Daytime	55	52	57	2	
		Evening	45	25	45	--	
		Night-time	45	25	45	--	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup> (dBA)	Total Landfill Sound Level <sup>[3]</sup> (dBA)	Cumulative Sound Level <sup>[4]</sup> (dBA)	Overall Increase in Sound Level <sup>[5]</sup> (dBA)	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	43	<b>60</b>	--
		Evening	57	36	<b>57</b>	--	
		Night-time	45	36	<b>46</b>	--	
	NR5	St. Stephen Catholic Elementary School	Daytime	55	33	<b>55</b>	--
			Evening	45	23	<b>45</b>	--
			Night-time	45	23	<b>45</b>	--
	NR6	Huntleigh United Cemetery	Daytime	55	49	<b>56</b>	<b>1</b>
			Evening	45	25	<b>45</b>	--
			Night-time	45	25	<b>45</b>	--
	NR7	Lloydalex Park	Daytime	55	36	<b>55</b>	--
			Evening	45	26	<b>45</b>	--
			Night-time	45	26	<b>45</b>	--
	RR10	2-storey Spruce Ridge Road Central	Daytime	55	34	<b>55</b>	--
			Evening	45	18	<b>45</b>	--
			Night-time	45	18	<b>45</b>	--
	RR11	2-storey David Manchester Road North	Daytime	60	42	<b>60</b>	--
			Evening	57	20	<b>57</b>	--
			Night-time	47	20	<b>47</b>	--
	RR13	2-storey David Manchester Road South	Daytime	55	42	<b>55</b>	--
			Evening	45	28	<b>45</b>	--
			Night-time	45	28	<b>45</b>	--
	RR16	2-storey Carp Road North	Daytime	55	46	<b>55</b>	--
			Evening	45	23	<b>45</b>	--
			Night-time	45	23	<b>45</b>	--
RR17	2-storey Oak Creek Road	Daytime	61	46	<b>62</b>	--	
		Evening	57	26	<b>57</b>	--	
		Night-time	45	26	<b>45</b>	--	
RR18	2-storey West Carleton Industrial Park	Daytime	55	44	<b>55</b>	--	
		Evening	48	39	<b>49</b>	<b>1</b>	
		Night-time	45	39	<b>46</b>	<b>1</b>	
RR19	2-storey Timbermere	Daytime	55	39	<b>55</b>	--	
		Evening	45	30	<b>46</b>	--	
		Night-time	45	30	<b>46</b>	--	
RR20	2-storey Stittsville	Daytime	55	35	<b>55</b>	--	
		Evening	45	26	<b>45</b>	--	
		Night-time	45	26	<b>45</b>	--	
RR21	2-storey Jackson Trails	Daytime	55	38	<b>55</b>	--	
		Evening	45	28	<b>45</b>	--	
		Night-time	45	28	<b>45</b>	--	
RR22	2-storey Fairwinds	Daytime	55	35	<b>55</b>	--	
		Evening	45	23	<b>45</b>	--	
		Night-time	45	23	<b>45</b>	--	
RR23	2-storey Arcadia	Daytime	55	37	<b>55</b>	--	
		Evening	45	23	<b>45</b>	--	
		Night-time	45	23	<b>45</b>	--	
RR24	2-storey Kanata West	Daytime	55	35	<b>55</b>	--	
		Evening	45	19	<b>45</b>	--	
		Night-time	45	19	<b>45</b>	--	

**Table C3.5a: Total Ancillary Facility Sound Levels - Scenario 1 (Steady-State Sources)**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

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

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h. Ancillary facilities operate during daytime hours.

2. The higher of MOE NPC-205/232 guideline limit or background sound level. This is also referred to as the "baseline noise condition".

3. Comparison of total sound level to the resulting guideline limit.

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Stationary Source Guideline Limit <sup>[2]</sup> (dBA)	MRF/OPF Source Contribution	CDF Source Contribution	Total Ancillary Facility Sound Level	Criteria Comparison <sup>[3]</sup>	
				(dBA)	(dBA)	(dBA)	(dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	52	42	43	45	--
	PR9	2-storey home David Manchester Road	Daytime	59	38	41	43	--
	NR1	1-storey home at 2485 Carp Road North	Daytime	50	41	42	44	--
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	42	43	46	--
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	52	55	57	--
	NR8	2-storey Terrace Youth Residential Services	Daytime	57	48	50	52	--
	NR9	2-storey Sensitive Business Operation	Daytime	64	39	40	42	--
	RR12	2-storey David Manchester Road Central	Daytime	63	36	37	39	--
	RR14	2-storey at 607 William Mooney Road	Daytime	61	43	44	46	--
RR15	2-storey Wilbert Cox Drive	Daytime	50	40	40	43	--	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	40	41	44	--
	NR5	St. Stephen Catholic Elementary School	Daytime	50	27	28	30	--
	NR6	Huntleigh United Cemetery	Daytime	50	33	34	37	--
	NR7	Lloydalex Park	Daytime	50	30	31	34	--
	RR10	2-storey Spruce Ridge Road Central	Daytime	45	27	29	31	--
	RR11	2-storey David Manchester Road North	Daytime	60	32	33	36	--
	RR13	2-storey David Manchester Road South	Daytime	50	36	41	42	--
	RR16	2-storey Carp Road North	Daytime	50	31	32	35	--
	RR17	2-storey Oak Creek Road	Daytime	61	32	33	36	--
	RR18	2-storey West Carleton Industrial Park	Daytime	52	45	46	48	--
	RR19	2-storey Timbermere	Daytime	50	38	40	42	--
	RR20	2-storey Stittsville	Daytime	50	33	34	37	--
	RR21	2-storey Jackson Trails	Daytime	50	31	32	34	--
	RR22	2-storey Fairwinds	Daytime	50	27	28	30	--
	RR23	2-storey Arcadia	Daytime	50	26	28	30	--
RR24	2-storey Kanata West	Daytime	50	23	23	26	--	

**Table C3.5b: Cumulative Ancillary Facilities and Overall Increase in Sound Levels - Scenario 1 (Steady-State Sources)**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

- Cumulative or additive noise levels are determined from modelled output. All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h. Ancillary facilities operate during daytime hours.
2. The higher of MOE NPC-205/232 guideline limit or background sound level. This is also referred to as the "baseline noise condition".
3. Cumulative sound levels include contributions from the baseline noise conditions and total ancillary facilities.
5. Change from baseline noise condition.

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Stationary Source Guideline Limit <sup>[2]</sup> (dBA)	Total Ancillary Facility Sound Level <sup>[3]</sup> (dBA)	Cumulative Sound Level <sup>[3]</sup> (dBA)	Overall Increase in Sound Level <sup>[4]</sup> (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	52	45	<b>53</b>	<b>1</b>
	PR9	2-storey home David Manchester Road	Daytime	59	43	<b>59</b>	--
	NR1	1-storey home at 2485 Carp Road North	Daytime	50	44	<b>51</b>	<b>1</b>
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	46	<b>61</b>	--
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	57	<b>62</b>	<b>2</b>
	NR8	2-storey Terrace Youth Residential Services	Daytime	57	52	<b>58</b>	<b>1</b>
	NR9	2-storey Sensitive Business Operation	Daytime	64	42	<b>64</b>	--
	RR12	2-storey David Manchester Road Central	Daytime	63	39	<b>63</b>	--
	RR14	2-storey at 607 William Mooney Road	Daytime	61	46	<b>62</b>	--
	RR15	2-storey Wilbert Cox Drive	Daytime	50	43	<b>51</b>	<b>1</b>
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	44	<b>60</b>	--
	NR5	St. Stephen Catholic Elementary School	Daytime	50	30	<b>50</b>	--
	NR6	Huntleigh United Cemetery	Daytime	50	37	<b>51</b>	--
	NR7	Lloydalex Park	Daytime	50	34	<b>50</b>	--
	RR10	2-storey Spruce Ridge Road Central	Daytime	45	31	<b>46</b>	--
	RR11	2-storey David Manchester Road North	Daytime	60	36	<b>60</b>	--
	RR13	2-storey David Manchester Road South	Daytime	50	42	<b>51</b>	<b>1</b>
	RR16	2-storey Carp Road North	Daytime	50	35	<b>51</b>	--
	RR17	2-storey Oak Creek Road	Daytime	61	36	<b>61</b>	--
	RR18	2-storey West Carleton Industrial Park	Daytime	52	48	<b>54</b>	<b>1</b>
	RR19	2-storey Timbermere	Daytime	50	42	<b>51</b>	<b>1</b>
	RR20	2-storey Stittsville	Daytime	50	37	<b>51</b>	--
	RR21	2-storey Jackson Trails	Daytime	50	34	<b>51</b>	--
	RR22	2-storey Fairwinds	Daytime	50	30	<b>50</b>	--
RR23	2-storey Arcadia	Daytime	50	30	<b>50</b>	--	
RR24	2-storey Kanata West	Daytime	50	26	<b>50</b>	--	

**Table C3.6: Cumulative and Overall Increase in Sound Levels - Scenario 1 (Steady-State Sources)**

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- Cumulative or additive noise levels are determined from modelled output. All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.

1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
2. The higher of MOE Landfill guideline limit or background sound level. This is also referred to as the "baseline noise condition".
3. Sum of Total Landfill and Total Ancillary Facility sound levels
4. Cumulative sound levels include contributions from the baseline noise conditions, total landfill activities and total ancillary facilities.
5. Change from baseline noise condition.

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup> (dBA)	Total WCEC Sound Level <sup>[4]</sup> (dBA)	Cumulative Sound Level <sup>[6]</sup> (dBA)	Overall Increase in Sound Level <sup>[7]</sup> (dBA)	
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	55	53	57	2
		Evening	48	26	48	--	
		Night-time	45	26	45	--	
	PR9	2-storey home David Manchester Road	Daytime	59	48	60	--
			Evening	55	29	55	--
			Night-time	46	29	46	--
	NR1	1-storey home at 2485 Carp Road North	Daytime	55	60	61	6
			Evening	45	28	45	--
			Night-time	45	28	45	--
	NR2	2-storey home at 2166 Carp Road East	Daytime	60	48	61	--
			Evening	56	41	57	--
			Night-time	45	41	47	1
	NR4	2-storey home at 292 Moonstone Road South	Daytime	60	56	62	1
			Evening	59	38	59	--
			Night-time	51	38	52	--
	NR8	2-storey Terrace Youth Residential Services	Daytime	57	52	59	1
			Evening	53	42	54	--
			Night-time	45	42	47	2
NR9	2-storey Sensitive Business Operation	Daytime	64	56	65	1	
		Evening	60	29	60	--	
		Night-time	47	29	47	--	
RR12	2-storey David Manchester Road Central	Daytime	63	47	63	--	
		Evening	59	23	59	--	
		Night-time	49	23	49	--	
RR14	2-storey at 607 William Mooney Road	Daytime	61	56	62	1	
		Evening	57	26	57	--	
		Night-time	45	26	45	--	
RR15	2-storey Wilbert Cox Drive	Daytime	55	53	57	2	
		Evening	45	25	45	--	
		Night-time	45	25	45	--	

Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Resulting Landfill Guideline Limit <sup>[2]</sup> (dBA)	Total WCEC Sound Level <sup>[4]</sup> (dBA)	Cumulative Sound Level <sup>[6]</sup> (dBA)	Overall Increase in Sound Level <sup>[7]</sup> (dBA)	
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	60	46	<b>61</b>	--
		Evening	57	36	<b>57</b>	--	
		Night-time	45	36	<b>46</b>	--	
	NR5	St. Stephen Catholic Elementary School	Daytime	55	35	<b>55</b>	--
			Evening	45	23	<b>45</b>	--
			Night-time	45	23	<b>45</b>	--
	NR6	Huntleigh United Cemetery	Daytime	55	49	<b>56</b>	<b>1</b>
			Evening	45	25	<b>45</b>	--
			Night-time	45	25	<b>45</b>	--
	NR7	Lloydalex Park	Daytime	55	38	<b>55</b>	--
			Evening	45	26	<b>45</b>	--
			Night-time	45	26	<b>45</b>	--
	RR10	2-storey Spruce Ridge Road Central	Daytime	55	36	<b>55</b>	--
			Evening	45	18	<b>45</b>	--
			Night-time	45	18	<b>45</b>	--
	RR11	2-storey David Manchester Road North	Daytime	60	43	<b>60</b>	--
			Evening	57	20	<b>57</b>	--
			Night-time	47	20	<b>47</b>	--
	RR13	2-storey David Manchester Road South	Daytime	55	45	<b>55</b>	--
			Evening	45	28	<b>45</b>	--
			Night-time	45	28	<b>45</b>	--
	RR16	2-storey Carp Road North	Daytime	55	46	<b>56</b>	<b>1</b>
			Evening	45	23	<b>45</b>	--
			Night-time	45	23	<b>45</b>	--
RR17	2-storey Oak Creek Road	Daytime	61	46	<b>62</b>	--	
		Evening	57	26	<b>57</b>	--	
		Night-time	45	26	<b>45</b>	--	
RR18	2-storey West Carleton Industrial Park	Daytime	55	49	<b>56</b>	<b>1</b>	
		Evening	48	39	<b>49</b>	<b>1</b>	
		Night-time	45	39	<b>46</b>	<b>1</b>	
RR19	2-storey Timbermere	Daytime	55	43	<b>55</b>	--	
		Evening	45	30	<b>46</b>	--	
		Night-time	45	30	<b>46</b>	--	
RR20	2-storey Stittsville	Daytime	55	39	<b>55</b>	--	
		Evening	45	26	<b>45</b>	--	
		Night-time	45	26	<b>45</b>	--	
RR21	2-storey Jackson Trails	Daytime	55	39	<b>55</b>	--	
		Evening	45	28	<b>45</b>	--	
		Night-time	45	28	<b>45</b>	--	
RR22	2-storey Fairwinds	Daytime	55	36	<b>55</b>	--	
		Evening	45	23	<b>45</b>	--	
		Night-time	45	23	<b>45</b>	--	
RR23	2-storey Arcadia	Daytime	55	38	<b>55</b>	--	
		Evening	45	23	<b>45</b>	--	
		Night-time	45	23	<b>45</b>	--	
RR24	2-storey Kanata West	Daytime	55	35	<b>55</b>	--	
		Evening	45	19	<b>45</b>	--	
		Night-time	45	19	<b>45</b>	--	



**Table C3.7: Point of Reception Noise Impact Scenario Comparison (Steady-State)**

WCEC Landfill - Ottawa, Ontario

Notes to Table:

- All values shown are rounded to the nearest digit. Any apparent discrepancies are due to rounding.
- 1. Daytime occurs from 0700-1900h. Evening occurs from 1900-2300h. Night-time occurs from 2300-0700h.
- 2. Sum of Total Landfill and Total Ancillary Facility sound levels

