

Appendix A

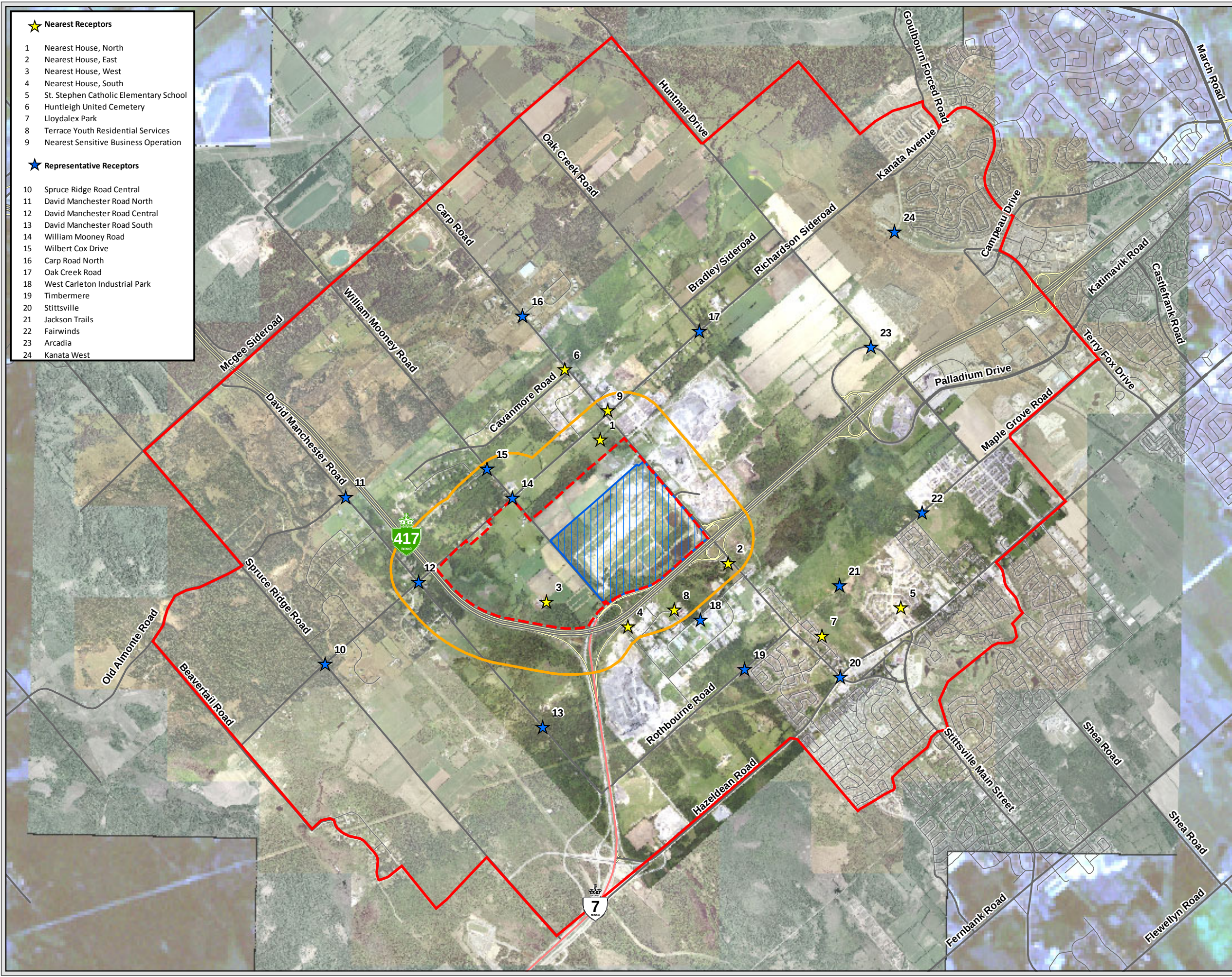
Overview Map / Zoning



Overview Map



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



★ Nearest Receptors

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

★ Representative Receptors

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

Legend

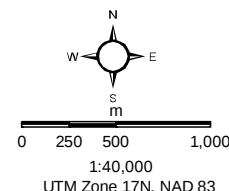
Receptors

- ★ Nearest Receptors
- ★ Representative Receptors

Boundaries

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

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



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

Receptor Locations

April 2011
Project 60191228



Figure 4

Zoning



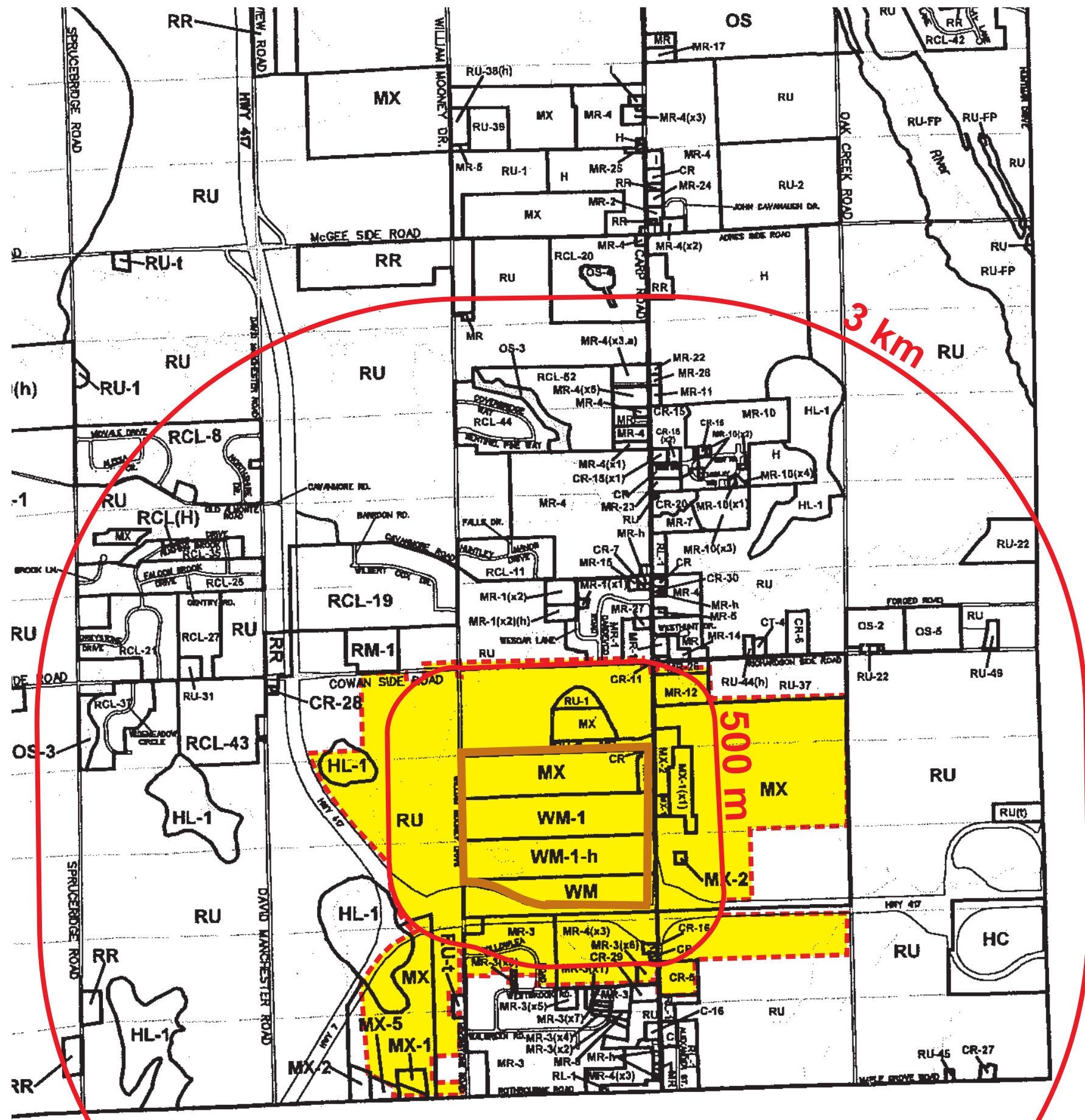


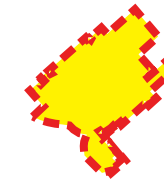
Figure 8
Former Township of
West Carleton
Zoning By-law (1981)



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

Sound Power Level Determination / Detailed Traffic Information



Sound Power Level Determination



Table B1.1: Noise Source Data
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 dBAI, 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

I = Impulsive

T = Tonal

Q = Quasi-Steady Impulsive

B = Buzzing

C = Cyclic
5.