**Summary of 'Steady-state' Noise Impacts**

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Total WCEC Sound Level <sup>[2]</sup>		Which Scenario is Higher?  (dBA)	
			Scenario 1 (dBA)	Scenario 2 (dBA)		
SITE VICINITY RECEPTORS	PR4	2-storey home on Richardson Side Road NNW	Daytime	53	55	Scenario 2 by 2
		Evening	27	27	Equal	
		Night-time	27	27	Equal	
	PR9	2-storey home David Manchester Road	Daytime	48	49	Scenario 2 by 1
			Evening	29	29	Equal
			Night-time	29	29	Equal
	NR1	1-storey home at 2485 Carp Road North	Daytime	60	55	Scenario 1 by 5
			Evening	31	31	Equal
			Night-time	31	31	Equal
	NR2	2-storey home at 2166 Carp Road East	Daytime	48	48	Equal
			Evening	41	41	Equal
			Night-time	41	41	Equal
	NR4	2-storey home at 292 Moonstone Road South	Daytime	56	56	Equal
			Evening	38	38	Equal
			Night-time	38	38	Equal
NR8	2-storey Terrace Youth Residential Services	Daytime	52	52	Equal	
		Evening	42	42	Equal	
		Night-time	42	42	Equal	
NR9	2-storey Sensitive Business Operation	Daytime	56	53	Scenario 1 by 3	
		Evening	30	30	Equal	
		Night-time	30	30	Equal	
RR12	2-storey David Manchester Road Central	Daytime	47	48	Scenario 2 by 1	
		Evening	23	23	Equal	
		Night-time	23	23	Equal	
RR14	2-storey at 607 William Mooney Road	Daytime	56	58	Scenario 2 by 2	
		Evening	28	28	Equal	
		Night-time	28	28	Equal	
RR15	2-storey Wilbert Cox Drive	Daytime	53	54	Scenario 2 by 1	
		Evening	26	26	Equal	
		Night-time	26	26	Equal	

## Summary of 'Steady-state' Noise Impacts

Point of Reception ID	Point of Reception (PoR) Description	Time Period <sup>[1]</sup>	Total WCEC Sound Level <sup>[2]</sup>		Which Scenario is Higher?  (dBA)	
			Scenario 1 (dBA)	Scenario 2 (dBA)		
REGIONAL RECEPTORS	PR7	2-storey home at 2096 Carp Road South	Daytime	46	45	Scenario 1 by 1
		Evening	36	36	Equal	
		Night-time	36	36	Equal	
	NR5	St. Stephen Catholic Elementary School	Daytime	35	35	Equal
			Evening	23	23	Equal
			Night-time	23	23	Equal
	NR6	Huntleigh United Cemetery	Daytime	49	48	Scenario 1 by 1
			Evening	25	25	Equal
			Night-time	25	25	Equal
	NR7	Lloydalex Park	Daytime	38	37	Scenario 1 by 1
			Evening	26	26	Equal
			Night-time	26	26	Equal
	RR10	2-storey Spruce Ridge Road Central	Daytime	36	36	Equal
			Evening	18	18	Equal
			Night-time	18	18	Equal
	RR11	2-storey David Manchester Road North	Daytime	43	44	Scenario 2 by 1
			Evening	20	20	Equal
			Night-time	20	20	Equal
	RR13	2-storey David Manchester Road South	Daytime	45	45	Equal
			Evening	28	28	Equal
			Night-time	28	28	Equal
	RR16	2-storey Carp Road North	Daytime	46	45	Scenario 1 by 1
			Evening	23	23	Equal
			Night-time	23	23	Equal
RR17	2-storey Oak Creek Road	Daytime	46	42	Scenario 1 by 4	
		Evening	27	27	Equal	
		Night-time	27	27	Equal	
RR18	2-storey West Carleton Industrial Park	Daytime	49	49	Equal	
		Evening	39	39	Equal	
		Night-time	39	39	Equal	
RR19	2-storey Timbermere	Daytime	43	43	Equal	
		Evening	30	30	Equal	
		Night-time	30	30	Equal	
RR20	2-storey Stittsville	Daytime	39	38	Scenario 1 by 1	
		Evening	26	26	Equal	
		Night-time	26	26	Equal	
RR21	2-storey Jackson Trails	Daytime	39	39	Equal	
		Evening	28	28	Equal	
		Night-time	28	28	Equal	
RR22	2-storey Fairwinds	Daytime	36	35	Scenario 1 by 1	
		Evening	23	23	Equal	
		Night-time	23	23	Equal	
RR23	2-storey Arcadia	Daytime	38	36	Scenario 1 by 2	
		Evening	23	23	Equal	
		Night-time	23	23	Equal	
RR24	2-storey Kanata West	Daytime	35	32	Scenario 1 by 3	
		Evening	19	19	Equal	
		Night-time	19	19	Equal	

**Table C3.8a: 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
<b>Point of Reception Description</b> Site Vicinity 2-storey home on Richardson Side Road NNW	<b>Point of Reception Description</b> Site Vicinity 2-storey home David Manchester Road	<b>Point of Reception Description</b> Site Vicinity 1-storey home at 2485 Carp Road North	<b>Point of Reception Description</b> Site Vicinity 2-storey home at 2166 Carp Road East	<b>Point of Reception Description</b> Site Vicinity 2-storey home at 292 Moonstone Road South
<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> 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 <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
EXISTING LANDFILL OPERATIONS																
BLOWER_BLDG	Blower Bldg concentric opening	2068	-4	dBA	2570	-6	dBA	1117	2	dBA	808	1	dBA	1386	-11	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	2038	3	dBA	2552	1	dBA	1085	13	dBA	839	17	dBA	1386	11	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	2046	8	dBA	2563	6	dBA	1086	20	dBA	839	24	dBA	1396	19	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	2061	-4	dBA	2568	-6	dBA	1107	3	dBA	819	5	dBA	1390	1	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	2053	-4	dBA	2558	-6	dBA	1106	3	dBA	819	7	dBA	1381	1	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	2277	-25	dBA	2604	-20	dBA	1464	-15	dBA	459	2	dBA	1254	-14	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	2267	-25	dBA	2601	-20	dBA	1451	-9	dBA	472	2	dBA	1256	-15	dBA
GEN_OH1	Energy Building overhead door 1	2280	-10	dBA	2604	-5	dBA	1469	-7	dBA	454	15	dBA	1252	2	dBA
GEN_OH2	Energy Building overhead door 2	2271	-12	dBA	2601	-7	dBA	1457	-8	dBA	466	18	dBA	1254	1	dBA
GEN_OH3	Energy Building overhead door 3	2263	-14	dBA	2599	-9	dBA	1445	-9	dBA	478	19	dBA	1257	-1	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	2250	15	dBA	2579	19	dBA	1447	18	dBA	476	31	dBA	1235	27	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	2254	15	dBA	2580	19	dBA	1453	18	dBA	470	31	dBA	1234	27	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	2258	15	dBA	2581	19	dBA	1459	18	dBA	465	31	dBA	1233	27	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	2263	15	dBA	2583	19	dBA	1466	18	dBA	458	31	dBA	1231	27	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	2267	15	dBA	2584	19	dBA	1471	18	dBA	452	31	dBA	1230	27	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	2254	5	dBA	2585	8	dBA	1448	9	dBA	475	25	dBA	1241	17	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	2259	5	dBA	2586	8	dBA	1454	9	dBA	469	26	dBA	1240	17	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	2263	5	dBA	2587	8	dBA	1459	9	dBA	464	26	dBA	1239	17	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	2267	5	dBA	2589	8	dBA	1466	9	dBA	457	26	dBA	1237	17	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	2272	5	dBA	2590	8	dBA	1472	9	dBA	451	26	dBA	1236	17	dBA
GEN_WALL1	Energy Bldg wall 1	2274	-11	dBA	2602	-6	dBA	1461	-7	dBA	462	17	dBA	1253	1	dBA
GEN_WALL2	Energy Bldg wall 2	2266	-12	dBA	2600	-7	dBA	1449	-8	dBA	474	19	dBA	1256	0	dBA
GEN_WALL3	Energy Bldg wall 3	2281	-13	dBA	2605	-8	dBA	1471	-9	dBA	452	10	dBA	1252	-1	dBA

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
MRF/OPF/CDF																
WTPF_COMP	WTPF Waste compactor	1441	18	dBA	1407	18	dBA	1644	-9	dBA	1383	5	dBA	457	31	dBA
WTPF_DROP_ICI	WTPF Drop-off truck unloading at IC&I pad	1457	32	dBA	1453	31	dBA	1614	28	dBA	1341	37	dBA	464	45	dBA
WTPF_LOADER_ICI	WTPF Loader IC&I	1457	38	dBA	1450	34	dBA	1617	31	dBA	1343	40	dBA	463	51	dBA
WTPF_DROP_CD	WTPF Drop-off truck unloading at C&D pad	1479	32	dBA	1469	32	dBA	1621	29	dBA	1321	38	dBA	449	50	dBA
WTPF_LOADER_CD	WTPF Loader C&D	1479	39	dBA	1463	34	dBA	1628	31	dBA	1327	40	dBA	444	51	dBA
WTPF_CRUSHER	WTPF Portable Concrete Crusher	1478	31	dBA	1453	35	dBA	1637	28	dBA	1335	36	dBA	439	48	dBA
WTPF_HR1_inICI	WTPF Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	varies	37	dBA	varies	33	dBA	varies	38	dBA	varies	29	dBA	varies	38	dBA
WTPF_HR2_inCD	WTPF Inbound C&D Material Trucks #trips/hr; Entry and Exit	varies	38	dBA	varies	35	dBA	varies	40	dBA	varies	31	dBA	varies	40	dBA
WTPF_HR3_outTT	WTPF Outbound Transfer Trailers #trips/hr; Entry and Exit	varies	32	dBA	varies	29	dBA	varies	33	dBA	varies	26	dBA	varies	36	dBA
WTPF_HR4_outICI	WTPF Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	varies	30	dBA	varies	26	dBA	varies	31	dBA	varies	22	dBA	varies	31	dBA
WTPF_HR5_outCD	WTPF Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	varies	34	dBA	varies	30	dBA	varies	35	dBA	varies	27	dBA	varies	36	dBA
SBR/EVAPORATOR																
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	1813	13	dBA	2232	12	dBA	1139	10	dBA	869	21	dBA	1083	19	dBA
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	1817	13	dBA	2238	12	dBA	1138	10	dBA	867	21	dBA	1087	19	dBA
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	1826	13	dBA	2241	11	dBA	1149	12	dBA	856	22	dBA	1083	19	dBA
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	1830	13	dBA	2234	12	dBA	1166	11	dBA	846	22	dBA	1067	19	dBA
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	1834	13	dBA	2239	12	dBA	1165	12	dBA	843	22	dBA	1071	19	dBA
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	1842	13	dBA	2240	12	dBA	1178	12	dBA	831	22	dBA	1064	19	dBA
SS_EVAP_STK1	Evaporator Discharge Stack 1	1681	12	dBA	2038	14	dBA	1199	13	dBA	958	22	dBA	918	22	dBA
SS_EVAP_STK2	Evaporator Discharge Stack 2	1685	12	dBA	2039	14	dBA	1204	13	dBA	953	22	dBA	914	22	dBA
SS_EVAP_CASE	Evaporator Casing Radiated	1682	18	dBA	2037	22	dBA	1202	15	dBA	956	33	dBA	914	34	dBA
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	1668	11	dBA	2026	12	dBA	1196	8	dBA	970	21	dBA	913	24	dBA
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	1668	2	dBA	2027	3	dBA	1196	0	dBA	970	10	dBA	914	13	dBA
PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES																
SS_TRK_IDLE	Idling Truck on Weigh Scale	1580	20	dBA	2322	14	dBA	603	27	dBA	1352	12	dBA	1496	15	dBA
SS1_cs_ldr	Cover Soil - CAT Loader	918	43	dBA	1384	39	dBA	1248	35	dBA	1729	31	dBA	1037	42	dBA
SS1_lwf_cmpt1	Landfill Working Face - CAT 826G Compactor	1388	32	dBA	2284	25	dBA	373	41	dBA	1647	25	dBA	1664	25	dBA
SS1_lwf_cmpt2	Landfill Working Face - CAT 826G Compactor	1403	32	dBA	2298	25	dBA	366	41	dBA	1642	25	dBA	1671	25	dBA
SS1_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	1378	40	dBA	2270	34	dBA	386	48	dBA	1643	33	dBA	1652	33	dBA
SS1_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	1376	39	dBA	2282	33	dBA	362	51	dBA	1666	32	dBA	1677	32	dBA
SS1_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	1399	39	dBA	2305	33	dBA	348	51	dBA	1662	32	dBA	1690	32	dBA
SS1_ob_stu	Overburden - CAT Soil Truck Unloading	818	46	dBA	1377	40	dBA	1220	36	dBA	1821	32	dBA	1137	42	dBA
SS1_lwf_grdr	Construction Working Face - Grader	1217	38	dBA	2106	31	dBA	502	48	dBA	1691	30	dBA	1568	30	dBA
SS1_cwf_exc1	Construction Working Face - CAT 330B Excavator	1185	30	dBA	2099	23	dBA	494	38	dBA	1735	21	dBA	1596	22	dBA
SS1_cwf_exc2	Construction Working Face - CAT 330B Excavator	1201	30	dBA	2115	23	dBA	480	39	dBA	1730	21	dBA	1603	22	dBA
SS1_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	1192	41	dBA	2081	34	dBA	523	48	dBA	1700	32	dBA	1557	33	dBA
SS1_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	1207	40	dBA	2114	34	dBA	484	49	dBA	1719	32	dBA	1595	33	dBA
SS1_cwf_scrpr1	Construction Working Face - CAT Scraper 1	1181	42	dBA	2081	35	dBA	516	50	dBA	1718	33	dBA	1570	34	dBA
SS1_cwf_scrpr2	Construction Working Face - CAT Scraper 2	1199	42	dBA	2098	35	dBA	502	50	dBA	1712	33	dBA	1578	34	dBA
SS1_cwf_scrpr3	Construction Working Face - CAT Scraper 3	1216	42	dBA	2116	35	dBA	488	50	dBA	1705	33	dBA	1585	34	dBA
SS1_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	varies	40	dBA	varies	35	dBA	varies	49	dBA	varies	35	dBA	varies	35	dBA
SS1_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	varies	32	dBA	varies	28	dBA	varies	35	dBA	varies	23	dBA	varies	26	dBA
SS1_HR3_ist	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	varies	33	dBA	varies	29	dBA	varies	33	dBA	varies	22	dBA	varies	26	dBA
SS1_HR3_cst	Construction Overburden Haul Truck Route #trips/hr; To and From Stockpile	varies	28	dBA	varies	23	dBA	varies	25	dBA	varies	16	dBA	varies	23	dBA
SS1_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	varies	35	dBA	varies	30	dBA	varies	41	dBA	varies	29	dBA	varies	29	dBA
PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES																
Imp1_pc_wh	Pest Control - Whistle	1348	27	dBA	2242	22	dBA	401	41	dBA	1655	20	dBA	1640	20	dBA
Imp1_pc_pc1	Pest Control - Propane Cannon 1 (Common Location)	867	68	dBAI	1442	63	dBAI	1165	61	dBAI	1767	56	dBAI	1130	62	dBAI
Imp1_pc_pc2	Pest Control - Propane Cannon 2	1467	63	dBAI	2313	57	dBAI	433	71	dBAI	1545	58	dBAI	1617	57	dBAI
Imp1_pc_pc3	Pest Control - Propane Cannon 3	1381	63	dBAI	2194	58	dBAI	524	69	dBAI	1526	58	dBAI	1514	58	dBAI
Imp1_pc_pc4	Pest Control - Propane Cannon 4	1256	64	dBAI	2109	58	dBAI	527	69	dBAI	1629	57	dBAI	1525	58	dBAI
Imp1_pc_pc6	Pest Control - Propane Cannon 6	1342	64	dBAI	2250	58	dBAI	380	73	dBAI	1678	57	dBAI	1662	57	dBAI

**Table C3.8b: 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
<b>Point of Reception Description</b> Site Vicinity 2-storey Terrace Youth Residential Services	<b>Point of Reception Description</b> Site Vicinity 2-storey Sensitive Business Operation	<b>Point of Reception Description</b> Site Vicinity 2-storey David Manchester Road Central	<b>Point of Reception Description</b> Site Vicinity 2-storey at 607 William Mooney Road	<b>Point of Reception Description</b> Site Vicinity 2-storey Wilbert Cox Drive
<b>Point of Reception Co-ords (m)</b> X Y Z 18424510 5013860 134.2	<b>Point of Reception Co-ords (m)</b> X Y Z 18423804 5016030 117.7	<b>Point of Reception Co-ords (m)</b> X Y Z 18421792 5014164 138.0	<b>Point of Reception Co-ords (m)</b> X Y Z 18422720 5015088 126.9	<b>Point of Reception Co-ords (m)</b> X Y Z 18422487.31 5015391.74 126.27

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
EXISTING LANDFILL OPERATIONS																
BLOWER_BLDG	Blower Bldg concentric opening	1108	-5	dBA	1301	1	dBA	2879	-7	dBA	1839	-4	dBA	2112	-4	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	1121	14	dBA	1272	12	dBA	2853	-1	dBA	1808	1	dBA	2078	3	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	1128	21	dBA	1271	19	dBA	2862	4	dBA	1815	9	dBA	2084	8	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	1116	4	dBA	1291	2	dBA	2874	-8	dBA	1832	-4	dBA	2103	-4	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	1108	4	dBA	1292	2	dBA	2865	-8	dBA	1825	-4	dBA	2097	-5	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	869	-11	dBA	1652	-8	dBA	3025	-27	dBA	2088	-25	dBA	2389	-25	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	876	-11	dBA	1639	-9	dBA	3018	-27	dBA	2078	-25	dBA	2377	-25	dBA
GEN_OH1	Energy Building overhead door 1	866	6	dBA	1657	13	dBA	3027	-13	dBA	2092	-9	dBA	2393	-11	dBA
GEN_OH2	Energy Building overhead door 2	873	5	dBA	1645	11	dBA	3021	-14	dBA	2083	-11	dBA	2382	-12	dBA
GEN_OH3	Energy Building overhead door 3	879	4	dBA	1633	10	dBA	3015	-17	dBA	2073	-13	dBA	2372	-14	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	859	33	dBA	1639	18	dBA	2998	12	dBA	2063	16	dBA	2364	14	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	856	33	dBA	1645	18	dBA	3001	12	dBA	2068	16	dBA	2369	14	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	853	33	dBA	1651	18	dBA	3004	12	dBA	2072	16	dBA	2374	14	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	849	31	dBA	1658	19	dBA	3008	12	dBA	2078	16	dBA	2380	15	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	846	31	dBA	1663	19	dBA	3011	12	dBA	2082	16	dBA	2385	15	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	864	20	dBA	1639	13	dBA	3003	2	dBA	2067	6	dBA	2367	4	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	861	20	dBA	1645	13	dBA	3007	2	dBA	2072	6	dBA	2373	4	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	858	20	dBA	1650	13	dBA	3010	2	dBA	2076	6	dBA	2377	4	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	854	20	dBA	1657	13	dBA	3013	2	dBA	2082	6	dBA	2383	4	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	851	20	dBA	1663	13	dBA	3016	2	dBA	2086	6	dBA	2388	4	dBA
GEN_WALL1	Energy Bldg wall 1	870	5	dBA	1650	11	dBA	3023	-13	dBA	2086	-10	dBA	2386	-11	dBA
GEN_WALL2	Energy Bldg wall 2	877	5	dBA	1637	10	dBA	3017	-14	dBA	2076	-11	dBA	2375	-12	dBA
GEN_WALL3	Energy Bldg wall 3	865	3	dBA	1659	8	dBA	3028	-15	dBA	2094	-12	dBA	2395	-13	dBA

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
MRF/OPF/CDF																
WTPF_COMP	WTPF Waste compactor	792	15	dBA	1963	-9	dBA	1956	14	dBA	1446	18	dBA	1826	14	dBA
WTPF_DROP_ICI	WTPF Drop-off truck unloading at IC&I pad	767	44	dBA	1931	28	dBA	1990	28	dBA	1450	32	dBA	1829	29	dBA
WTPF_LOADER_ICI	WTPF Loader IC&I	767	46	dBA	1934	31	dBA	1989	30	dBA	1451	39	dBA	1830	36	dBA
WTPF_DROP_CD	WTPF Drop-off truck unloading at C&D pad	745	44	dBA	1937	28	dBA	2012	28	dBA	1470	31	dBA	1848	28	dBA
WTPF_LOADER_CD	WTPF Loader C&D	746	46	dBA	1944	30	dBA	2008	30	dBA	1472	39	dBA	1851	31	dBA
WTPF_CRUSHER	WTPF Portable Concrete Crusher	749	43	dBA	1954	27	dBA	2003	27	dBA	1474	35	dBA	1853	33	dBA
WTPF_HR1_inICI	WTPF Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	varies	33	dBA	varies	36	dBA	varies	31	dBA	varies	38	dBA	varies	35	dBA
WTPF_HR2_inCD	WTPF Inbound C&D Material Trucks #trips/hr; Entry and Exit	varies	35	dBA	varies	37	dBA	varies	33	dBA	varies	39	dBA	varies	36	dBA
WTPF_HR3_outTT	WTPF Outbound Transfer Trailers #trips/hr; Entry and Exit	varies	30	dBA	varies	31	dBA	varies	26	dBA	varies	33	dBA	varies	30	dBA
WTPF_HR4_outICI	WTPF Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	varies	26	dBA	varies	29	dBA	varies	24	dBA	varies	31	dBA	varies	28	dBA
WTPF_HR5_outCD	WTPF Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	varies	31	dBA	varies	33	dBA	varies	28	dBA	varies	35	dBA	varies	32	dBA
SBR/EVAPORATOR																
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	897	21	dBA	1390	11	dBA	2580	10	dBA	1626	12	dBA	1936	11	dBA
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	900	21	dBA	1388	11	dBA	2585	10	dBA	1630	12	dBA	1938	11	dBA
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	891	21	dBA	1398	11	dBA	2592	10	dBA	1640	12	dBA	1949	11	dBA
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	873	21	dBA	1416	12	dBA	2592	10	dBA	1647	12	dBA	1958	12	dBA
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	875	21	dBA	1414	12	dBA	2597	10	dBA	1651	13	dBA	1961	12	dBA
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	863	21	dBA	1427	12	dBA	2602	10	dBA	1661	13	dBA	1972	12	dBA
SS_EVAP_STK1	Evaporator Discharge Stack 1	814	24	dBA	1477	13	dBA	2414	8	dBA	1527	13	dBA	1857	11	dBA
SS_EVAP_STK2	Evaporator Discharge Stack 2	809	24	dBA	1482	13	dBA	2417	8	dBA	1532	13	dBA	1862	11	dBA
SS_EVAP_CASE	Evaporator Casing Radiated	810	35	dBA	1480	17	dBA	2414	15	dBA	1528	18	dBA	1859	18	dBA
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	818	26	dBA	1475	9	dBA	2401	10	dBA	1515	9	dBA	1846	9	dBA
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	818	15	dBA	1475	1	dBA	2401	1	dBA	1515	1	dBA	1846	1	dBA
PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES																
SS_TRK_IDLE	Idling Truck on Weigh Scale	1415	13	dBA	868	23	dBA	2456	13	dBA	1307	23	dBA	1549	20	dBA
SS1_cs_ldr	Cover Soil - CAT Loader	1311	35	dBA	1577	33	dBA	1619	37	dBA	870	44	dBA	1247	40	dBA
SS1_lwf_cmpt1	Landfill Working Face - CAT 826G Compactor	1656	25	dBA	690	40	dBA	2301	25	dBA	1078	35	dBA	1282	33	dBA
SS1_lwf_cmpt2	Landfill Working Face - CAT 826G Compactor	1658	25	dBA	680	40	dBA	2316	25	dBA	1093	35	dBA	1294	33	dBA
SS1_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	1646	33	dBA	703	47	dBA	2290	34	dBA	1070	43	dBA	1278	41	dBA
SS1_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	1672	32	dBA	681	47	dBA	2291	33	dBA	1064	42	dBA	1265	40	dBA
SS1_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	1678	32	dBA	664	47	dBA	2314	33	dBA	1085	42	dBA	1282	40	dBA
SS1_ob_stu	Overburden - CAT Soil Truck Unloading	1416	35	dBA	1547	34	dBA	1549	39	dBA	765	47	dBA	1144	42	dBA
SS1_lwf_grdr	Construction Working Face - Grader	1614	30	dBA	830	43	dBA	2123	31	dBA	923	42	dBA	1161	39	dBA
SS1_cwf_exc1	Construction Working Face - CAT 330B Excavator	1652	22	dBA	823	34	dBA	2096	23	dBA	885	33	dBA	1117	31	dBA
SS1_cwf_exc2	Construction Working Face - CAT 330B Excavator	1654	22	dBA	809	34	dBA	2112	23	dBA	899	33	dBA	1128	31	dBA
SS1_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	1612	33	dBA	851	44	dBA	2096	34	dBA	900	44	dBA	1143	41	dBA
SS1_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	1644	32	dBA	813	45	dBA	2116	34	dBA	907	44	dBA	1138	41	dBA
SS1_cwf_scrpr1	Construction Working Face - CAT Scraper 1	1628	33	dBA	845	46	dBA	2088	35	dBA	887	45	dBA	1126	43	dBA
SS1_cwf_scrpr2	Construction Working Face - CAT Scraper 2	1630	33	dBA	830	46	dBA	2106	35	dBA	902	45	dBA	1138	42	dBA
SS1_cwf_scrpr3	Construction Working Face - CAT Scraper 3	1632	33	dBA	816	46	dBA	2124	35	dBA	918	45	dBA	1151	42	dBA
SS1_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	varies	34	dBA	varies	47	dBA	varies	34	dBA	varies	43	dBA	varies	41	dBA
SS1_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	varies	23	dBA	varies	32	dBA	varies	26	dBA	varies	34	dBA	varies	31	dBA
SS1_HR3_1st	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	varies	22	dBA	varies	32	dBA	varies	27	dBA	varies	35	dBA	varies	32	dBA
SS1_HR3_cst	Construction Overburden Haul Truck Route #trips/hr; To and From Stockpile	varies	17	dBA	varies	23	dBA	varies	22	dBA	varies	29	dBA	varies	26	dBA
SS1_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	varies	28	dBA	varies	38	dBA	varies	29	dBA	varies	38	dBA	varies	35	dBA
PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES																
Imp1_pc_wh	Pest Control - Whistle	1644	20	dBA	722	34	dBA	2259	22	dBA	1041	30	dBA	1253	28	dBA
Imp1_pc_pc1	Pest Control - Propane Cannon 1 (Common Location)	1385	57	dBAI	1493	59	dBAI	1616	62	dBAI	787	69	dBAI	1161	65	dBAI
Imp1_pc_pc2	Pest Control - Propane Cannon 2	1580	58	dBAI	728	70	dBAI	2370	57	dBAI	1169	65	dBAI	1384	63	dBAI
Imp1_pc_pc3	Pest Control - Propane Cannon 3	1505	58	dBAI	834	65	dBAI	2272	57	dBAI	1100	66	dBAI	1342	64	dBAI
Imp1_pc_pc4	Pest Control - Propane Cannon 4	1559	58	dBAI	853	65	dBAI	2153	58	dBAI	971	67	dBAI	1217	65	dBAI
Imp1_pc_pc6	Pest Control - Propane Cannon 6	1668	57	dBAI	703	70	dBAI	2257	58	dBAI	1032	67	dBAI	1237	65	dBAI

**Table C3.9a: Point of Reception Noise Impact - Scenario 2 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
<b>Point of Reception Description</b> Site Vicinity 2-storey home on Richardson Side Road NNW	<b>Point of Reception Description</b> Site Vicinity 2-storey home David Manchester Road	<b>Point of Reception Description</b> Site Vicinity 1-storey home at 2485 Carp Road North	<b>Point of Reception Description</b> Site Vicinity 2-storey home at 2166 Carp Road East	<b>Point of Reception Description</b> Site Vicinity 2-storey home at 292 Moonstone Road South
<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> X Y Z	<b>Point of Reception Co-ords (m)</b> 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 <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
<b>EXISTING LANDFILL OPERATIONS</b>																
BLOWER_BLDG	Blower Bldg concentric opening	2068	-4	dBA	2570	-6	dBA	1117	2	dBA	808	1	dBA	1386	-11	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	2038	3	dBA	2552	1	dBA	1085	13	dBA	839	17	dBA	1386	11	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	2046	8	dBA	2563	6	dBA	1086	20	dBA	839	24	dBA	1396	19	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	2061	-4	dBA	2568	-6	dBA	1107	3	dBA	819	5	dBA	1390	1	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	2053	-4	dBA	2558	-6	dBA	1106	3	dBA	819	7	dBA	1381	1	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	2277	-25	dBA	2604	-20	dBA	1464	-15	dBA	459	2	dBA	1254	-14	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	2267	-25	dBA	2601	-20	dBA	1451	-9	dBA	472	2	dBA	1256	-15	dBA
GEN_OH1	Energy Building overhead door 1	2280	-10	dBA	2604	-5	dBA	1469	-7	dBA	454	15	dBA	1252	2	dBA
GEN_OH2	Energy Building overhead door 2	2271	-12	dBA	2601	-7	dBA	1457	-8	dBA	466	18	dBA	1254	1	dBA
GEN_OH3	Energy Building overhead door 3	2263	-14	dBA	2599	-9	dBA	1445	-9	dBA	478	19	dBA	1257	-1	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	2250	15	dBA	2579	19	dBA	1447	18	dBA	476	31	dBA	1235	27	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	2254	15	dBA	2580	19	dBA	1453	18	dBA	470	31	dBA	1234	27	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	2258	15	dBA	2581	19	dBA	1459	18	dBA	465	31	dBA	1233	27	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	2263	15	dBA	2583	19	dBA	1466	18	dBA	458	31	dBA	1231	27	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	2267	15	dBA	2584	19	dBA	1471	18	dBA	452	31	dBA	1230	27	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	2254	5	dBA	2585	8	dBA	1448	9	dBA	475	25	dBA	1241	17	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	2259	5	dBA	2586	8	dBA	1454	9	dBA	469	26	dBA	1240	17	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	2263	5	dBA	2587	8	dBA	1459	9	dBA	464	26	dBA	1239	17	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	2267	5	dBA	2589	8	dBA	1466	9	dBA	457	26	dBA	1237	17	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	2272	5	dBA	2590	8	dBA	1472	9	dBA	451	26	dBA	1236	17	dBA
GEN_WALL1	Energy Bldg wall 1	2274	-11	dBA	2602	-6	dBA	1461	-7	dBA	462	17	dBA	1253	1	dBA
GEN_WALL2	Energy Bldg wall 2	2266	-12	dBA	2600	-7	dBA	1449	-8	dBA	474	19	dBA	1256	0	dBA
GEN_WALL3	Energy Bldg wall 3	2281	-13	dBA	2605	-8	dBA	1471	-9	dBA	452	10	dBA	1252	-1	dBA