Noise Control Measures

S = Silencer

L = Lagging

O = Other

A = Acoustic lining, plenum

E = Acoustic Enclosure

U = Uncontrolled

B = Barrier
6.

Sound Power Level Data Source

Man = Manufacturer's Data

EC = Engineering Calc based on specifications

Mea = Measured Directly

Same ### = same type as source no. ###

Pre = Previous CofA
7.

Due to the size and the varying nature of haul routes and conveyor systems, a single coordinate could not be shown.

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

Source ID ^[1]	Source Description	Sound Power Level ^[2]	Source Location ^[3]	Sound Characteristics ^[4]	Existing Noise Control Measures ^[5]	1/1 Octave Band Sound Power Level Data (dB, if available)								PWL Data Source ^[6]	Height Above Roof (m)	Local Roof Height Ab. Grade (m)	Height Above Grade (m)	Source Co-ordinate (m)			
		(dBA)	(I or O)	(S,Q,I,B,T,C)	(S,A,B,L,E,O,U)	31.5	63	125	250	500	1000	2000	4000					8000	X	Y	Z
LANDFILL SITE OPERATIONS																					
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	18424532.3	5014988.0	138.9
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	18424524.7	5014981.1	129.3
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	18424548.6	5014975.4	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	18424541.4	5014968.3	129.0
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	18424555.9	5014967.6	128.6
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	18424770.5	5014689.8	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	18424761.7	5014699.9	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	18424773.5	5014685.5	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	18424765.5	5014694.6	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	18424757.6	5014703.6	126.8
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	18424768.4	5014691.3	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	18424760.0	5014700.9	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	18424774.9	5014684.0	127.4
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	18424743.9	5014686.7	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	18424747.9	5014682.2	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	18424751.5	5014678.0	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	18424756.2	5014672.9	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	18424759.9	5014668.5	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	18424748.5	5014690.8	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	18424752.6	5014686.4	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	18424756.3	5014682.1	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	18424760.8	5014676.9	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	18424764.7	5014672.5	138.4
SURROUNDING OPERATIONS																					
Amb_CBM	CBM - Facility	110	O	S	U	116.0	114.7	109.6	113.3	106.6	103.4	101.9	97.1	90.7	Pre	7.0	116.2	123.2	18424456.1	5015444.8	123.2
Amb_Clark_asph	Clark Quarry - Asphalt	122	O	S	U	120.1	124.3	122.0	120.4	123.7	110.0	108.6	108.8	107.4	Pre	7.0	130.2	137.2	18424480.3	5012668.5	137.2
Amb_Clark_crush	Clark Quarry - Crushing	123	O	S	U	120.0	119.6	117.0	114.9	116.0	119.7	117.6	108.3	90.1	Pre	15.0	127.7	142.7	18424336.4	5012760.9	142.7
Amb_Clark_ldr_t	Clark Quarry - loader and truck	115	O	S	U	111.8	114.5	114.7	114.5	109.1	110.0	108.2	100.2	89.5	Pre	3.0	129.5	132.5	18424067.6	5013401.4	132.5
Amb_Cumb	Cumberland Ready-mix - Facility	110	O	S	U	110.7	115.9	115.0	109.0	108.1	103.7	99.8	98.3	93.6	Pre	7.0	119.6	126.6	18424691.2	5015065.0	126.6
Amb_Kar_crush1	Karson - Crushing Operations (1o crush)	120	O	S	U	123.8	121.9	120.2	118.5	118.6	115.6	112.4	104.8	89.9	Pre	7.0	95.2	102.2	18424459.6	5015864.9	102.2
Amb_Kar_crush2	Karson - Crushing Operations (2o crush, 3o crush, and screen)	125	O	S	U	124.3	124.7	124.1	117.2	115.2	118.8	120.2	115.6	103.2	Pre	7.0	116.3	123.3	18424907.5	5015050.1	123.3
Amb_WestCarl	West Carleton Concrete - Facility	117	O	S	U	116.8	121.1	122.7	115.0	112.9	113.8	106.1	101.9	96.4	Pre	7.0	115.9	122.9	18424266.1	5015548.9	122.9
Amb_Kar_conv	Karson Quarry - Conveyor System	127	O	S	U	114.6	115.6	108.2	110.0	119.3	123.6	120.6	115.6	110.5	Pre			varies	varies	varies	varies

Table B1.2: SPL to PWL Conversions of Measurment Data for Point Sources

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. All measurements conducted on **April 19, 2011**, using Larson Davis LD-824 SLM's / RTA's.
2. All measurements were consistent with ISO 3744:1994(E) and ISO 3746:1995 measurement standakes, and the applicable portions of the MOE Publication NPC-103.
3. Calc Type of C, A, or S refer to the source geometry, and represent Cylindrical, Area, or Spherical sources, respectively.
4. 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.
5. 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.
6. 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.
7. Refer to "Spectral Weighting" column for dB or dBA application information.
8. Where the radius of a spherical or cylindrical radiator is less than 1/4 wavelength of the octave band being measured, the estimated PWL will be left blank.

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

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

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

MEASUREMENT EQUIPMENT



Sound Level Meter 824 Kit 1

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



Sound Level Meter 824 Kit 2

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

Detailed Traffic Information



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**

AADT peak hour SAWDT	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	
	24860	43045	10875	19206	4740	6985	23935	
	2337	4046	1067	1856	557	668	2250	
	27843	48210	12723	22471	5546	8172	26089	

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

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

Carp Road

	North of 417			South of 417		
	Cars	Medium	Heavy	Cars	Medium	Heavy
0:00	31	3	0	65	4	1
1:00	20	1	0	46	1	1
2:00	11	1	1	19	3	0
3:00	22	1	1	26	1	0
4:00	24	3	6	48	6	3
5:00	155	25	5	243	36	3
6:00	592	97	8	979	102	8
7:00	864	131	17	1473	104	15
8:00	714	148	12	1518	151	5
9:00	576	185	11	1191	134	9
10:00	538	128	22	925	126	22
11:00	559	134	13	998	100	6
12:00	660	134	17	1191	103	8
13:00	648	147	16	1101	113	11
14:00	663	138	21	1100	130	16
15:00	837	124	15	1477	110	14
16:00	931	128	8	1747	101	8
17:00	800	77	1	1788	55	3
18:00	499	38	2	1260	24	2
19:00	328	28	4	750	13	5
20:00	290	13	1	607	7	2
21:00	195	8	0	500	7	2
22:00	159	11	0	540	8	0
23:00	73	4	0	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	
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

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

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

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

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


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Transportation Master Plan

Annex C - Transportation Performance Objectives and Indicators

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

Appendix C

Noise Impact Modelling / Ambient Sound Level Calculations / Draft Work Plan



Noise Impact Modelling



APPENDIX C1

WASTE MANAGEMENT WEST CARLETON ENVIRONMENTAL CENTRE (WCEC) PROPOSED EXPANSION ENVIRONMENTAL ASSESSMENT Baseline Noise Assessment Modelling Assumptions

On-site Noise Modelling:

- As a conservative approximation, all sources were assumed to be in operation during facility daytime hours of 0700 to 1730 hr.
- Ground elevations for the existing landfill site were provided by Genivar. These ground elevations were included in the noise modelling and indicated a peak height of 173 m above grade.
- Two (2) enclosed flares and one (1) candlestick flare were assumed to be in operation concurrently.
- All significant noise sources from the landfill have been modelled as single noise sources.
- The Blower Building concentric opening to the smaller of the two enclosed flares was identified as tonal on-site but was not audible off-site. As such, a 5 dB tonal penalty was not applied to the sound power level.

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

WCEC Landfill - Ottawa, Ontario

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

Table C1.2a: Point of Reception Noise Impact

WCEC Landfill - Ottawa, Ontario

Receptors: NR1, NR2, NR3, NR4, NR5

Notes to Table:

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"Table A2" in Appendix A of Basic CCoFA Guide.

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"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

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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		
NR1			NR2			NR3			NR4			NR5		
Point of Reception Description			Point of Reception Description			Point of Reception Description			Point of Reception Description			Point of Reception Description		
Nearest 2-storey home at 2485 Carp Road North			Nearest 2-storey home at 2166 Carp Road East			Nearest 2-storey home at 427 William Mooney Road West			Nearest 2-storey home at 292 Moonstone Road South			St. Stephen Catholic Elementary School		
Point of Reception Co-ords (m)			Point of Reception Co-ords (m)			Point of Reception Co-ords (m)			Point of Reception Co-ords (m)			Point of Reception Co-ords (m)		
X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
18423722	5015711	122.99	18425095	5014365	133.61	18423121	5013942	133.5	18424009	5013694	134.5	18426965	5013887	117.46

Source ID ^[1]	Source Description	Point of Reception 1			Point of Reception 2			Point of Reception 3			Point of Reception 4			Point of Reception 5		
		Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)
C_FLARE_stk	Candlestick flare exhaust 875 cfm	1086	27	dBA	839	10	dBA	1757	8	dBA	1396	12	dBA	2671	19	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	1085	20	dBA	839	3	dBA	1746	3	dBA	1386	5	dBA	2675	16	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	1107	10	dBA	819	-3	dBA	1762	-4	dBA	1390	-2	dBA	2650	6	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	1106	10	dBA	819	-3	dBA	1752	-4	dBA	1381	-2	dBA	2654	6	dBA
BLOWER_BLDG	Blower Bldg concentric opening	1117	8	dBA	808	-3	dBA	1764	-4	dBA	1386	-2	dBA	2641	-5	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	1464	-3	dBA	459	-24	dBA	1811	-25	dBA	1254	-24	dBA	2337	-15	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	1451	-4	dBA	472	-24	dBA	1807	-25	dBA	1256	-24	dBA	2349	-15	dBA
GEN_OH1	Energy Building overhead door 1	1469	18	dBA	454	-8	dBA	1812	-10	dBA	1252	-7	dBA	2333	2	dBA
GEN_OH2	Energy Building overhead door 2	1457	17	dBA	466	-10	dBA	1808	-12	dBA	1254	-8	dBA	2343	0	dBA
GEN_OH3	Energy Building overhead door 3	1445	16	dBA	478	-11	dBA	1805	-14	dBA	1257	-10	dBA	2354	-2	dBA
GEN_WALL1	Energy Bldg wall 1	1461	16	dBA	462	-9	dBA	1810	-11	dBA	1253	-8	dBA	2339	0	dBA
GEN_WALL2	Energy Bldg wall 2	1449	15	dBA	474	-10	dBA	1806	-12	dBA	1256	-9	dBA	2351	-1	dBA
GEN_WALL3	Energy Bldg wall 3	1471	14	dBA	452	-11	dBA	1812	-13	dBA	1252	-10	dBA	2331	-2	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	1447	24	dBA	476	17	dBA	1785	15	dBA	1235	19	dBA	2361	27	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	1453	24	dBA	470	17	dBA	1787	15	dBA	1234	19	dBA	2356	27	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	1459	24	dBA	465	17	dBA	1789	15	dBA	1233	19	dBA	2351	27	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	1466	24	dBA	458	17	dBA	1791	15	dBA	1231	19	dBA	2345	27	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	1471	24	dBA	452	17	dBA	1793	15	dBA	1230	19	dBA	2340	27	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	1448	14	dBA	475	7	dBA	1791	5	dBA	1241	8	dBA	2358	16	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	1454	14	dBA	469	7	dBA	1793	5	dBA	1240	8	dBA	2353	16	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	1459	14	dBA	464	7	dBA	1795	5	dBA	1239	8	dBA	2348	16	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	1466	14	dBA	457	7	dBA	1797	5	dBA	1237	8	dBA	2342	16	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	1472	14	dBA	451	7	dBA	1798	5	dBA	1236	8	dBA	2337	16	dBA
Amb_CBM	CBM - Facility	781	49	dBA	1254	28	dBA	2010	25	dBA	1807	28	dBA	2953	28	dBA
Amb_Clark_asph	Clark Quarry - Asphalt	3136	35	dBA	1805	41	dBA	1862	40	dBA	1129	42	dBA	2767	47	dBA
Amb_Clark_crush	Clark Quarry - Crushing	3014	31	dBA	1775	37	dBA	1694	36	dBA	989	40	dBA	2860	46	dBA
Amb_Clark_ldr_t	Clark Quarry - loader and truck	2336	29	dBA	1409	35	dBA	1090	33	dBA	299	37	dBA	2938	46	dBA
Amb_Cumb	Cumberland Ready-mix - Facility	1165	42	dBA	808	26	dBA	1930	24	dBA	1531	27	dBA	2561	29	dBA
Amb_Kar_crush1	Karson - Crushing Operations (1o crush)	754	56	dBA	1629	37	dBA	2343	34	dBA	2217	37	dBA	3192	36	dBA
Amb_Kar_crush2	Karson - Crushing Operations (2o crush, 3o crush, and screen)	1358	52	dBA	710	36	dBA	2102	33	dBA	1627	37	dBA	2364	39	dBA
Amb_WestCarl	West Carleton Concrete - Facility	568	64	dBA	1445	35	dBA	1973	32	dBA	1873	36	dBA	3170	34	dBA
Amb_Kar_conv	Karson Quarry - Conveyor System	varies	60	dBA	varies	40	dBA	varies	37	dBA	varies	41	dBA	varies	41	dBA