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
<b>MRF/OPF/CDF</b>																
WTPF_COMP	WTPF Waste compactor	1441	18	dBA	1407	18	dBA	1644	-9	dBA	1383	5	dBA	457	31	dBA
WTPF_DROP_ICI	WTPF Drop-off truck unloading at IC&I pad	1457	32	dBA	1453	31	dBA	1614	28	dBA	1341	37	dBA	464	45	dBA
WTPF_LOADER_ICI	WTPF Loader IC&I	1457	38	dBA	1450	34	dBA	1617	31	dBA	1343	40	dBA	463	51	dBA
WTPF_DROP_CD	WTPF Drop-off truck unloading at C&D pad	1479	32	dBA	1469	32	dBA	1621	29	dBA	1321	38	dBA	449	50	dBA
WTPF_LOADER_CD	WTPF Loader C&D	1479	39	dBA	1463	34	dBA	1628	31	dBA	1327	40	dBA	444	51	dBA
WTPF_CRUSHER	WTPF Portable Concrete Crusher	1478	31	dBA	1453	35	dBA	1637	28	dBA	1335	36	dBA	439	48	dBA
WTPF_HR1_inICI	WTPF Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	varies	37	dBA	varies	33	dBA	varies	38	dBA	varies	29	dBA	varies	38	dBA
WTPF_HR2_inCD	WTPF Inbound C&D Material Trucks #trips/hr; Entry and Exit	varies	38	dBA	varies	35	dBA	varies	40	dBA	varies	31	dBA	varies	40	dBA
WTPF_HR3_outTT	WTPF Outbound Transfer Trailers #trips/hr; Entry and Exit	varies	32	dBA	varies	29	dBA	varies	33	dBA	varies	26	dBA	varies	36	dBA
WTPF_HR4_outICI	WTPF Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	varies	30	dBA	varies	26	dBA	varies	31	dBA	varies	22	dBA	varies	31	dBA
WTPF_HR5_outCD	WTPF Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	varies	34	dBA	varies	30	dBA	varies	35	dBA	varies	27	dBA	varies	36	dBA
<b>SBR/EVAPORATOR</b>																
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	1813	13	dBA	2232	12	dBA	1139	10	dBA	869	21	dBA	1083	19	dBA
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	1817	13	dBA	2238	12	dBA	1138	10	dBA	867	21	dBA	1087	19	dBA
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	1826	13	dBA	2241	11	dBA	1149	12	dBA	856	22	dBA	1083	19	dBA
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	1830	13	dBA	2234	12	dBA	1166	11	dBA	846	22	dBA	1067	19	dBA
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	1834	13	dBA	2239	12	dBA	1165	12	dBA	843	22	dBA	1071	19	dBA
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	1842	13	dBA	2240	12	dBA	1178	12	dBA	831	22	dBA	1064	19	dBA
SS_EVAP_STK1	Evaporator Discharge Stack 1	1681	12	dBA	2038	14	dBA	1199	13	dBA	958	22	dBA	918	22	dBA
SS_EVAP_STK2	Evaporator Discharge Stack 2	1685	12	dBA	2039	14	dBA	1204	13	dBA	953	22	dBA	914	22	dBA
SS_EVAP_CASE	Evaporator Casing Radiated	1682	18	dBA	2037	22	dBA	1202	15	dBA	956	33	dBA	914	34	dBA
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	1668	11	dBA	2026	12	dBA	1196	8	dBA	970	21	dBA	913	24	dBA
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	1668	2	dBA	2027	3	dBA	1196	0	dBA	970	10	dBA	914	13	dBA
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES</b>																
SS_TRK_IDLE	Idling Truck on Weigh Scale	1580	20	dBA	2322	14	dBA	603	27	dBA	1352	12	dBA	1496	15	dBA
SS2C_cs_ldr	Cover Soil - CAT Loader	918	43	dBA	1384	39	dBA	1248	35	dBA	1729	31	dBA	1037	42	dBA
SS2C_lwf_cmpt1	Landfill Working Face - CAT 826G Compactor	733	39	dBA	1612	30	dBA	964	35	dBA	1945	23	dBA	1429	27	dBA
SS2C_lwf_cmpt2	Landfill Working Face - CAT 826G Compactor	746	39	dBA	1626	30	dBA	950	35	dBA	1935	23	dBA	1430	27	dBA
SS2C_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	726	47	dBA	1598	38	dBA	978	38	dBA	1946	31	dBA	1421	35	dBA
SS2C_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	717	46	dBA	1613	37	dBA	965	41	dBA	1964	30	dBA	1447	34	dBA
SS2C_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	737	46	dBA	1635	37	dBA	942	41	dBA	1952	30	dBA	1450	34	dBA
SS2C_lwf_grdr	Construction Working Face - Grader	1106	40	dBA	1995	32	dBA	595	41	dBA	1737	29	dBA	1524	31	dBA
SS2C_cwf_exc1	Construction Working Face - CAT 330B Excavator	1067	31	dBA	1983	24	dBA	597	36	dBA	1785	21	dBA	1552	22	dBA
SS2C_cwf_exc2	Construction Working Face - CAT 330B Excavator	1084	31	dBA	2001	24	dBA	580	37	dBA	1778	21	dBA	1559	22	dBA
SS2C_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	1084	42	dBA	1973	35	dBA	615	43	dBA	1746	32	dBA	1514	33	dBA
SS2C_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	1092	42	dBA	2002	34	dBA	581	47	dBA	1767	32	dBA	1551	33	dBA
SS2C_cwf_scrpr1	Construction Working Face - CAT Scraper 1	1067	43	dBA	1967	36	dBA	616	43	dBA	1768	32	dBA	1527	34	dBA
SS2C_cwf_scrpr2	Construction Working Face - CAT Scraper 2	1084	43	dBA	1985	36	dBA	600	44	dBA	1760	33	dBA	1534	34	dBA
SS2C_cwf_scrpr3	Construction Working Face - CAT Scraper 3	1101	43	dBA	2002	35	dBA	585	44	dBA	1753	33	dBA	1540	34	dBA
SS2C_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	varies	46	dBA	varies	40	dBA	varies	48	dBA	varies	35	dBA	varies	37	dBA
SS2C_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	varies	32	dBA	varies	28	dBA	varies	35	dBA	varies	23	dBA	varies	26	dBA
SS2C_HR3_1st	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	varies	34	dBA	varies	28	dBA	varies	26	dBA	varies	20	dBA	varies	26	dBA
SS2C_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	varies	34	dBA	varies	28	dBA	varies	38	dBA	varies	26	dBA	varies	26	dBA
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES</b>																
Imp2C_pc_wh	Pest Control - Whistle	789	33	dBA	1659	25	dBA	916	31	dBA	1901	19	dBA	1422	22	dBA
Imp2C_pc_pc1	Pest Control - Propane Cannon 1	867	68	dBAI	1442	63	dBAI	1165	61	dBAI	1767	56	dBAI	1130	62	dBAI
Imp2C_pc_pc2	Pest Control - Propane Cannon 2	740	70	dBAI	1537	62	dBAI	1038	63	dBAI	1908	56	dBAI	1344	60	dBAI
Imp2C_pc_pc3	Pest Control - Propane Cannon 3	886	68	dBAI	1652	61	dBAI	936	64	dBAI	1779	56	dBAI	1307	60	dBAI
Imp2C_pc_pc4	Pest Control - Propane Cannon 4	910	68	dBAI	1770	61	dBAI	809	65	dBAI	1815	56	dBAI	1425	59	dBAI
Imp2C_pc_pc6	Pest Control - Propane Cannon 6	778	69	dBAI	1668	61	dBAI	907	64	dBAI	1919	56	dBAI	1444	59	dBAI



**Table C3.9b: Point of Reception Noise Impact - Scenario 2 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 18424510 5013860 134.2	Point of Reception Co-ords (m) X Y Z 18423804 5016030 117.7	Point of Reception Co-ords (m) X Y Z 18421792 5014164 138.0	Point of Reception Co-ords (m) X Y Z 18422720 5015088 126.9	Point of Reception Co-ords (m) X Y Z 18422487.31 5015391.74 126.27

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
EXISTING LANDFILL OPERATIONS																
BLOWER_BLDG	Blower Bldg concentric opening	1108	-5	dBA	1301	1	dBA	2879	-7	dBA	1839	-4	dBA	2112	-4	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	1121	14	dBA	1272	12	dBA	2853	-1	dBA	1808	1	dBA	2078	3	dBA
C_FLARE_stk	Candlestick flare exhaust 875 cfm	1128	21	dBA	1271	19	dBA	2862	4	dBA	1815	9	dBA	2084	8	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	1116	4	dBA	1291	2	dBA	2874	-8	dBA	1832	-4	dBA	2103	-4	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	1108	4	dBA	1292	2	dBA	2865	-8	dBA	1825	-4	dBA	2097	-5	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	869	-11	dBA	1652	-8	dBA	3025	-27	dBA	2088	-25	dBA	2389	-25	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	876	-11	dBA	1639	-9	dBA	3018	-27	dBA	2078	-25	dBA	2377	-25	dBA
GEN_OH1	Energy Building overhead door 1	866	6	dBA	1657	13	dBA	3027	-13	dBA	2092	-9	dBA	2393	-11	dBA
GEN_OH2	Energy Building overhead door 2	873	5	dBA	1645	11	dBA	3021	-14	dBA	2083	-11	dBA	2382	-12	dBA
GEN_OH3	Energy Building overhead door 3	879	4	dBA	1633	10	dBA	3015	-17	dBA	2073	-13	dBA	2372	-14	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	859	33	dBA	1639	18	dBA	2998	12	dBA	2063	16	dBA	2364	14	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	856	33	dBA	1645	18	dBA	3001	12	dBA	2068	16	dBA	2369	14	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	853	33	dBA	1651	18	dBA	3004	12	dBA	2072	16	dBA	2374	14	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	849	31	dBA	1658	19	dBA	3008	12	dBA	2078	16	dBA	2380	15	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	846	31	dBA	1663	19	dBA	3011	12	dBA	2082	16	dBA	2385	15	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	864	20	dBA	1639	13	dBA	3003	2	dBA	2067	6	dBA	2367	4	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	861	20	dBA	1645	13	dBA	3007	2	dBA	2072	6	dBA	2373	4	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	858	20	dBA	1650	13	dBA	3010	2	dBA	2076	6	dBA	2377	4	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	854	20	dBA	1657	13	dBA	3013	2	dBA	2082	6	dBA	2383	4	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	851	20	dBA	1663	13	dBA	3016	2	dBA	2086	6	dBA	2388	4	dBA
GEN_WALL1	Energy Bldg wall 1	870	5	dBA	1650	11	dBA	3023	-13	dBA	2086	-10	dBA	2386	-11	dBA
GEN_WALL2	Energy Bldg wall 2	877	5	dBA	1637	10	dBA	3017	-14	dBA	2076	-11	dBA	2375	-12	dBA
GEN_WALL3	Energy Bldg wall 3	865	3	dBA	1659	8	dBA	3028	-15	dBA	2094	-12	dBA	2395	-13	dBA

Source ID <sup>[1]</sup>	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 <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)	Distance (m)	Sound Level at PoR <sup>[2]</sup>	Units <sup>[3]</sup> (dBA, dBAI)
<b>MRF/OPF/CPF</b>																
WTPF_COMP	WTPF Waste compactor	792	15	dBA	1963	-9	dBA	1956	14	dBA	1446	18	dBA	1826	14	dBA
WTPF_DROP_ICI	WTPF Drop-off truck unloading at IC&I pad	767	44	dBA	1931	28	dBA	1990	28	dBA	1450	32	dBA	1829	29	dBA
WTPF_LOADER_ICI	WTPF Loader IC&I	767	46	dBA	1934	31	dBA	1989	30	dBA	1451	39	dBA	1830	36	dBA
WTPF_DROP_CD	WTPF Drop-off truck unloading at C&D pad	745	44	dBA	1937	28	dBA	2012	28	dBA	1470	31	dBA	1848	28	dBA
WTPF_LOADER_CD	WTPF Loader C&D	746	46	dBA	1944	30	dBA	2008	30	dBA	1472	39	dBA	1851	31	dBA
WTPF_CRUSHER	WTPF Portable Concrete Crusher	749	43	dBA	1954	27	dBA	2003	27	dBA	1474	35	dBA	1853	33	dBA
WTPF_HR1_inICI	WTPF Inbound IC&I Delivery Trucks #trips/hr; Entry and Exit	varies	33	dBA	varies	36	dBA	varies	31	dBA	varies	38	dBA	varies	35	dBA
WTPF_HR2_inCD	WTPF Inbound C&D Material Trucks #trips/hr; Entry and Exit	varies	35	dBA	varies	37	dBA	varies	33	dBA	varies	39	dBA	varies	36	dBA
WTPF_HR3_outTT	WTPF Outbound Transfer Trailers #trips/hr; Entry and Exit	varies	30	dBA	varies	31	dBA	varies	26	dBA	varies	33	dBA	varies	30	dBA
WTPF_HR4_outICI	WTPF Outbound IC&I Recyclable Trucks #trips/hr; Entry and Exit	varies	26	dBA	varies	29	dBA	varies	24	dBA	varies	31	dBA	varies	28	dBA
WTPF_HR5_outCD	WTPF Outbound C&D Recyclable Trucks #trips/hr; Entry and Exit	varies	31	dBA	varies	33	dBA	varies	28	dBA	varies	35	dBA	varies	32	dBA
<b>SBR/EVAPORATOR</b>																
SS1_SBR_BLR200	SBR Blower 200; 1295 cfm	897	21	dBA	1390	11	dBA	2580	10	dBA	1626	12	dBA	1936	11	dBA
SS1_SBR_BLR210	SBR Blower 210; 1295 cfm	900	21	dBA	1388	11	dBA	2585	10	dBA	1630	12	dBA	1938	11	dBA
SS1_SBR_SBLR300	Sludge Blower 300; 1295 cfm	891	21	dBA	1398	11	dBA	2592	10	dBA	1640	12	dBA	1949	11	dBA
SS2C_SBR_BLR500	SBR Blower 500; 1295 cfm future	873	21	dBA	1416	12	dBA	2592	10	dBA	1647	12	dBA	1958	12	dBA
SS2C_SBR_BLR510	SBR Blower 510; 1295 cfm future	875	21	dBA	1414	12	dBA	2597	10	dBA	1651	13	dBA	1961	12	dBA
SS2C_SBR_SBLR600	Sludge Blower 600; 1295 cfm	863	21	dBA	1427	12	dBA	2602	10	dBA	1661	13	dBA	1972	12	dBA
SS_EVAP_STK1	Evaporator Discharge Stack 1	814	24	dBA	1477	13	dBA	2414	8	dBA	1527	13	dBA	1857	11	dBA
SS_EVAP_STK2	Evaporator Discharge Stack 2	809	24	dBA	1482	13	dBA	2417	8	dBA	1532	13	dBA	1862	11	dBA
SS_EVAP_CASE	Evaporator Casing Radiated	810	35	dBA	1480	17	dBA	2414	15	dBA	1528	18	dBA	1859	18	dBA
SS_EVAP_BLRinlet	Evaporator Blower Inlet with Filter; 6000 cfm, 15 in w.g.	818	26	dBA	1475	9	dBA	2401	10	dBA	1515	9	dBA	1846	9	dBA
SS_EVAP_BLRcase	Evaporator Blower Casing; 6000 cfm, 15 in w.g.	818	15	dBA	1475	1	dBA	2401	1	dBA	1515	1	dBA	1846	1	dBA
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - STEADY-STATE SOURCES</b>																
SS_TRK_IDLE	Idling Truck on Weigh Scale	1415	13	dBA	868	23	dBA	2456	13	dBA	1307	23	dBA	1549	20	dBA
SS2C_cs_ldr	Cover Soil - CAT Loader	1311	35	dBA	1577	33	dBA	1619	37	dBA	870	44	dBA	1247	40	dBA
SS2C_lwf_cmpt1	Landfill Working Face - CAT 826G Compactor	1647	25	dBA	1282	33	dBA	1603	30	dBA	540	42	dBA	891	37	dBA
SS2C_lwf_cmpt2	Landfill Working Face - CAT 826G Compactor	1643	25	dBA	1269	33	dBA	1618	30	dBA	549	42	dBA	897	37	dBA
SS2C_lwf_dzr1	Landfill Working Face - CAT D6R Dozer	1643	33	dBA	1296	41	dBA	1592	38	dBA	540	50	dBA	894	45	dBA
SS2C_lwf_dzr2	Landfill Working Face - CAT D7 Dozer	1667	32	dBA	1282	40	dBA	1592	37	dBA	521	49	dBA	871	44	dBA
SS2C_lwf_dzr3	Landfill Working Face - CAT D7 Dozer	1663	32	dBA	1260	40	dBA	1614	37	dBA	531	49	dBA	877	44	dBA
SS2C_lwf_grdr	Construction Working Face - Grader	1608	30	dBA	923	37	dBA	2006	32	dBA	824	43	dBA	1083	40	dBA
SS2C_cwf_exc1	Construction Working Face - CAT 330B Excavator	1647	22	dBA	924	33	dBA	1973	24	dBA	779	35	dBA	1035	32	dBA
SS2C_cwf_exc2	Construction Working Face - CAT 330B Excavator	1648	22	dBA	908	33	dBA	1992	24	dBA	794	35	dBA	1046	32	dBA
SS2C_cwf_ldr1	Construction Working Face - CAT 972G Loader 1	1606	33	dBA	943	39	dBA	1984	35	dBA	805	45	dBA	1070	42	dBA
SS2C_cwf_ldr2	Construction Working Face - CAT 972G Loader 2	1639	32	dBA	909	44	dBA	1998	34	dBA	803	45	dBA	1057	42	dBA
SS2C_cwf_scrpr1	Construction Working Face - CAT Scraper 1	1624	33	dBA	943	40	dBA	1969	36	dBA	785	47	dBA	1048	43	dBA
SS2C_cwf_scrpr2	Construction Working Face - CAT Scraper 2	1624	33	dBA	928	45	dBA	1987	36	dBA	800	46	dBA	1059	43	dBA
SS2C_cwf_scrpr3	Construction Working Face - CAT Scraper 3	1625	33	dBA	913	45	dBA	2004	35	dBA	815	46	dBA	1070	43	dBA
SS2C_HR1_rfpv	Refuse Truck on Paved Route #trips/hr; Entry and Exit	varies	35	dBA	varies	45	dBA	varies	39	dBA	varies	48	dBA	varies	45	dBA
SS2C_HR2_cspv	Contaminated Soil Truck on Paved Route #trips/hr; Entry and Exit	varies	23	dBA	varies	32	dBA	varies	26	dBA	varies	34	dBA	varies	31	dBA
SS2C_HR3_1st	Landfill Daily Cover Soil Haul Truck Route #trips/hr; To and From Stockpile	varies	21	dBA	varies	25	dBA	varies	27	dBA	varies	35	dBA	varies	31	dBA
SS2C_HR4_cht	Construction Haul Truck #trips/hr; Entry and Exit	varies	26	dBA	varies	36	dBA	varies	27	dBA	varies	36	dBA	varies	33	dBA
<b>PREFERRED ALTERNATIVE LANDFILL FOOTPRINT OPERATIONS - IMPULSIVE SOURCES</b>																
Imp2C_pc_wh	Pest Control - Whistle	1622	20	dBA	1237	28	dBA	1661	25	dBA	582	37	dBA	922	31	dBA
Imp2C_pc_pc1	Pest Control - Propane Cannon 1	1385	57	dBAI	1493	59	dBAI	1616	62	dBAI	787	69	dBAI	1161	65	dBAI
Imp2C_pc_pc2	Pest Control - Propane Cannon 2	1579	57	dBAI	1360	60	dBAI	1576	62	dBAI	593	72	dBAI	958	67	dBAI
Imp2C_pc_pc3	Pest Control - Propane Cannon 3	1495	57	dBAI	1263	60	dBAI	1727	61	dBAI	705	70	dBAI	1050	66	dBAI
Imp2C_pc_pc4	Pest Control - Propane Cannon 4	1583	58	dBAI	1134	62	dBAI	1789	60	dBAI	675	71	dBAI	990	67	dBAI
Imp2C_pc_pc6	Pest Control - Propane Cannon 6	1644	57	dBAI	1227	61	dBAI	1657	61	dBAI	563	73	dBAI	901	68	dBAI