Table C1.2b: Point of Reception Noise Impact

WCEC Landfill - Ottawa, Ontario

Receptors: NR6, NR7, NR8, NR9

		Point of Reception ID			Point of Reception ID			Point of Reception ID			Point of Reception ID		
		NR6			NR7			NR8			NR9		
		Point of Reception Description			Point of Reception Description			Point of Reception Description			Point of Reception Description		
		Huntleigh United Cemetery			Lloydalex Park			2-storey Terrace Youth Residential Services			Nearest 2-storey Sensitive Business Operation		
		Point of Reception Co-ords (m)			Point of Reception Co-ords (m)			Point of Reception Co-ords (m)			Point of Reception Co-ords (m)		
		X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
		18423336	5016477	114.51	18426103	5013580	121.31	18424509.64	5013860.45	134.18	18423804.02	5016029.65	117.72
Source ID ^[1]	Source Description	Point of Reception 6			Point of Reception 7			Point of Reception 8			Point of Reception 9		
		Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)	Distance (m)	Sound Level at PoR ^[2]	Units ^[3] (dBA, dBAI)
C_FLARE_stk	Candlestick flare exhaust 875 cfm	1910	20	dBA	2109	6	dBA	1128	21	dBA	1271	24	dBA
C_FLARE_motor	Candlestick flare motor 875 cfm	1911	12	dBA	2110	1	dBA	1121	14	dBA	1272	17	dBA
E_FLARE1_in	Smaller enclosed flare air intake at base	1930	-1	dBA	2089	-6	dBA	1116	4	dBA	1291	5	dBA
E_FLARE2_in	Larger enclosed flare air intake at base	1931	3	dBA	2089	-6	dBA	1108	4	dBA	1292	7	dBA
BLOWER_BLDG	Blower Bldg concentric opening	1941	-10	dBA	2078	-6	dBA	1108	2	dBA	1301	1	dBA
GEN_IN_left	Energy Bldg sweep of air intakes; left half	2292	-5	dBA	1734	-20	dBA	869	-13	dBA	1652	0	dBA
GEN_IN_right	Energy Bldg sweep of air intakes; right half	2278	-3	dBA	1747	-20	dBA	876	-8	dBA	1639	2	dBA
GEN_OH1	Energy Building overhead door 1	2297	8	dBA	1729	-5	dBA	866	-5	dBA	1657	15	dBA
GEN_OH2	Energy Building overhead door 2	2285	12	dBA	1741	-7	dBA	873	-6	dBA	1645	18	dBA
GEN_OH3	Energy Building overhead door 3	2273	14	dBA	1753	-9	dBA	879	-8	dBA	1633	19	dBA
GEN_WALL1	Energy Bldg wall 1	2289	10	dBA	1737	-6	dBA	870	-6	dBA	1650	17	dBA
GEN_WALL2	Energy Bldg wall 2	2277	14	dBA	1749	-7	dBA	877	-7	dBA	1637	19	dBA
GEN_WALL3	Energy Bldg wall 3	2299	3	dBA	1727	-8	dBA	865	-8	dBA	1659	10	dBA
GEN_RAD1	Energy Building Smithco radiator fan 1	2278	24	dBA	1753	19	dBA	859	20	dBA	1639	31	dBA
GEN_RAD2	Energy Building Smithco radiator fan 2	2284	23	dBA	1747	19	dBA	856	20	dBA	1645	31	dBA
GEN_RAD3	Energy Building Smithco radiator fan 3	2289	23	dBA	1741	19	dBA	853	20	dBA	1651	31	dBA
GEN_RAD4	Energy Building Smithco radiator fan 4	2296	23	dBA	1734	19	dBA	849	20	dBA	1658	31	dBA
GEN_RAD5	Energy Building Smithco radiator fan 5	2302	24	dBA	1729	19	dBA	846	20	dBA	1663	31	dBA
GEN_STK1	Energy Bldg generator combustion exhaust 1	2277	20	dBA	1752	8	dBA	864	10	dBA	1639	25	dBA
GEN_STK2	Energy Bldg generator combustion exhaust 2	2283	20	dBA	1746	8	dBA	861	10	dBA	1645	26	dBA
GEN_STK3	Energy Bldg generator combustion exhaust 3	2289	20	dBA	1740	8	dBA	858	10	dBA	1650	26	dBA
GEN_STK4	Energy Bldg generator combustion exhaust 4	2296	20	dBA	1733	8	dBA	854	10	dBA	1657	26	dBA
GEN_STK5	Energy Bldg generator combustion exhaust 5	2302	20	dBA	1728	8	dBA	851	10	dBA	1663	26	dBA
Amb_CBM	CBM - Facility	1523	34	dBA	2488	22	dBA	1585	41	dBA	876	37	dBA
Amb_Clark_asph	Clark Quarry - Asphalt	3977	45	dBA	1861	44	dBA	1192	33	dBA	3429	45	dBA
Amb_Clark_crush	Clark Quarry - Crushing	3848	42	dBA	1947	41	dBA	1113	29	dBA	3312	42	dBA
Amb_Clark_ldr_t	Clark Quarry - loader and truck	3161	37	dBA	2043	37	dBA	637	27	dBA	2641	38	dBA
Amb_Cumb	Cumberland Ready-mix - Facility	1957	37	dBA	2049	21	dBA	1218	32	dBA	1311	41	dBA
Amb_Kar_crush1	Karson - Crushing Operations (1o crush)	1280	37	dBA	2814	30	dBA	2005	47	dBA	676	39	dBA
Amb_Kar_crush2	Karson - Crushing Operations (2o crush, 3o crush, and screen)	2123	50	dBA	1895	31	dBA	1254	47	dBA	1475	54	dBA
Amb_WestCarl	West Carleton Concrete - Facility	1314	39	dBA	2693	28	dBA	1706	50	dBA	667	41	dBA
Amb_Kar_conv	Karson Quarry - Conveyor System	varies	49	dBA	varies	33	dBA	varies	53	dBA	varies	53	dBA

Ambient Sound Level Calculations



APPENDIX C2

WASTE MANAGEMENT WEST CARLETON ENVIRONMENTAL CENTRE (WCEC) PROPOSED EXPANSION ENVIRONMENTAL ASSESSMENT Baseline Noise Assessment Modelling Assumptions

Ambient Noise Modelling:

- Landfill traffic volumes on the weigh scale (assumed one-way) for 2009 year were provided by Waste Management. Two-way daily traffic volumes were estimated based on 9.5 hours of operation (daytime 0700 to 1730 hr).
- The following percent split of landfill truck traffic leaving the facility onto the surrounding roadways via Carp Road was assumed:
 - 5% travels north onto Carp Road north of Hwy 417, north of the landfill entrance;
 - Same 5% travels east onto Richardson Side Road east of Carp Road.
 - 95% travels south onto Carp Road north of Hwy 417, south of the landfill entrance;
 - 90% of that travels east onto Hwy 417 east of Carp Road; and,
 - 5% of that travels south onto Carp Road south of Hwy 417.
- The Richardson Side Road and Carp Road traffic volumes including medium and heavy vehicles were calculated based on hourly vehicle counts from AECOM. Three counts were provided:
 - Carp Road, north of Hwy 417 (April 2011);
 - Carp Road, south of Hwy 417 (April 2011); and,
 - Richardson Side Road, west of Carp Road (April 2011).
- The Heavy Vehicle percentages and the percent split of medium to heavy vehicles for Carp Road and Richardson Side Road have been calculated based on the vehicle counts provided by AECOM.
- The percent split of medium to heavy vehicles has been assumed based on MTO default values where data were unavailable.
- The hourly sound level distributions were provided or estimated from hourly traffic volumes for the following road segments:
 - Richardson Side Road – west of Carp Road;
 - Carp Road – north and south of Hwy 417; and,
 - Hwy 417 – east and west of Carp Road.

- The hourly distribution for road traffic sound levels was estimated based on the distribution from CAA Journal 2008 for Highway 7 and Richardson Side Road east of Carp Road, since hourly traffic data were unavailable.
- The hourly sound level distributions were calculated from ambient sound level measurements for the following road segments:
 - Richardson Side Road – west of Carp Road;
 - Carp Road – b/w Richardson Side Road and Hwy 417;
 - Hwy 417 – west of Hwy 7; and
 - Hwy 417 – b/w Hwy 7 and Carp Road
- Hwy 417 traffic volumes were determined based on 2009 traffic volumes, which are the most current traffic volumes available from AECOM. Hwy 7 traffic volumes were determined based on an average annual daily traffic data from MTO's website (calc from 2006 to 2009)
- An average annual percent change in traffic volume base on data from MTO's website (calc from 2006 to 2009) was applied to approximate the 2012 traffic volumes.
- Default Heavy Vehicle percentages (medium and heavy) for Hwy 417 and Hwy 417 were based on MTO Environmental Guide for Noise October 2006 for freeways and Regional Roads.
- The following off-site stationary noise sources were previously measured and identified in the Ottawa Waste Management Facility Environmental Assessment Baseline Assessment dated January 2007:
 - CBM facility noise;
 - Clark Quarry operations (working face loader and rock truck, crushing operations and asphalt plant).
 - Cumberland Ready Mix facility noise;
 - Karson Quarry Operations (1^o, 2^o, and 3^o crushers, screens and conveyor system); and
 - West Carleton Concrete facility noise.

Table C2.1: Determination of 2009 Landfill Heavy Truck Traffic Volumes

WCEC Landfill - Ottawa, Ontario

Notes to Table:

1. Landfill traffic volumes for 2009 year were provided by AECOM.

Operation hours from 2010 NPRI questionnaire:

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

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

Table C2.2: Determination of Annual Average Daily Traffic, Day/Night Split and Hourly Distribution

WCEC Landfill - Ottawa, Ontario

2009 Highway 417					2011 Carp Road					2011 Richardson Road					Highway 417	
West of Carp					North of 417					West of Carp					West of Hwy 7	
East of Carp					South of 417					East of Carp					AADT	
AADT					AADT					AADT					AADT	
Day/Night Split					Day/Night Split					Day/Night Split					Day/Night Split	
24860					12077					4939					23935	
90/10					91/9					91/9					90/10	

Carp Road					Carp Road					Richardson Road					Highway 417	
North of 417					South of 417					West of Carp Road					Hourly Volume	
Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total		Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total		Cars ^[1]	Medium ^[2]	Heavy ^[3]	Total		as % of AADT	
0:00	31	3	0	34	65	4	1	70		15	3	0	18		0:00	0.74%
1:00	20	1	0	21	46	1	1	48		5	0	0	5		1:00	0.41%
2:00	11	1	1	13	19	3	0	22		5	1	0	6		2:00	0.31%
3:00	22	1	1	24	26	1	0	27		7	1	0	8		3:00	0.27%
4:00	24	3	6	33	48	6	3	57		6	2	1	9		4:00	0.42%
5:00	155	25	5	185	243	36	3	282		76	11	0	87		5:00	1.69%
6:00	592	97	8	697	979	102	8	1089		226	66	1	293		6:00	4.95%
7:00	864	131	17	1012	1473	104	15	1592		353	76	0	429		7:00	5.77%
8:00	714	148	12	874	1518	151	5	1674		289	45	1	335		8:00	5.44%
9:00	576	185	11	772	1191	134	9	1334		222	48	1	271		9:00	5.61%
10:00	538	128	22	688	925	126	22	1073		179	233	1	413		10:00	5.76%
11:00	559	134	13	706	998	100	6	1104		210	37	0	247		11:00	6.29%
12:00	660	134	17	811	1191	103	8	1302		207	40	1	248		12:00	6.21%
13:00	648	147	16	811	1101	113	11	1225		200	59	1	260		13:00	6.35%
14:00	663	138	21	822	1100	130	16	1246		205	47	1	253		14:00	6.72%
15:00	837	124	15	976	1477	110	14	1601		300	52	2	354		15:00	7.29%
16:00	931	128	8	1067	1747	101	8	1856		395	68	2	465		16:00	8.26%
17:00	800	77	1	878	1788	55	3	1846		374	24	0	398		17:00	7.54%
18:00	499	38	2	539	1260	24	2	1286		255	18	0	273		18:00	5.74%
19:00	328	28	4	360	750	13	5	768		160	16	0	176		19:00	4.31%
20:00	290	13	1	304	607	7	2	616		141	8	0	149		20:00	3.63%
21:00	195	8	0	203	500	7	2	509		100	4	0	104		21:00	3.07%
22:00	159	11	0	170	540	8	0	548		91	6	0	97		22:00	1.95%
23:00	73	4	0	77	164	1	0	165		38	3	0	41		23:00	1.26%
Total	10189	1707	181	12077	19756	1440	144	21340		4059	868	12	4939			
Day	9261	1572	160	10993	18166	1286	128	19580		3681	781	10	4472			
Night	928	135	21	1084	1590	154	16	1760		378	87	2	467			
Total	10189	1707	181	12077	19756	1440	144	21340		4059	868	12	4939			

Notes:

- Traffic data provided by AECOM (MTO 2009 for Highway 417, April 2011 counts 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 (%)	
Hwy 7 - south of Hwy 417 ^[4]					
2006	14400	0.0%	0%	2.1%	Use 2.1% growth per year from 2007 based on AADT change from 2006.
2007	14700	2.1%	2.1%		
2008	N/A	--	--		
2009	N/A	--	--		
Hwy 417 - west of Hwy 7 ^[1]					
2006	22500	8.2%	0%	2.1%	Use 2.1% growth per year from 2009 based on AADT change from 2006 to account for 2007 traffic anomaly.
2007	16800	-25.3%	--		
2008	N/A	--	--		
2009 ^[5]	23935	--	2.1%		
Hwy 417 - b/w Hwy 7 and Carp Rd ^[2]					
2006	38200	1.9%	--	1.0%	Use City of Ottawa's default growth rate of 1% from 2009 to 2012 based on lower AADT in 2009 from 2007.
2007	39800	4.2%	0%		
2008	N/A	--	--		
2009 ^[5]	24860	--	-18.8%		
Hwy 417 - east of Carp Road ^[3]					
2006	42800	0.5%	--	1.0%	Use City of Ottawa's default growth rate of 1% from 2009 to 2012 based on AADT change from 2007.
2007	43000	0.5%	0%		
2008	N/A	--	--		
2009 ^[5]	43045	--	0.1%		

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

WCEC Landfill - Ottawa, Ontario

EXISTING TRAFFIC INCLUDING LANDFILL ^[1]

Road ID	Road Segment	Year	AADT Including Landfill			
			Cars	Medium	Heavy	Total
Landfill	Landfill 2-Way Traffic at Weigh Scale	2009 ^[2]	0	0	33	33
Highway 7	South of 417	2007	--	--	--	14700
Highway 417	West of Highway 7	2009	--	--	--	23935
Highway 417	West of Carp	2009	--	--	--	24860
Highway 417	East of Carp	2009	--	--	--	43045
Carp Road	North of 417 - North of Landfill Entrance	2011	10189	1707	181	12077
Carp Road	North of 417 - South of Landfill Entrance	2011	10189	1707	181	12077
Carp Road	South of 417	2011	19756	1440	144	21340
Richardson Road	West of Carp Road	2011	4059	868	12	4939
Richardson Road	East of Carp Road	2011	--	--	--	6985

EXISTING TRAFFIC INCLUDING LANDFILL ^[1]

Road ID	Road Segment	Year	Total Vehicle Breakdown ^[3]		AADT Including Landfill				Day/Night Split ^[1]		Traffic Volume Including Landfill					
			%Medium	%Heavy	Cars	Medium	Heavy	Total	Day	Night	Day (16h)			Night (8h)		
											Cars	Medium	Heavy	Cars	Medium	Heavy
Landfill	Landfill 2-Way Traffic at Weigh Scale	2009 ^[2]	0.0	100.0	0	0	33	33	100	0	0	0	33	0	0	0
Highway 7	South of 417	2007	5.0	8.0	12789	735	1176	14700	90	10	11510	662	1058	1279	74	118
Highway 417	West of Highway 7	2009	5.0	15.0	19148	1197	3590	23935	90	10	17233	1077	3231	1915	120	359
Highway 417	West of Carp	2009	5.0	15.0	19888	1243	3729	24860	90	10	17899	1119	3356	1989	124	373
Highway 417	East of Carp	2009	5.0	15.0	34436	2152	6457	43045	90	10	30992	1937	5811	3444	215	646
Carp Road	North of 417 - North of Landfill Entrance	2011	14.1	1.5	10189	1707	181	12077	91	9	9272	1553	165	917	154	16
Carp Road	North of 417 - South of Landfill Entrance	2011	14.1	1.5	10189	1707	181	12077	91	9	9272	1553	165	917	154	16
Carp Road	South of 417	2011	6.7	0.7	19756	1440	144	21340	92	8	18176	1325	132	1580	115	12
Richardson Road	West of Carp Road	2011	17.6	0.2	4059	868	12	4939	91	9	3694	790	11	365	78	1
Richardson Road	East of Carp Road	2011	5.0	8.0	6077	349	559	6985	90	10	5469	314	503	608	35	56

Notes:

[1] Traffic data for the Landfill (2009), Highway 417 (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 C2.4b: Determination of Traffic Volume - Baseline

WCEC Landfill - Ottawa, Ontario

EXISTING TRAFFIC EXCLUDING LANDFILL ^[1]

Road ID	Road Segment	Year	Heavy Truck Traffic Split				AADT Excluding Landfill Traffic			
			North of Landfill		South of Landfill		Cars	Medium	Heavy	Total
			5%	95%	5%	90%				
Landfill	Landfill 2-Way Traffic at Weigh Scale	2012	--	--	--	--	--	--	--	--
Highway 7	South of 417	2007	--	--	--	--	12789	735	1176	14700
Highway 417	West of Highway 7	2009	--	--	--	--	19148	1197	3590	23935
Highway 417	West of Carp	2009	--	--	--	0	19888	1243	3729	24860
Highway 417	East of Carp	2009	--	--	--	29	34436	2152	6428	43016
Carp Road	North of 417 - North of Landfill Entrance	2011	2	0	--	--	10189	1707	179	12075
Carp Road	North of 417 - South of Landfill Entrance	2011	0	31	--	--	10189	1707	150	12046
Carp Road	South of 417	2011	--	--	2	--	19756	1440	142	21338
Richardson Road	West of Carp Road	2011	0	--	--	--	4059	868	12	4939
Richardson Road	East of Carp Road	2011	2	--	--	--	6077	349	557	6983

BASELINE TRAFFIC EXCLUDING LANDFILL (2012)