**Table C3.10a: Daytime Point of Reception Impact - Scenario 1 (Pest Control Devices)**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.
2. Pest control devices are only planned during daytime hours from 0700-1900h.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
Partial Level at the Point of Reception										
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	68	63	61	56	62	57	59	62	69	65
Propane Cannon 2 <sup>[2]</sup> (dBA)	63	57	71	58	57	58	70	57	65	63
Propane Cannon 3 <sup>[2]</sup> (dBA)	63	58	69	58	58	58	65	57	66	64
Propane Cannon 4 <sup>[2]</sup> (dBA)	64	58	69	57	58	58	65	58	67	65
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>									
Propane Cannon 6 <sup>[2]</sup> (dBA)	64	58	73	57	57	57	70	58	67	65

\* Highlighted cells are above the Background Noise Condition.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
Partial Level at the Point of Reception										
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	64	63	61	60
Whistle <sup>[2]</sup> (dBA)	27	22	41	20	20	20	34	22	30	28

\* Highlighted cells are above the Background Noise Condition.

**Table C3.10b: Daytime Point of Reception Impact - Scenario 1 (Pest Control Devices)**  
 WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.
2. Pest control devices are only planned during daytime hours from 0700-1900h.

<b>REGIONAL RECEPTORS</b>																
	<b>PR7</b>	<b>NR5</b>	<b>NR6</b>	<b>NR7</b>	<b>RR10</b>	<b>RR11</b>	<b>RR13</b>	<b>RR16</b>	<b>RR17</b>	<b>RR18</b>	<b>RR19</b>	<b>RR20</b>	<b>RR21</b>	<b>RR22</b>	<b>RR23</b>	<b>RR24</b>
	Partial Level at the Point of Reception															
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	54	46	56	50	50	57	59	56	51	56	53	48	50	46	45	42
Propane Cannon 2 <sup>[2]</sup> (dBA)	56	48	61	50	46	54	50	59	60	56	52	48	51	48	49	49
Propane Cannon 3 <sup>[2]</sup> (dBA)	56	48	60	51	47	54	51	59	59	57	52	48	51	48	48	44
Propane Cannon 4 <sup>[2]</sup> (dBA)	55	47	60	50	47	55	51	59	54	56	52	48	50	47	48	44
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>															
Propane Cannon 6 <sup>[2]</sup> (dBA)	55	47	62	50	47	55	50	60	60	56	51	48	50	47	53	49

\* Highlighted cells are above the Background Noise Condition.

<b>REGIONAL RECEPTORS</b>																
	<b>PR7</b>	<b>NR5</b>	<b>NR6</b>	<b>NR7</b>	<b>RR10</b>	<b>RR11</b>	<b>RR13</b>	<b>RR16</b>	<b>RR17</b>	<b>RR18</b>	<b>RR19</b>	<b>RR20</b>	<b>RR21</b>	<b>RR22</b>	<b>RR23</b>	<b>RR24</b>
	Partial Level at the Point of Reception															
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	60	60	61	60	60	60	60	60	60	60
Whistle <sup>[2]</sup> (dBA)	18	13	28	14	17	20	19	23	23	19	15	13	15	18	18	16

\* Highlighted cells are above the Background Noise Condition.

**Table C3.11a: Daytime Point of Reception Impact - Scenario 2 (Pest Control Devices)**

WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.
2. Pest control devices are only planned during daytime hours from 0700-1900h.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
Partial Level at the Point of Reception										
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	68	63	61	56	62	57	59	62	69	65
Propane Cannon 2 <sup>[2]</sup> (dBA)	70	62	63	56	60	57	60	62	72	67
Propane Cannon 3 <sup>[2]</sup> (dBA)	68	61	64	56	60	57	60	61	70	66
Propane Cannon 4 <sup>[2]</sup> (dBA)	68	61	65	56	59	58	62	60	71	67
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>									
Propane Cannon 6 <sup>[2]</sup> (dBA)	69	61	64	56	59	57	61	61	73	68

\* Highlighted cells are above the Background Noise Condition.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
Partial Level at the Point of Reception										
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	64	63	61	60
Whistle <sup>[2]</sup> (dBA)	33	25	31	19	22	20	28	25	37	31

\* Highlighted cells are above the Background Noise Condition.

**Table C3.11b: Daytime Point of Reception Impact - Scenario 2 (Pest Control Devices)**  
 WCEC Landfill - Ottawa, Ontario

**Notes to Table:**

1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.
2. Pest control devices are only planned during daytime hours from 0700-1900h.

<b>REGIONAL RECEPTORS</b>																
	<b>PR7</b>	<b>NR5</b>	<b>NR6</b>	<b>NR7</b>	<b>RR10</b>	<b>RR11</b>	<b>RR13</b>	<b>RR16</b>	<b>RR17</b>	<b>RR18</b>	<b>RR19</b>	<b>RR20</b>	<b>RR21</b>	<b>RR22</b>	<b>RR23</b>	<b>RR24</b>
	Partial Level at the Point of Reception															
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	54	46	56	50	50	57	59	56	51	56	53	48	50	46	45	42
Propane Cannon 2 <sup>[2]</sup> (dBA)	54	46	57	49	50	57	58	57	51	56	52	47	49	45	45	42
Propane Cannon 3 <sup>[2]</sup> (dBA)	54	46	57	50	49	57	57	57	52	56	52	48	50	46	46	42
Propane Cannon 4 <sup>[2]</sup> (dBA)	54	46	58	49	49	57	57	58	52	56	52	47	49	46	46	43
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>															
Propane Cannon 6 <sup>[2]</sup> (dBA)	54	46	58	49	49	57	57	58	52	55	51	47	49	45	46	42

\* Highlighted cells are above the Background Noise Condition.

<b>REGIONAL RECEPTORS</b>																
	<b>PR7</b>	<b>NR5</b>	<b>NR6</b>	<b>NR7</b>	<b>RR10</b>	<b>RR11</b>	<b>RR13</b>	<b>RR16</b>	<b>RR17</b>	<b>RR18</b>	<b>RR19</b>	<b>RR20</b>	<b>RR21</b>	<b>RR22</b>	<b>RR23</b>	<b>RR24</b>
	Partial Level at the Point of Reception															
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	60	60	61	60	60	60	60	60	60	60
Whistle <sup>[2]</sup> (dBA)	17	12	25	14	19	21	21	22	20	18	15	13	14	12	17	15

\* Highlighted cells are above the Background Noise Condition.

# Appendix D1

## Background Sound Levels near NR4





# Memorandum

Tel: 519.823.1311  
Fax: 519.823.1316  
RWDI AIR Inc.  
650 Woodlawn Road West  
Guelph, Ontario, Canada N1K 1B8  
Email: solutions@rwdi.com

**Date:** June 1, 2012

**RWDI Reference #:** 1100798

**To:** Mr. Tim Murphy

**E-Mail:** Tmurphy3@wm.com

**From:** Brad Bergeron

**E-Mail:** Brad.Bergeron@rwdi.com

**Re: Assessment of Background Sound Levels near Receptor NR4  
Waste Management of Canada Corporation  
Ottawa Landfill Site  
Ottawa, Ontario**

Dear Mr. Murphy,

Waste Management of Canada Corporation (WM) retained RWDI AIR Inc. (RWDI) to evaluate background sound levels near a two-storey home located at 292 Moonstone Road South which is situated southwest of the West Carleton Environmental Centre (WCEC) in Ottawa, Ontario. This home has been identified as receptor NR4 and is one of the receptors to be assessed for noise as part of the WCEC Expansion Project. Background sound levels were examined for this receptor in order to assess the predictable worst-case noise impacts from the landfill expansion.

The objective of this work is to evaluate the background sound levels near NR4 to determine if guideline limits above the Ontario Ministry of the Environment (MOE) default guideline limits could be established. This memorandum summarizes our findings from the background measurement programme.

## MOE NOISE GUIDELINE LIMITS

The relevant criteria for the WCEC expansion is the MOE "Stationary Source" guidelines for Class 2 (suburban) areas as set out in MOE Publication NPC-205, and the MOE Landfill guideline for landfilling activities.

### ***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).

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### ***Landfill Operations***

The Landfill guideline sets the One Hour Energy Equivalent Sound Level (Leq(1-hr)) limit for noise from a landfill site are outlined as follows:

- 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).

The MOE Publication NPC-205 or Landfill guideline uses the background sound level as the applicable sound level limit, where the background sound level is above the default values. If the actual background sound level is below the default limit, then the default limit can be used.

## **RESULTS**

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Background sound levels in the area are influenced mainly by the noise of road traffic along Highway 417. The landfill's waste transfer and processing facility (WTPF) was not audible at NR4 during operating hours. The pit (Clark Quarry) located to the west of the receptor was not operating during the measurement period.

Long-term measurements of background sound levels were conducted from April 26 to 30, 2012. Measurements were conducted in accordance with the applicable requirements of MOE Publication NPC-103. Only data gathered during meteorological conditions complying with MOE NPC-103 criteria have been used in the analysis of background sound levels. Equipment and weather data are provided in **Attachments 1 and 2**.

The measurement location was selected as representative of background sound levels for receptor NR4. Measurement location is shown as ML1 in **Figure A**. Long-term measurement results are shown in **Figure B**. Minimum ambient sound levels during the measurement period demonstrate that background sound levels are higher than the NPC-205 and the Landfill guideline minima. The minimum hourly measured sound levels, and resulting guideline limits to be used in the Environmental Assessment for receptor NR4 are 60 dBA, 59 dBA and 51 dBA for the daytime, evening and night-time hours, respectively.



CONSULTING ENGINEERS  
& SCIENTISTS

Assessment of Background Sound Levels near Receptor NR4  
Waste Management of Canada Corporation  
Ottawa Landfill Site  
RWDI# 1100798  
June 1, 2012

Page 3

## CLOSING

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This memorandum provides the guideline limits that are applicable based on measured sound levels at receptor NR4. The measurements showed the minimum sound levels due to road traffic along Highway 417 west of Carp Road are higher than the applicable default guideline limits.

We would be pleased to respond should you have any questions.

Kind regards,

A handwritten signature in black ink that reads "Brad Bergeron". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

Brad Bergeron, A.Sc.T., d.E.T.  
Senior Project Manager/Principal

# ATTACHMENTS



**Sound Level Meter 820 Kit 3**

<b>Sound Level Meter</b>	
Make and Model	Larson-Davis Model 820 SLM
Serial No.	1408
<b>Pre-amplifier</b>	
Make and Model	Larson-Davis Model PRM828
Serial No.	2093
<b>Microphone</b>	
Make and Model	Larson-Davis Model 2559 precision air-condenser microphone
Serial No.	3031
<b>Calibrator</b>	
Make and Model	Larson-Davis CAL200 precision acoustic calibrator (1000 Hz)
Serial No.	3628

Last modified: January 7, 2008

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## Hourly Data Report for April 26, 2012

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 INT'L  
ONTARIO

**Latitude:** 45°19'00.000" N **Longitude:** 75°40'00.000" W **Elevation:** 114.00 m

**Climate ID:** 6106001

**WMO ID:** 71628

**TC ID:** YOW

### Hourly Data Report for April 26, 2012

<b>T i m e</b>	<b>Temp</b> °C	<b>Dew Point</b> Temp °C	<b>Rel</b> <b>Hum</b> %	<b>Wind</b> <b>Dir</b> 10's deg	<b>Wind</b> <b>Spd</b> km/h	<b>Visibility</b> km	<b>Stn</b> <b>Press</b> kPa	<b>Hmdx</b>	<b>Wind</b> <b>Chill</b>	<b>Weather</b>
00:00‡	0.2	-2.0	85	17	4	10.0	99.76			NA
01:00‡	-2.0	-3.6	89	17	7	10.0	99.76			-5 Clear
02:00‡	-2.8	-4.2	90	14	6	10.0	99.66			-5 NA
03:00‡	-0.1	-2.6	83	19	9	10.0	99.67			-3 NA
04:00‡	-0.9	-2.5	89	17	7	10.0	99.67			-3 Mainly Clear
05:00‡	-1.7	-2.7	93	19	4	10.0	99.68			-3 NA
06:00‡	0.2	-1.0	92	10	7	10.0	99.67			NA
07:00‡	3.0	0.7	85	13	9	10.0	99.65			Mostly Cloudy
08:00‡	3.7	0.9	82	15	9	10.0	99.61			NA
09:00‡	6.6	0.5	65	18	13	10.0	99.56			NA
10:00‡	8.8	0.8	57	14	12	10.0	99.47			Cloudy
11:00‡	8.6	1.1	59	10	15	10.0	99.37			NA
12:00‡	9.9	0.0	50	11	19	10.0	99.21			NA
13:00‡	9.1	-1.0	49	9	25	10.0	99.03			Cloudy
14:00‡	9.2	-0.1	52	10	18	10.0	98.98			NA
15:00‡	9.2	0.7	55	6	12	10.0	98.84			NA
16:00‡	8.2	1.4	62	5	8	10.0	98.89			Rain
17:00‡	6.9	3.2	77	3	11	10.0	98.88			Rain
18:00‡	6.0	4.2	88	2	15	10.0	98.83			Rain
19:00‡	5.6	4.3	91	34	21	10.0	98.83			Rain
20:00‡	4.7	3.4	91	34	22	10.0	98.88			Rain
21:00‡	4.3	3.3	93	32	19	10.0	98.97			NA
22:00‡	4.1	3.4	95	32	17	10.0	99.00			Rain
23:00‡	4.1	3.1	93	31	18	10.0	99.06			Rain

### Legend

M = Missing

E = Estimated

NA = Not Available

‡ = Partner data that is not subject to review by the  
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## Hourly Data Report for April 27, 2012

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 INT'L  
ONTARIO

**Latitude:** 45°19'00.000" N **Longitude:** 75°40'00.000" W **Elevation:** 114.00 m

**Climate ID:** 6106001

**WMO ID:** 71628

**TC ID:** YOW

### Hourly Data Report for April 27, 2012

<b>T i m e</b>	<b>Temp</b> °C	<b>Dew Point</b> Temp °C	<b>Rel</b> <b>Hum</b> %	<b>Wind</b> <b>Dir</b> 10's deg	<b>Wind</b> <b>Spd</b> km/h	<b>Visibility</b> km	<b>Stn</b> <b>Press</b> kPa	<b>Hmdx</b>	<b>Wind</b> <b>Chill</b>	<b>Weather</b>
00:00‡	3.2	1.3	87	32	30	10.0	99.17			Rain
01:00‡	1.7	-0.6	85	32	31	10.0	99.27			Rain
02:00‡	0.8	-1.8	83	32	42	10.0	99.33			Snow
03:00‡	0.5	-2.4	81	31	35	10.0	99.43			Snow
04:00‡	0.0	-2.9	81	31	31	10.0	99.51		-7	Snow
05:00‡	-0.5	-4.0	77	32	33	10.0	99.61		-7	NA
06:00‡	-0.6	-4.3	76	31	28	10.0	99.71		-7	NA
07:00‡	-0.5	-4.4	75	30	31	10.0	99.76		-7	Cloudy
08:00‡	-0.4	-4.7	73	30	31	10.0	99.85		-7	NA
09:00‡	-0.5	-5.3	70	30	37	10.0	99.92		-8	NA
10:00‡	0.1	-5.7	65	30	37	10.0	100.00			Cloudy
11:00‡	0.9	-5.8	61	32	38	10.0	100.07			NA
12:00‡	1.5	-5.7	59	29	30	10.0	100.13			NA
13:00‡	1.5	-6.4	56	31	31	10.0	100.21			Cloudy
14:00‡	1.1	-6.3	58	30	34	10.0	100.26			NA
15:00‡	2.2	-6.2	54	31	29	10.0	100.29			NA
16:00‡	2.5	-6.6	51	30	36	10.0	100.35			Mostly Cloudy
17:00‡	2.2	-6.4	53	31	34	10.0	100.43			NA
18:00‡	1.2	-7.1	54	32	37	10.0	100.48			NA
19:00‡	0.5	-7.5	55	33	27	10.0	100.55			Cloudy
20:00‡	0.2	-8.3	53	31	30	10.0	100.63			NA
21:00‡	0.3	-8.5	52	31	22	10.0	100.68			NA
22:00‡	0.3	-8.2	53	33	24	10.0	100.72			Cloudy
23:00‡	0.1	-8.6	52	33	30	10.0	100.77			NA

#### Legend

M = Missing

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# Hourly Data Report for April 28, 2012

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 INT'L  
ONTARIO

**Latitude:** 45°19'00.000" N **Longitude:** 75°40'00.000" W **Elevation:** 114.00 m

**Climate ID:** 6106001

**WMO ID:** 71628

**TC ID:** YOW

## Hourly Data Report for April 28, 2012

<b>T i m e</b>	<b>Temp</b> °C	<b>Dew Point</b> Temp °C	<b>Rel</b> <b>Hum</b> %	<b>Wind</b> <b>Dir</b> 10's deg	<b>Wind</b> <b>Spd</b> km/h	<b>Visibility</b> km	<b>Stn</b> <b>Press</b> kPa	<b>Hmdx</b>	<b>Wind</b> <b>Chill</b>	<b>Weather</b>
00:00‡	-0.2	-9.2	51	31	29	10.0	100.77		-7	NA
01:00‡	-0.5	-8.7	54	32	18	10.0	100.73		-6	Cloudy
02:00‡	-0.9	-8.9	55	34	21	10.0	100.74		-7	NA
03:00‡	-2.0	-9.7	56	32	23	10.0	100.81		-8	NA
04:00‡	-3.2	-10.1	59	30	21	10.0	100.88		-9	Mainly Clear
05:00‡	-3.4	-10.3	59	32	24	10.0	100.93		-10	NA
06:00‡	-2.8	-10.2	57	32	24	10.0	100.99		-9	NA
07:00‡	-2.1	-10.5	53	29	23	10.0	101.03		-8	Mainly Clear
08:00‡	-1.1	-11.3	46	31	21	10.0	101.07		-7	NA
09:00‡	0.4	-11.7	40	32	17	10.0	101.05			NA
10:00‡	1.5	-12.0	36	30	23	10.0	101.02			Clear
11:00‡	3.2	-11.6	33	28	17	10.0	101.01			NA
12:00‡	4.7	-10.7	32	31	18	10.0	100.92			NA
13:00‡	5.8	-10.5	30	31	20	10.0	100.87			Clear
14:00‡	6.5	-10.8	28	26	24	10.0	100.79			NA
15:00‡	7.6	-9.3	29	27	21	10.0	100.73			NA
16:00‡	7.5	-9.9	28	29	18	10.0	100.70			Mainly Clear
17:00‡	7.4	-10.9	26	29	25	10.0	100.65			NA
18:00‡	7.0	-10.8	27	27	21	10.0	100.66			NA
19:00‡	5.3	-11.4	29	28	14	10.0	100.62			Mainly Clear
20:00‡	3.1	-11.3	34	27	13	10.0	100.66			NA
21:00‡	3.3	-10.8	35	26	7	10.0	100.70			NA
22:00‡	1.5	-9.8	43	26	9	10.0	100.70			Mostly Cloudy
23:00‡	1.6	-9.7	43	27	9	10.0	100.68			NA

### Legend

M = Missing

E = Estimated

NA = Not Available

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## Hourly Data Report for April 29, 2012

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 INT'L  
ONTARIO

Latitude: 45°19'00.000" N Longitude: 75°40'00.000" W Elevation: 114.00 m

Climate ID: 6106001

WMO ID: 71628

TC ID: YOW

### Hourly Data Report for April 29, 2012

<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‡	1.1	-9.3	46	25	10	10.0	100.68			NA
01:00‡	-1.3	-8.3	59	25	13	10.0	100.68	-6		Mostly Cloudy
02:00‡	-2.0	-8.3	62	25	10	10.0	100.68	-6		NA
03:00‡	-2.0	-9.0	59	27	10	10.0	100.67	-6		NA
04:00‡	-3.2	-9.3	63	26	9	10.0	100.71	-7		Mainly Clear
05:00‡	-2.9	-9.2	62	28	10	10.0	100.76	-7		NA
06:00‡	0.1	-7.2	58	30	11	10.0	100.81			NA
07:00‡	2.6	-11.1	36	32	26	10.0	100.85			Mainly Clear
08:00‡	3.4	-13.1	29	33	30	10.0	100.90			NA
09:00‡	4.6	-12.9	27	31	30	10.0	100.89			NA
10:00‡	5.7	-11.9	27	30	20	10.0	100.93			Clear
11:00‡	7.1	-13.3	22	33	38	10.0	100.91			NA
12:00‡	7.4	-11.9	24	30	22	10.0	100.92			NA
13:00‡	9.1	-11.6	22	28	23	10.0	100.91			Clear
14:00‡	9.8	-11.6	21	28	28	10.0	100.90			NA
15:00‡	9.8	-12.8	19	33	17	10.0	100.90			NA
16:00‡	10.1	-11.9	20	29	29	10.0	100.92			Clear
17:00‡	9.7	-12.3	20	29	22	10.0	100.92			NA
18:00‡	9.1	-12.2	21	31	24	10.0	100.95			NA
19:00‡	7.5	-11.8	24	32	17	10.0	101.01			Mainly Clear
20:00‡	5.4	-11.7	28	29	12	10.0	101.11			NA
21:00‡	4.4	-8.7	38	29	13	10.0	101.17			NA
22:00‡	4.6	-11.6	30	34	9	10.0	101.19			Clear
23:00‡	3.9	-11.8	31	0	12	10.0	101.20			NA

#### Legend

M = Missing

E = Estimated

NA = Not Available

‡ = Partner data that is not subject to review by the  
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Date Modified: 2012-03-14

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## Hourly Data Report for April 30, 2012

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 INT'L  
ONTARIO

Latitude: 45°19'00.000" N Longitude: 75°40'00.000" W Elevation: 114.00 m

Climate ID: 6106001

WMO ID: 71628

TC ID: YOW

### Hourly Data Report for April 30, 2012

<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#	3.6	-12.0	31	4	8	10.0	101.16			NA
01:00#	4.2	-11.9	30	5	8	10.0	101.11			Mainly Clear
02:00#	0.2	-11.0	43	21	4	10.0	101.11			NA
03:00#	0.0	-6.7	61	22	8	10.0	101.19		-3	NA
04:00#	-1.2	-8.7	57	22	10	10.0	101.24		-5	Mainly Clear
05:00#	-2.0	-8.8	60	24	4	10.0	101.28		-3	NA
06:00#	1.5	-6.4	56	29	8	10.0	101.37			NA
07:00#	5.1	-7.4	40	32	6	10.0	101.37			Mostly Cloudy
08:00#	7.7	-9.3	29	8	7	10.0	101.25			NA
09:00#	9.2	-9.3	26	13	9	10.0	101.28			NA
10:00#	10.2	-8.0	27	6	12	10.0	101.19			Mostly Cloudy
11:00#	11.7	-7.7	25	13	8	10.0	101.14			NA
12:00#	12.1	-7.3	25	7	12	10.0	101.05			NA
13:00#	12.1	-6.3	27	10	4	10.0	100.94			Mostly Cloudy
14:00#	12.5	-6.0	27	13	9	10.0	100.86			NA
15:00#	13.0	-5.1	28	12	18	10.0	100.75			NA
16:00#	12.6	-4.0	31	11	9	10.0	100.69			Mostly Cloudy
17:00#	12.4	-4.7	30	10	13	10.0	100.67			NA
18:00#	11.5	-3.4	35	10	17	10.0	100.57			NA
19:00#	10.9	-2.8	38	11	20	10.0	100.42			Mostly Cloudy
20:00#	10.4	-1.6	43	9	15	10.0	100.47			Rain Showers
21:00#	10.2	-1.2	45	8	12	10.0	100.47			NA
22:00#	9.5	-0.7	49	8	12	10.0	100.38			Rain Showers
23:00#	9.3	-1.1	48	7	16	10.0	100.30			NA