Road ID	Road Segment	Year	Traffic Volume Growth ^[4]		2012 AADT				Day/Night Split ^[1]		Traffic Volume					
			%Growth	#Years	Cars	Medium	Heavy	Total	Day	Night	Day (16h)			Night (8h)		
											Cars	Medium	Heavy	Cars	Medium	Heavy
Landfill	Landfill 2-Way Traffic at Weigh Scale	2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Highway 7	South of 417	2012	2.1%	5	14178	815	1304	16296	90	10	12760	733	1173	1418	81	130
Highway 417	West of Highway 7	2012	2.1%	3	20395	1275	3824	25494	90	10	18356	1147	3442	2040	127	382
Highway 417	West of Carp	2012	1.0%	3	20491	1281	3842	25613	90	10	18442	1153	3458	2049	128	384
Highway 417	East of Carp	2012	1.0%	3	35479	2217	6623	44319	90	10	31932	1996	5960	3548	222	662
Carp Road	North of 417 - North of Landfill Entrance	2012	1.0%	1	10291	1724	181	12196	91	9	9365	1569	165	926	155	16
Carp Road	North of 417 - South of Landfill Entrance	2012	1.0%	1	10291	1724	151	12166	91	9	9365	1569	137	926	155	14
Carp Road	South of 417	2012	1.0%	1	19954	1454	143	21551	92	8	18357	1338	132	1596	116	11
Richardson Road	West of Carp Road	2012	1.0%	1	4100	877	12	4988	91	9	3731	798	11	369	79	1
Richardson Road	East of Carp Road	2012	1.0%	1	6138	353	562	7053	90	10	5524	317	506	614	35	56

Notes:

- [1] Traffic data for the Landfill (2009), Highway 417 (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 C2.5a: ORNAMENT Calculations

Ontario Road Noise Analysis Method for ENvironment and Transportation
version 2.05

Job No. 1100798
Job Name WCEC Ottawa Landfill

Scenario Existing (2011)
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)	Topo-graphy 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 L _{eq} (dBA)
			Autos	Medium	Heavy					Θ ₁	Θ ₂								Elevation Change e (m)	Hor. Dist a (m)	Hor. Dist b (m)				Θ ₁	Θ ₂						
24-Hour																																
PR2	Carp Road - North of 417 - North of Landfill Entrance	24	10189	1707	181	80	0	y	1	-90	90	50	Soft	A	1.1		4.5															60
PR3	Richardson Road - West of Carp Road	24	4059	868	12	80	0	y	1	-90	90	268	Soft	A	0.1		4.5															44
PR4	Richardson Road - West of Carp Road	24	4059	868	12	80	0	y	1	-90	90	39	Soft	A	0.1		4.5															58
PR6	Highway 417 - West of Carp	24	19888	1243	3729	100	0	y	1	-90	90	384	Soft	A	2.0		4.5															55
PR7	Carp Road - South of 417	24	19756	1440	144	80	0	y	1	-90	90	73	Soft	A	0.1		4.5															58
PR9	Highway 417 - West of Highway 7	24	19148	1197	3590	100	0	y	1	-65	70	322	Soft	A	2.0		4.5															55
NR1	Carp Road - North of 417 - North of Landfill Entrance	24	10189	1707	181	80	0	y	1	-90	90	216	Soft	A	1.1		4.5															50.0
	Richardson Road - West of Carp Road	24	4059	868	12	80	0	y	1	-90	90	163	Soft	A	0.1		4.5															47.7
																																52
NR2	Highway 417 - West of Carp	24	19888	1243	3729	100	0	y	1	-75	10	300	Soft	A	2.0		4.5															53.7
	Carp Road - South of 417	24	19756	1440	144	80	0	y	1	-90	90	53	Soft	A	0.1		4.5															60.1
																																61
NR3	Highway 417 - West of Highway 7	24	19148	1197	3590	100	0	y	1	-90	90	302	Soft	A	2.0		4.5															56
NR4	Highway 417 - West of Carp	24	19888	1243	3729	100	0	y	1	-65	65	101	Soft	A	2.0		4.5															63
NR8	Highway 417 - West of Carp	24	19888	1243	3729	100	0	y	1	-65	70	296	Soft	A	2.0		4.5															56
NR9	Richardson Road - East of Carp Road	24	6077	349	559	80	0	y	1	-90	90	27	Soft	A	1.7		4.5															63
RR11	Highway 417 - West of Highway 7	24	19148	1197	3590	100	0	y	1	-90	90	188	Soft	A	2.0		4.5															59
RR12	Highway 417 - West of Highway 7	24	19148	1197	3590	100	0	y	1	-10	70	156	Soft	A	2.0		4.5															57.8
	Richardson Road - West of Carp Road	24	4059	868	12	80	0	y	1	-90	90	32	Soft	A	0.1		4.5															59.1
																																61
RR13	Highway 7 - South of 417	24	12789	735	1176	80	0	y	1	-60	65	625	Soft	A	1.7		4.5															44
RR14	Richardson Road - West of Carp Road	24	4059	868	12	80	0	y	1	-90	90	27	Soft	A	0.1		4.5															60
RR17	Richardson Road - East of Carp Road	24	6077	349	559	80	0	y	1	-90	90	27	Soft	A	1.7		4.5															63



Table C2.5b: ORNAMENT Calculations

Ontario Road Noise Analysis Method for ENvironment and Transportation
version 2.05

Job No. 1100798
Job Name WCEC Ottawa Landfill

Scenario Existing (2011)
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)	Topo-graphy 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-Reciever Distance (m)	Barrier Viewable Angle		No. of Rows of Houses	Density of Houses (% Houses)	Depth of Woods	Adjustment (dB)	Reason For Adjustment	Total Segment L _{eq} (dBA)
			Autos	Medium	Heavy					Θ ₁	Θ ₂								Elevation Change e (m)	Hor. Dist a (m)	Hor. Dist b (m)				Θ ₁	Θ ₂						
24-Hour																																
PR2	Carp Road - North of 417 - North of Landfill Entrance	24	10291	1724	181	80	0	y	1	-90	90	50	Soft	A	1.1		4.5															60
PR3	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	268	Soft	A	0.1		4.5															44
PR4	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	39	Soft	A	0.1		4.5															58
PR6	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-90	90	384	Soft	A	2.0		4.5															55
PR7	Carp Road - South of 417	24	19954	1454	143	80	0	y	1	-90	90	73	Soft	A	0.1		4.5															58
PR9	Highway 417 - West of Highway 7	24	20395	1275	3824	100	0	y	1	-65	70	322	Soft	A	2.0		4.5															55
NR1	Carp Road - North of 417 - North of Landfill Entrance	24	10291	1724	181	80	0	y	1	-90	90	216	Soft	A	1.1		4.5															50.1
	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	163	Soft	A	0.1		4.5															47.7
																																52
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	90	53	Soft	A	0.1		4.5															60.1
																																61
NR3	Highway 417 - West of Highway 7	24	20395	1275	3824	100	0	y	1	-90	90	302	Soft	A	2.0		4.5															56
NR4	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	65	101	Soft	A	2.0		4.5															63
NR8	Highway 417 - West of Carp	24	20491	1281	3842	100	0	y	1	-65	70	296	Soft	A	2.0		4.5															56
NR9	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	-90	90	27	Soft	A	1.7		4.5															63
RR11	Highway 417 - West of Highway 7	24	20395	1275	3824	100	0	y	1	-90	90	188	Soft	A	2.0		4.5															59
RR12	Highway 417 - West of Highway 7	24	20395	1275	3824	100	0	y	1	-10	70	156	Soft	A	2.0		4.5															58.0
	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	32	Soft	A	0.1		4.5															59.1
																																62
RR13	Highway 7 - South of 417	24	14178	815	1304	80	0	y	1	-60	65	625	Soft	A	1.7		4.5															45
RR14	Richardson Road - West of Carp Road	24	4100	877	12	80	0	y	1	-90	90	27	Soft	A	0.1		4.5															60
RR17	Richardson Road - East of Carp Road	24	6138	353	562	80	0	y	1	-90	90	27	Soft	A	1.7		4.5															63

Table C2.6: Summary of ORNAMENT Predicted Sound Levels

WCEC Landfill - Ottawa, Ontario

Notes to Table:

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

Receptor ID	Receptor Description	Receptor Height	ORNAMENT		Change from Existing (dBA)	Existing vs. Baseline
			Existing (2011) (dBA)	Baseline (2012) (dBA)		
24-Hour Leq (24) - MOE Default Limit of 55 dBA						
PR2	Previous 2-storey home Carp Road Central	4.5	60	60	0	Equivalent
PR3	Previous 2-storey home at 569 William Mooney Road NNW	4.5	44	44	0	Equivalent
PR4	Previous 2-storey home on Richardson Side Road NNW	4.5	58	58	0	Equivalent
PR5	Previous 2-storey home at 505 William Mooney Road NW	4.5	Default	Default	0	Equivalent
PR6	Previous 2-storey home at 381 William Mooney Road SW	4.5	55	55	0	Equivalent
PR7	Previous 2-storey home at 2096 Carp Road South	4.5	58	58	0	Equivalent
PR9	Previous 2-storey home David Manchester Road	4.5	55	55	0	Equivalent
NR1	Nearest 2-storey home at 2485 Carp Road North	4.5	52	52	0	Equivalent
NR2	Nearest 2-storey home at 2166 Carp Road East	4.5	61	61	0	Equivalent
NR3	Nearest 2-storey home at 427 William Mooney Road West	4.5	56	56	0	Equivalent
NR4	Nearest 2-storey home at 292 Moonstone Road South	4.5	63	63	0	Equivalent
NR5	1-storey St. Stephen Catholic Elementary School	1.5	Default	Default	0	Equivalent
NR6	Huntleigh United Cemetery	1.5	Default	Default	0	Equivalent
NR7	Lloydalex Park	1.5	Default	Default	0	Equivalent
NR8	2-storey Terrace Youth Residential Services	4.5	56	56	0	Equivalent
NR9	Nearest 2-storey Sensitive Business Operation	4.5	63	63	0	Equivalent
RR10	Representative 2-storey Spruce Ridge Road Central	4.5	Default	Default	0	Equivalent
RR11	Representative 2-storey David Manchester Road North	4.5	59	59	0	Equivalent
RR12	Representative 2-storey David Manchester Road Central	4.5	61	62	0	Equivalent
RR13	Representative 2-storey David Manchester Road South	4.5	44	45	0	Equivalent
RR14	Representative 2-storey William Mooney Road	4.5	60	60	0	Equivalent
RR15	Representative 2-storey Wilbert Cox Drive	4.5	Default	Default	0	Equivalent
RR16	Representative 2-storey Carp Road North	4.5	Default	Default	0	Equivalent
RR17	Representative 2-storey Oak Creek Road	4.5	63	63	0	Equivalent
RR18	Representative 2-storey West Carleton Industrial Park	4.5	Default	Default	0	Equivalent
RR19	Representative 2-storey Timbermere	4.5	Default	Default	0	Equivalent
RR20	Representative 2-storey Stittsville	4.5	Default	Default	0	Equivalent
RR21	Representative 2-storey Jackson Trails	4.5	Default	Default	0	Equivalent
RR22	Representative 2-storey Fairwinds	4.5	Default	Default	0	Equivalent
RR23	Representative 2-storey Arcadia	4.5	Default	Default	0	Equivalent
RR24	Representative 2-storey Kanata West	4.5	Default	Default	0	Equivalent

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

	Hourly Traffic Volume	Total Volume
Carp Road - North of 417 - North of Landfill Entrance	0000	0100
	0200	0300
	0400	0500
	0600	0700
	0800	0900
	1000	1100
	1200	1300
	1400	1500
	1600	1700
	1800	1900
	2000	2100
	2200	2300
	12077	34
	21	13
	24	33
	185	697
	1012	874
	772	688
	706	811
	811	811
	822	976
	1067	878
	539	360
	304	203
	170	77
	0	0
	0	0
	0	0

[illegible]

Road Source	24 hr Leq		Assign distribution	
	value (dBA)	number		
ITE % Traffic Distribution Distribution from CAA Journal 2008	0	1	-4.4	-6.2
	0	2	-6.8	-9.3
	60.1	3	48.4	46.3
Camp Road - North of 417 - North of Landfill Entrance	0	1	-4.4	-6.2
			-9.2	-9.2
			-11.4	-13.2
			-13.2	-9.2
			-6.4	-1.9
			-1.8	2.5
			0.8	3.3
			1.3	-0.4
			1.2	-0.8
			1.6	-0.6
			1.9	-0.5
			1.8	-0.3
			2.0	-0.1
			2.5	2.5
			2.5	3.5
			2.7	3.8
			2.6	3.1
		1.8	2.3	
		0.9	0.0	
		-0.1	-0.9	
		-0.9	-2.2	
		-2.4	-3.2	
		-4.0	-3.2	
		52.0	-3.2	
		57.9	-3.2	
		56.2	-3.2	
		55.4	-3.2	
		52.0	-3.2	
		0.0	-3.2	
		-0.9	-3.2	
		-2.2	-3.2	
		-3.2	-3.2	

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
	48.4	46.3	44.2	46.9	48.3	55.8	61.5	63.2	62.5	62.0	61.5	61.6	62.2	62.2	62.3	63.0	63.4	62.5	60.4	58.7	57.9	56.2	55.4	52.0

Stationary Noise Sources

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

Total of Road + Stationary Sources

Board/Stationary	Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
48.4	46.3	44.2	46.9	48.3	55.8	61.5	63.2	62.5	62.0	61.5	61.6	62.2	62.2	62.3	63.0	63.4	62.5	60.4	58.7	57.9	56.2	55.4	52.0		

Guideline Limits

NPC 205 Leq(1) minimum limit	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
AMBIENT GUIDELINE LIMIT LEQ(1)																								
	48.4	46.3	45.0	46.9	48.3	55.8	61.5	63.2	62.5	62.0	61.5	61.6	62.2	62.2	62.3	63.0	63.4	62.5	60.4	58.7	57.9	56.2	55.4	52.0
	Total Leq(day)												Total Leq(night)											
	73.5												73.5											
	Road Leq(day)												Road Leq(night)											
	73.5												73.5											
	day = 0700 through 2200												night = 2300 through 0600											
	Daytime												Night-time											
	60.4												45.0											
	Evening												Night-time											
	55.4												45.0											

Road Traffic Noise at PR3 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

[illegible][illegible]

Road Source	24 hr Leq value (dBA)	Assign distribution number
ITE % Traffic Distribution	0	1
Distribution from CAA Journal 2008	0	2
Richardson Road - West of Carp Road	44.2	3
	0	1

Total Road Traffic Leg (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
	33.7	28.1	28.9	30.1	30.6	40.5	45.8	47.4	46.4	45.4	47.3	45.0	45.1	45.3	45.1	46.6	47.8	47.1	45.5	43.6	42.8	41.3	41.0	37.2

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

Board/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
33.7	28.1	28.9	30.1	30.6	40.5	45.8	47.4	46.4	45.4	47.3	45.0	45.1	45.3	45.1	46.6	47.8	47.1	45.5	43.6	42.8	41.3	41.0	37.2		

Guideline Limits

AMBIENT GUIDELINE LIMIT LEQ(1)	NPC 205 Leq(1) minimum limit																									
	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300		
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45		
	45.0	45.0	45.0	45.0	45.0	45.0	45.8	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	47.0	47.0	47.0	47.0	45.0		
	Total Leq(day)												57.6		Road Leq(day)										57.6	
	Total Leq(night)												47.8		Road Leq(night)										47.8	
													day = 0700 through 2200												night = 2300 through 0600	
	Daytime												50.0													
	Evening												47.0													
	Night-time												45.0													

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

[illegible][illegible]

Road Source	24 hr Leq value (dBA)	Assign distribution number
ITE % Traffic Distribution	0	1
Distribution from CAA Journal 2008	0	2
Richardson Road - West of Carp Road	57.8	3
	0	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
	47.2	41.6	42.4	43.7	44.2	54.1	59.3	61.0	59.9	59.0	60.8	58.6	58.6	58.8	58.7	60.1	61.3	60.7	59.0	57.1	56.4	54.8	54.5	50.8

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

Board/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
47.2	41.6	42.4	43.7	44.2	54.1	59.3	61.0	59.9	59.0	60.8	58.6	58.6	58.8	58.7	60.1	61.3	60.7	59.0	57.1	56.4	54.8	54.5	50.8		

Guideline Limits

NPC 205 Leq(1) minimum limit	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
	AMBIENT GUIDELINE LIMIT LEQ(1)																							
	47.2	45.0	45.0	45.0	45.0	54.1	59.3	61.0	59.9	59.0	60.8	58.6	58.6	58.8	58.7	60.1	61.3	60.7	59.0	57.1	56.4	54.8	54.5	50.8
	Total Leq(day)												Total Leq(night)											
	71.2												61.3											
	Daytime												Night-time											
	58.6												45.0											
	Evening												Night-time											
	54.5												45.0											
	Night-time												Night-time											
	45.0												45.0											