**Legend**

M = Missing

E = Estimated

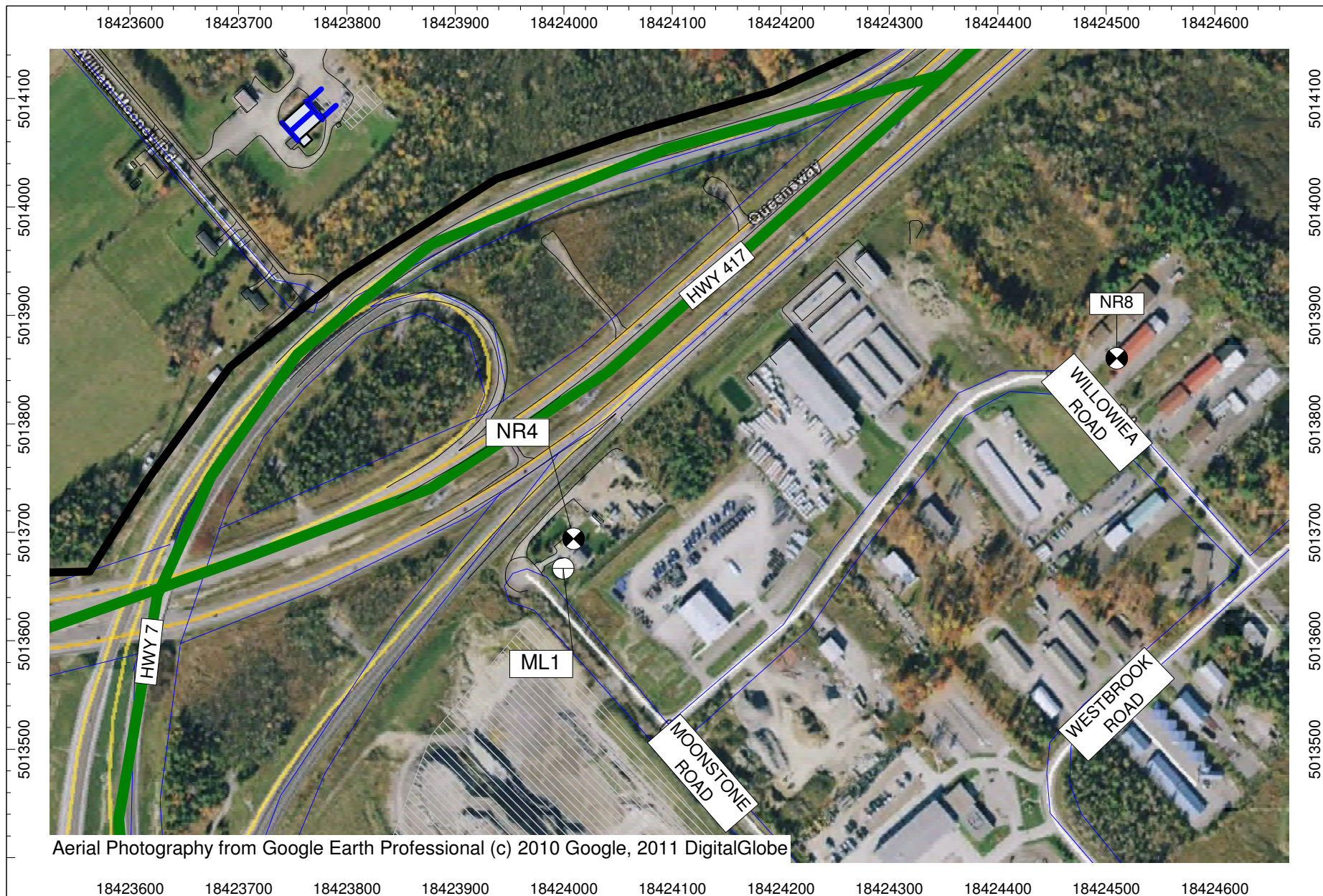
NA = Not Available

‡ = 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: 2012-03-14

# FIGURES



**Long-term Measurement Location ML1**

WCEC Landfill - Ottawa, Ontario

True North



Project #1100798

Drawn by: LBB

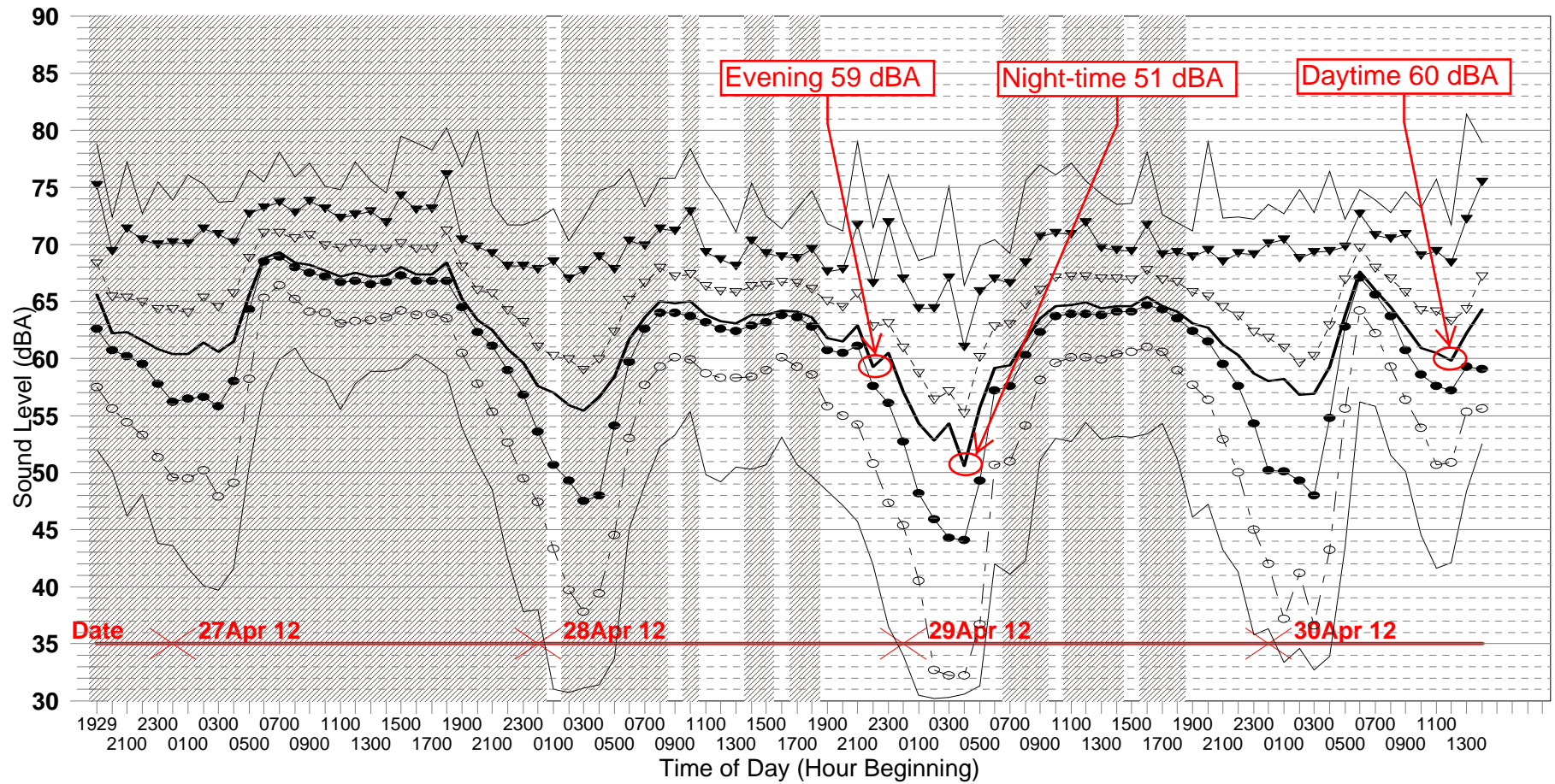
Figure: **1**

Scale: 1:5000

Date: May 25, 2012



## Long-Term Measurement Results NR4 (292 Moonstone Rd)



**Measured Ambient Sound Levels - NR4 (292 Moonstone Rd)**  
 April 26 2012 to April 30, 2012, 2002

WCEC Landfill – Ottawa, Ontario

Project #1100798

Figure No. **B**

Date: May 25, 2012

**RWDI**

# Appendix D2

## Mitigated Impulsive Noise Impact Tables





**From:** Brad Bergeron  
**To:** dejan.zivkovic@ontario.ca  
**CC:** Bergeron, Brad  
**Date:** 4/17/2012 6:54 AM  
**Subject:** Wind Rose and Updated Impulsive Noise Tables  
**Attachments:** Attachment 2-3\_impulsive.pdf; Wind Rose of Ottawa.sfc\_1.pdf; Bergeron, Brad.vcf

Hi Dejan,

Please find the attached wind rose for the historical meteorological conditions for the area based on 5 years of meteorological data (1996 to 2010). Please note this file was prepared by the MOE for this specific site and was used in the dispersion modelling.

In addition, I have also included the updated impulsive noise summary table as we discussed yesterday. As discussed, this revised table outlines the propane cannons directed away from the residential areas and the removal of Cannon 5 at the south pond.

We will call you between 1:30 and 2:00 pm to discuss the remaining items of interest.

Thanks  
Brad

Brad Bergeron, A.Sc.T.  
Senior Project Manager/Associate  
RWDI AIR Inc.  
Consulting Engineers & Scientists  
Tel: (519) 974-7384 (Windsor)  
Tel: (519) 823-1311 ext 2428 (Guelph)  
Fax: (519) 823-1316  
Cell: (519) 817-9888  
Email: brad.bergeron@rwdi.com

Website: <http://www.rwdi.com>  
Website: <http://www.rwdiair.com>

**Attachment 2a: Daytime Point of Reception Impact - Scenario 1 Mitigated (Pest Control Devices)**  
 WCEC Landfill - Ottawa, Ontario

Notes to Table:  
 1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.  
 2. Pest control devices are only planned during daytime hours from 0700-1900h.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
	Partial Level at the Point of Reception									
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	60	55	56	56	57	54	54	54	61	57
Propane Cannon 2 <sup>[2]</sup> (dBA)	55	49	63	55	50	53	62	49	57	55
Propane Cannon 3 <sup>[2]</sup> (dBA)	55	50	61	55	51	53	57	49	58	56
Propane Cannon 4 <sup>[2]</sup> (dBA)	56	50	62	54	52	53	58	50	59	57
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>									
Propane Cannon 6 <sup>[2]</sup> (dBA)	56	50	65	54	51	52	64	50	59	57

\* Highlighted cells are above the Background Noise Condition.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
	Partial Level at the Point of Reception									
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	64	60	64	63	61	60
Whistle <sup>[2]</sup> (dBA)	27	22	41	20	20	20	34	22	30	28

\* Highlighted cells are above the Background Noise Condition.

**Attachment 2b: Daytime Point of Reception Impact - Scenario 1 Mitigated (Pest Control Devices)**  
WCEC Landfill - Ottawa, Ontario

Notes to Table:  
1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.  
2. Pest control devices are only planned during daytime hours from 0700-1900h.

REGIONAL RECEPTORS																
	PR7	NR5	NR6	NR7	RR10	RR11	RR13	RR16	RR17	RR18	RR19	RR20	RR21	RR22	RR23	RR24
	Partial Level at the Point of Reception															
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	54	46	48	49	42	49	51	48	46	53	50	46	50	46	42	39
Propane Cannon 2 <sup>[2]</sup> (dBA)	53	46	53	47	38	46	42	51	55	51	48	45	49	48	47	46
Propane Cannon 3 <sup>[2]</sup> (dBA)	53	46	52	48	39	46	43	51	54	52	48	45	49	48	46	41
Propane Cannon 4 <sup>[2]</sup> (dBA)	52	46	52	47	39	47	43	51	50	52	48	45	49	47	45	41
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>															
Propane Cannon 6 <sup>[2]</sup> (dBA)	52	45	54	47	39	47	42	52	55	51	47	45	48	47	51	46

\* Highlighted cells are above the Background Noise Condition.

REGIONAL RECEPTORS																
	PR7	NR5	NR6	NR7	RR10	RR11	RR13	RR16	RR17	RR18	RR19	RR20	RR21	RR22	RR23	RR24
	Partial Level at the Point of Reception															
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	60	60	61	60	60	60	60	60	60	60
Whistle <sup>[2]</sup> (dBA)	18	13	28	14	17	20	19	23	23	19	15	13	15	18	18	16

\* Highlighted cells are above the Background Noise Condition.

**Attachment 3a: Daytime Point of Reception Impact - Scenario 2 Mitigated (Pest Control Devices)**  
 WCEC Landfill - Ottawa, Ontario

Notes to Table:  
 1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.  
 2. Pest control devices are only planned during daytime hours from 0700-1900h.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
	Partial Level at the Point of Reception									
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	60	55	56	56	57	54	54	54	61	57
Propane Cannon 2 <sup>[2]</sup> (dBA)	62	54	58	56	55	54	55	54	64	59
Propane Cannon 3 <sup>[2]</sup> (dBA)	60	53	59	56	55	54	55	53	62	58
Propane Cannon 4 <sup>[2]</sup> (dBA)	60	53	60	55	54	55	57	52	63	59
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>									
Propane Cannon 6 <sup>[2]</sup> (dBA)	61	53	59	55	54	54	56	53	65	60

\* Highlighted cells are above the Background Noise Condition.

SITE VICINITY RECEPTORS										
	PR4	PR9	NR1	NR2	NR4	NR8	NR9	RR12	RR14	RR15
	Partial Level at the Point of Reception									
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	64	60	64	63	61	60
Whistle <sup>[2]</sup> (dBA)	33	25	31	19	22	20	28	25	37	31

\* Highlighted cells are above the Background Noise Condition.

**Attachment 3b: Daytime Point of Reception Impact - Scenario 2 Mitigated (Pest Control Devices)**  
WCEC Landfill - Ottawa, Ontario

Notes to Table:  
1. The higher of MOE Noise Guidelines for Landfill Sites with pest control devices or background sound level.  
2. Pest control devices are only planned during daytime hours from 0700-1900h.

REGIONAL RECEPTORS																
	PR7	NR5	NR6	NR7	RR10	RR11	RR13	RR16	RR17	RR18	RR19	RR20	RR21	RR22	RR23	RR24
	Partial Level at the Point of Reception															
Resulting Daytime Impulsive Guideline Limit <sup>[1]</sup> (dBA)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Propane Cannon 1 <sup>[2]</sup> (dBA)	54	46	48	49	42	49	51	48	46	53	50	46	50	46	42	39
Propane Cannon 2 <sup>[2]</sup> (dBA)	53	46	50	47	42	49	50	49	47	53	49	45	49	45	43	39
Propane Cannon 3 <sup>[2]</sup> (dBA)	54	46	49	48	41	49	49	49	47	53	49	45	50	46	43	39
Propane Cannon 4 <sup>[2]</sup> (dBA)	53	46	50	47	41	49	49	50	48	53	49	44	49	46	44	40
Propane Cannon 5 <sup>[2]</sup> (dBA)	<b>Equipment Removed</b>															
Propane Cannon 6 <sup>[2]</sup> (dBA)	53	46	51	47	41	49	49	50	48	52	48	44	49	45	43	39

\* Highlighted cells are above the Background Noise Condition.

REGIONAL RECEPTORS																
	PR7	NR5	NR6	NR7	RR10	RR11	RR13	RR16	RR17	RR18	RR19	RR20	RR21	RR22	RR23	RR24
	Partial Level at the Point of Reception															
Resulting Daytime Quasi-Steady Guideline Limit <sup>[1]</sup> (dBA)	60	60	60	60	60	60	60	60	61	60	60	60	60	60	60	60
Whistle <sup>[2]</sup> (dBA)	17	12	25	14	19	21	21	22	20	18	15	13	14	12	17	15

\* Highlighted cells are above the Background Noise Condition.



# Appendix E

## Memorandum – Addendum to WCEC Environmental Assessment





CONSULTING ENGINEERS  
& SCIENTISTS

# Memorandum

Tel: 519.823.1311  
Fax: 519.823.1316  
RWDI AIR Inc.  
650 Woodlawn Road West  
Guelph, Ontario, Canada N1K 1B8  
Email: solutions@rwdi.com

**Date:** August 28, 2012

**RWDI Reference #:** 1100798

**To:** Mr. Tim Murphy

**E-Mail:** Tmurphy3@wm.com

**From:** Brad Bergeron

**E-Mail:** Brad.Bergeron@rwdi.com

**Re: Addendum to Environmental Assessment for a New Landfill Footprint  
at the West Carleton Environmental Centre  
Waste Management of Canada Corporation  
Ottawa Landfill Site – Acquisition of 2485 Carp Road North  
Ottawa, Ontario**

Throughout the Environmental assessment the Receptor R1 (NR1 in the noise evaluation) has been the most problematic with regard to several disciplines. Receptor R1 is identified as a 1-storey home at 2485 Carp Road North. Waste Management (WM) has optioned this property in July of 2012, which will affect the receptor based evaluations (Noise and Odour). The purpose of this document is to detail any changes to the results or mitigation requirements caused by the acquisition.

## ODOUR

There will be no changes to any odour impact evaluations, excepting that R1 will no longer need to be evaluated. There are no changes with regard to any proposed odour mitigation measures.

## NOISE

With NR1 removed, the next closest noise-sensitive receptors are three residential homes located immediately north of the Richardson Side Road, between Carp Road and William Mooney Road. These are 1-storey residential homes which have been represented by a single receptor, labelled NR1alt, as shown in **Figure 1**. Receptor NR1 was previously the limiting receptor located to the north. This addendum shows the impact at several receptors listed below to demonstrate the impact at the closest receptors to the north, now that NR1 was removed. It should be noted that the original analysis shows the impact at these locations with contour plots but not individual results as detailed herein.

## NOISE ASSESSMENT CRITERIA

The relevant criterion for receptor NR1alt is the MOE Landfill guideline for landfilling activities. The Landfill guideline sets the One Hour Energy Equivalent Sound Level (Leq(1-hr)) limit for noise from a landfill site are outlined as follows:

- The higher of 55 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).

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& SCIENTISTS

The MOE Landfill guideline uses the background sound level as the applicable sound level limit, where the background sound level is above the default values. If the actual background sound level is below the default limit, then the default limit can be used.

Background sound levels based only on traffic volumes were examined for receptor NR1alt. Road traffic noise was modelled for NR1alt using methods outlined in the MOE Publications NPC-206 and the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) algorithms. Traffic analysis of background sound levels is provided in **Attachments 1 and 2** to this memo. Background noise levels related to traffic were estimated based on the south façade since it is exposed to both Richardson Side Road and the worst-case exposure to the landfill noise emissions.

Minimum background sound levels due to traffic demonstrate that background sound levels are higher than the MOE Landfill guideline minima. The minimum hourly sound levels, and resulting guideline limits for receptor NR1alt are therefore 61 dBA, 57 dBA and 45 dBA for the daytime, evening and night-time hours, respectively. Since landfilling activities occur only during the daytime, only the daytime limit has been used in the assessment and summarized in **Table 1**.

This addendum considers only the following affected receptors within the 500 m to the north of the landfill (see **Table 1**). All other receptors in the EA and results at those receptors remain unchanged.

**Table 1: Resulting Daytime Landfill Guideline Limits**

Point of Reception ID	Point of Reception (PoR) Description	MOE Landfill Guideline Limit <sup>[1]</sup> (dBA)	Verified by Acoustic Audit <sup>[2]</sup>	Performance Limit <sup>[3]</sup> (dBA)	Performance Limit Source <sup>[4]</sup> (dBA)	Resulting Landfill Guideline Limit <sup>[5]</sup> (dBA)
PR4	2-storey home on Richardson Side Road NNW	55	No	52	C	55
NR1alt	1-storey home on Richardson Side Road	55	No	61	C	61
NR9	2-storey Sensitive Business Operation	55	No	64	C	64
RR14	2-storey at 607 William Mooney Road	55	No	61	C	61
RR15	2-storey Wilbert Cox Drive	55	No	50	D	55

Notes to Table 1:

- MOE Noise Guidelines for Landfill Sites.
- 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 Landfill guideline limit or performance limit.





## NOISE RESULTS

The assessment was completed through modelling of the predictable worst-case landfilling scenario. All WCEC sources considered occur concurrently for this assessment. The combined unmitigated  $L_{EQ, 1-hr}$  dBA values were calculated using the sound emissions from the individual sources and are shown in **Figure 1** and **Table 2**. The modelling showed that the applicable sound level limit for landfill steady-state sources may be exceeded in the daytime at one location, receptor PR4.

**Table 2: Acoustic Assessment Summary - Unmitigated**

Point of Reception ID	Point of Reception (PoR) Description	Total Sound Level at PoR <sup>[1]</sup> (dBA)	Verified by Acoustic Audit <sup>[2]</sup>	Resulting Landfill Guideline Limit <sup>[3]</sup> (dBA)	Performance Limit Source <sup>[4]</sup> (dBA)	Compliance with Performance Limit <sup>[5]</sup> (dBA)
PR4	2-storey home on Richardson Side Road NNW	56	No	55	C	No
NR1alt	1-storey home on Richardson Side Road	57	No	61	C	Yes
NR9	2-storey Sensitive Business Operation	53	No	64	C	Yes
RR14	2-storey at 607 William Mooney Road	59	No	61	C	Yes
RR15	2-storey Wilbert Cox Drive	55	No	55	D	Yes

Notes to Table 2:

1. Worst-case cumulative sound level from all applicable steady-state sources operating.
2. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
3. The higher of MOE Landfill guideline limit or performance limit.
4. 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).

### Potential Mitigation Measures

Previous mitigation recommended temporary berms be placed at both the construction and landfilling working faces to sufficiently control noise levels (see Section 6.2 of the EA). The temporary berms were required mostly to address sound levels at receptor NR1. Given that NR1 will be removed as a noise-sensitive receptor, temporary berms are no longer required at the active working faces.

However, a berm located near the outer perimeter of Cell 7 would sufficiently control noise levels at the receptors based on predictable worst-case sound levels. At a minimum, the berm should block line of sight and be 0.5 m above the top height of the tallest equipment. This berm is mainly required for construction of the base liners occurring at grade in Cell 7. The location of the perimeter berm is illustrated in **Figure 2**.

Mitigation measures for pest control devices remain the same as outlined in the EA.

With the proposed controls in place, sound levels from the WCEC expansion project are predicted to meet the applicable daytime sound level limit. With the berm providing compliance, residual effects from the EA would remain unchanged. The predicted sound levels are summarized in **Figure 2** and **Table 3**.



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**Table 3: Acoustic Assessment Summary - Mitigated**

Point of Reception ID	Point of Reception (PoR) Description	Total Sound Level at PoR <sup>[1]</sup> (dBA)	Verified by Acoustic Audit <sup>[2]</sup>	Resulting Landfill Guideline Limit <sup>[3]</sup> (dBA)	Performance Limit Source <sup>[4]</sup> (dBA)	Compliance with Performance Limit <sup>[5]</sup> (dBA)
PR4	2-storey home on Richardson Side Road NNW	54	No	55	C	Yes
NR1alt	1-storey home on Richardson Side Road	56	No	61	C	Yes
NR9	2-storey Sensitive Business Operation	53	No	64	C	Yes
RR14	2-storey at 607 William Mooney Road	56	No	61	C	Yes
RR15	2-storey Wilbert Cox Drive	52	No	55	D	Yes

Notes to Table 3:

5. Worst-case cumulative sound level from all applicable steady-state sources operating.
6. Has an acoustic audit (as defined in Publication NPC-233) been conducted with source in place and operating?
7. The higher of MOE Landfill guideline limit or performance limit.
8. 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).

## NOISE CONCLUSION

Given the option obtained by WM in July of 2012 on the parcel of land on which NR1 is located, this updated addendum has been developed for the EA for a New Landfill Footprint at the WCEC previously submitted. The updated analysis shows that the temporary landfill berm requirements previously recommended no longer apply. With the berm at the outer perimeter of Cell 7, as described in this addendum, the predicted sound levels from the new landfill comply with the applicable sound level limits and residual impact would be unchanged.

- Changes to Mitigation**
- 1) Temporary Berming around working face no longer required.
  - 2) Berm around outer perimeter of Cell 7 required during construction.

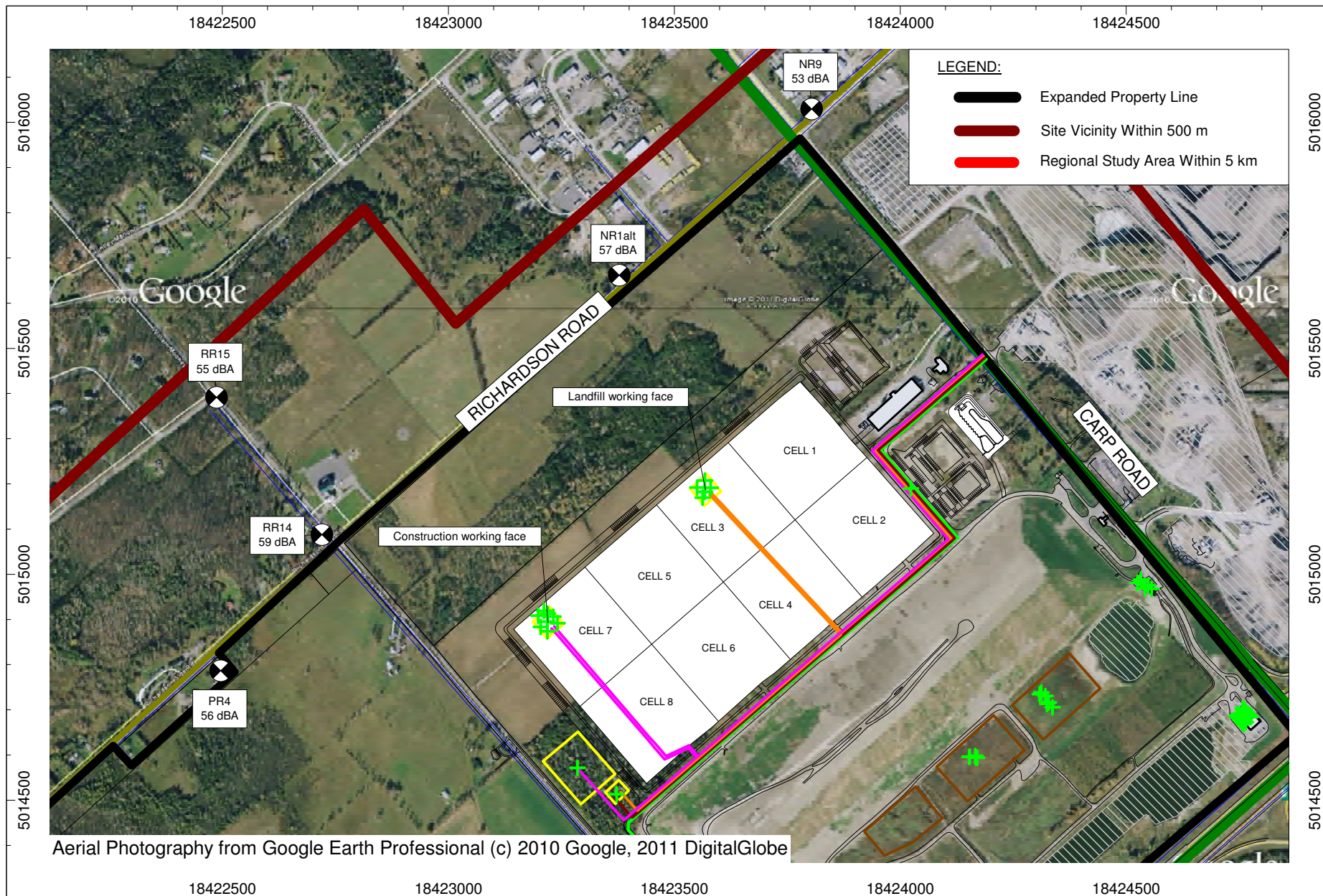
We would be pleased to respond should you have any questions.

Kind regards,

Brad Bergeron, A.Sc.T., d.E.T.  
 Senior Project Manager/Principal

BCB/klm


# FIGURES



**LEGEND:**

- Expanded Property Line
- Site Vicinity Within 500 m
- Regional Study Area Within 5 km

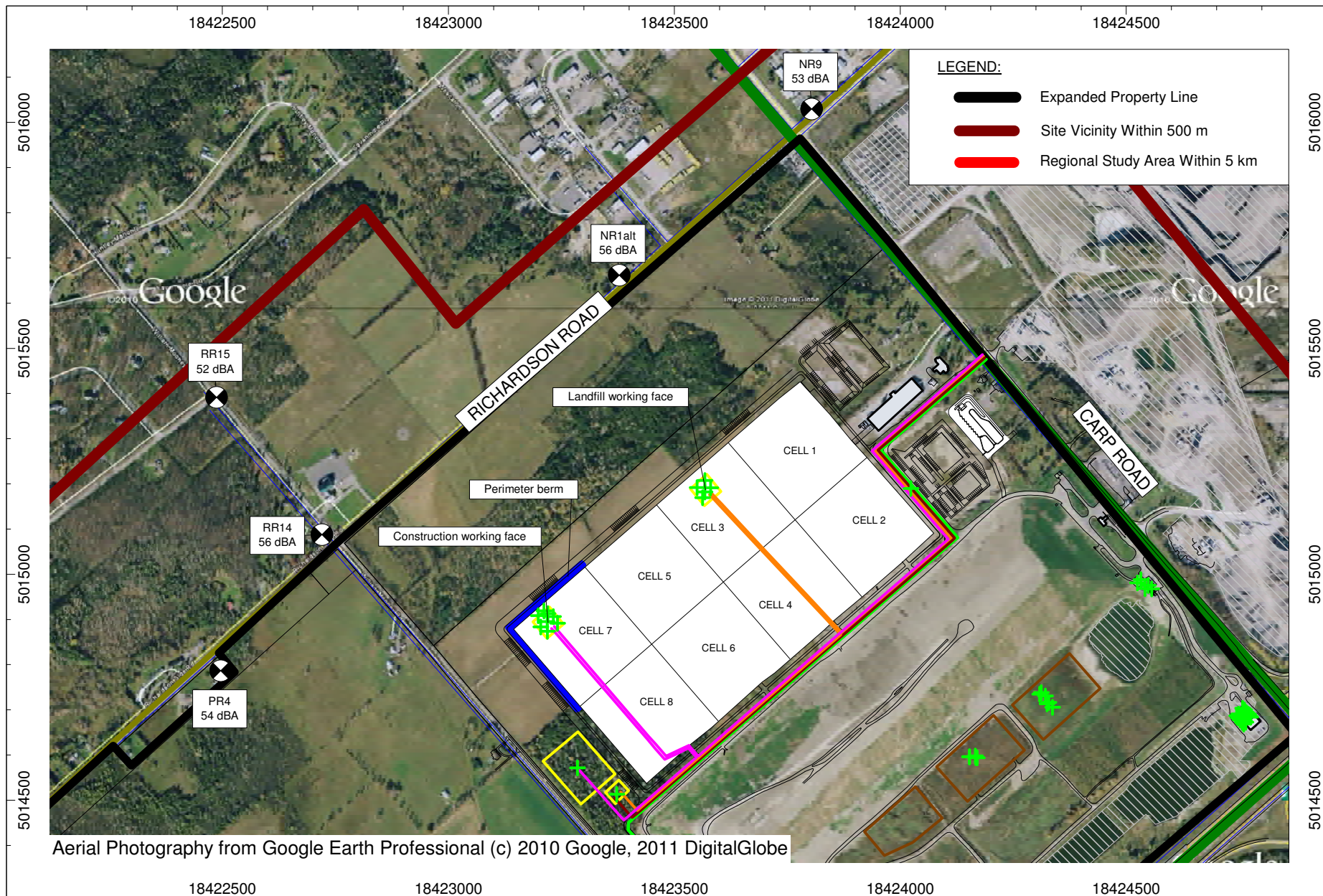
**Total WCEC Predicted Daytime Sound Levels - Unmitigated**  
 Worst-case Scenario  
 WCEC Landfill - Ottawa, Ontario

True North  
  
 Project #1100798

Drawn by: NTN	Figure: <b>1</b>
Scale: 1:12 000	
Date: July 25, 2012	




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



**LEGEND:**

- Expanded Property Line
- Site Vicinity Within 500 m
- Regional Study Area Within 5 km

**Total WCEC Predicted Daytime Sound Levels - Mitigated**  
 Worst-case Scenario  
 WCEC Landfill - Ottawa, Ontario

True North  
  
 Project #1100798

Drawn by: NTN	Figure: 2
Scale: 1:12 000	
Date: July 25, 2012	



# ATTACHMENT 1



**Attachment 1: ORNAMENT Calculations for NR1alt**

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 <sub>1</sub>	θ <sub>2</sub>								Elevation Change e (m)	Hor. Dist a (m)	Hor. Dist b (m)				θ <sub>1</sub>	θ <sub>2</sub>							
24-Hour																																	
NR1alt	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	27	Soft	A	0.1		1.5																60

# ATTACHMENT 2



## Attachment 2: Road Traffic Noise at NR1alt - 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	2	49.5	44.0	44.8	46.0	46.5	56.4	61.7	63.3	62.2	61.3	63.1	60.9	60.9	61.1	61.0	62.5	63.7	63.0	61.3	59.4	58.7	57.2	56.8	53.1
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	
		49.5	44.0	44.8	46.0	46.5	56.4	61.7	63.3	62.2	61.3	63.1	60.9	60.9	61.1	61.0	62.5	63.7	63.0	61.3	59.4	58.7	57.2	56.8	53.1	

### 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
	49.5	44.0	44.8	46.0	46.5	56.4	61.7	63.3	62.2	61.3	63.1	60.9	60.9	61.1	61.0	62.5	63.7	63.0	61.3	59.4	58.7	57.2	56.8	53.1

### 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
<b>AMBIENT GUIDELINE LIMIT LEQ(1)</b>		49.5	45.0	45.0	46.0	46.5	56.4	61.7	63.3	62.2	61.3	63.1	60.9	60.9	61.1	61.0	62.5	63.7	63.0	61.3	59.4	58.7	57.2	56.8	53.1

Daytime	61
Evening	57
Night-time	45