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																							
Highway 417 - West of Carp		#/N/A																							
		0																							
		0																							
		0																							

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
ITE % Traffic Distribution		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
Distribution from CAA Journal 2008		2	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Highway 417 - West of Carp		3	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 Traffic Distribution		4	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
		5	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%
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Road Source		24 hr Leq		Assign distribution																						
		value (dBA)	number																							
ITE % Traffic Distribution	0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2
Distribution from CAA Journal 2008	0	2	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0
Highway 417 - West of Carp	54.7	4	47.2	44.6	43.4	42.8	44.7	50.7	55.4	56.1	55.8	56.0	56.1	56.5	56.4	56.5	56.7	57.1	57.6	57.2	56.1	54.8	54.1	53.3	51.4	49.5
	0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
47.2	44.6	43.4	42.8	44.7	50.7	55.4	56.1	55.8	56.0	56.1	56.5	56.4	56.5	56.7	57.1	57.6	57.2	56.1	54.8	54.1	53.3	51.4	49.5
Total Road Traffic Leq (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

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
47.2	44.6	43.4	42.8	44.7	50.7	55.4	56.1	55.8	56.0	56.1	56.5	56.4	56.5	56.7	57.1	57.6	57.2	56.1	54.8	54.1	53.3	51.4	49.5
Road+Stationary Leq (1)																							

Guideline Limits

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
NPC 205 Leq(1) minimum limit																							
47.2	45.0	45.0	45.0	45.0	50.7	55.4	56.1	55.8	56.0	56.1	56.5	56.4	56.5	56.7	57.1	57.6	57.2	56.1	54.8	54.1	53.3	51.4	49.5
AMBIENT GUIDELINE LIMIT LEQ(1)																							
Daytime		Total Leq(day)				Road Leq(day)				day = 0700 through 2200				night = 2300 through 0600									
Evening		68.0				68.0				58.5				58.5									
Night-time		58.5				58.5				58.5				58.5									
		51.4				51.4				51.4				51.4									
		45.0				45.0				45.0				45.0									

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																								
Carp Road - South of 417		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
		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
0																										
0																										
0																										

Distribution																											
% Traffic Distribution		number																									
ITE % Traffic Distribution		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
Distribution from CAA Journal 2008		2		1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Carp Road - South of 417		3		0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 Traffic Distribution		4		0.3%	0.2%	0.1%	0.1%	0.3%	1.3%	5.1%	7.5%	7.8%	6.3%	5.0%	5.2%	6.1%	5.7%	5.8%	7.5%	8.7%	8.7%	6.0%	3.6%	2.9%	2.4%	2.6%	0.8%
		5		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%
		6		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

24 hr Leq		Assign distribution																									
Road Source		value (dBA)	number																								
ITE % Traffic Distribution		0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2
Distribution from CAA Journal 2008		0	2	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0
Carp Road - South of 417		57.8	3	46.8	45.2	41.8	42.7	45.9	52.9	58.7	60.4	60.6	59.6	58.7	58.8	59.5	59.2	59.3	60.4	61.0	61.0	59.5	57.2	56.3	55.4	55.7	50.5
		0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2

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
		46.8	45.2	41.8	42.7	45.9	52.9	58.7	60.4	60.6	59.6	58.7	58.8	59.5	59.2	59.3	60.4	61.0	61.0	59.5	57.2	56.3	55.4	55.7	50.5

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
		46.8	45.2	41.8	42.7	45.9	52.9	58.7	60.4	60.6	59.6	58.7	58.8	59.5	59.2	59.3	60.4	61.0	61.0	59.5	57.2	56.3	55.4	55.7	50.5

Guideline Limits

NPC 205 Leq(1) minimum limit		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
		45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
AMBIENT GUIDELINE LIMIT LEQ(1)		46.8	45.2	45.0	45.0	45.9	52.9	58.7	60.4	60.6	59.6	58.7	58.8	59.5	59.2	59.3	60.4	61.0	61.0	59.5	57.2	56.3	55.4	55.7	50.5

Daytime	58.7	Total Leq(day)		71.3	Road Leq(day)		71.3	day = 0700 through 2200	
Evening	55.4	Total Leq(night)		60.8	Road Leq(night)		60.8	night = 2300 through 0600	
Night-time	45.0								

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

	Hourly Traffic Volume	Total Volume
Carp Road - North of 417 - North of Landfill Entrance	0000	0100
	0200	0300
	0400	0500
	0600	0700
	0800	0900
	1000	1100
	1200	1300
	1400	1500
	1600	1700
	1800	1900
	2000	2100
	2200	2300
	12077	34
	21	13
	24	33
	185	697
	1012	874
	772	688
	706	811
	811	811
	822	976
	1067	878
	539	360
	304	203
	170	77
	0	0
	0	0
	0	0

		Distribution																													
		% Traffic Distribution																													
ITE % Traffic Distribution		1	2	3	4	5	6	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
Distribution from CAA Journal 2008		1	2	3	4	5	6	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Camp Road - North of 417 - North of Landfill Entrance		1	2	3	4	5	6	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 Traffic Distribution		1	2	3	4	5	6	0.3%	0.29%	0.1%	0.2%	0.3%	1.5%	5.8%	8.4%	7.2%	6.4%	5.7%	5.8%	6.7%	6.7%	6.8%	8.1%	8.8%	7.3%	4.5%	3.0%	2.5%	1.7%	1.4%	0.6%
		1	2	3	4	5	6	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%
		1	2	3	4	5	6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		1	2	3	4	5	6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Road Source	24 hr Leq		Assign distribution	
	value (dBA)	number		
ITE % Traffic Distribution Distribution from CAA Journal 2008	0	1	-4.4	-6.2
	0	2	-6.8	-9.3
	52.1	3	40.4	38.3
Carp Road - North of 417 - North of Landfill Entrance	0	1	-4.4	-6.2

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
	40.4	38.3	36.2	38.9	40.2	47.7	53.5	55.1	54.5	53.9	53.4	53.5	54.1	54.1	54.2	54.9	55.3	54.5	52.4	50.6	49.9	48.1	47.4	43.9

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

Board/Stationary Leg (t)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
40.4	38.3	36.2	38.9	40.2	47.7	53.5	55.1	54.5	53.9	53.4	53.5	54.1	54.2	54.9	55.3	54.5	52.4	50.6	49.9	48.1	47.4	43.9		

Guideline Limits

NPC 205 Leq(1) minimum limit	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300																																																																							
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45																																																																							
AMBIENT GUIDELINE LIMIT LEQ(1)	45.0	45.0	45.0	45.0	45.0	47.7	53.5	55.1	54.5	53.9	53.4	53.5	54.1	54.1	54.2	54.9	55.3	54.5	52.4	50.6	49.9	48.1	47.4	45.0																																																																							
<table><tr><td>Daytime</td><td>52.4</td><td colspan="22"></td></tr><tr><td>Evening</td><td>47.4</td><td colspan="22"></td></tr><tr><td>Night-time</td><td>45.0</td><td colspan="22"></td></tr></table>																								Daytime	52.4																							Evening	47.4																							Night-time	45.0																						
Daytime	52.4																																																																																														
Evening	47.4																																																																																														
Night-time	45.0																																																																																														
Total Leq(day)												Road Leq(day)												day = 0700 through 2200																																																																							
65.5												65.5												night = 2300 through 0600																																																																							
Total Leq(night)												Road Leq(night)												55.4																																																																							
55.4												55.4																																																																																			

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																							
Highway 417 - West of Carp		#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
0		0																							
0		0																							
0		0																							

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
ITE % Traffic Distribution		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
Distribution from CAA Journal 2008		2	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Highway 417 - West of Carp		3	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 Traffic Distribution		4	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
		5	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%
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

24 hr Leq		Assign distribution	
Road Source	value (dBA)	number	
ITE % Traffic Distribution	0	1	-4.4
	0	2	-6.8
	0	4	-9.3
	61.0	4	-10.6
Distribution from CAA Journal 2008	0	1	-11.4
	0	2	-13.2
	0	4	-9.2
	61.0	4	-6.4
Highway 417 - West of Carp	0	1	-1.9
	0	2	2.5
	0	4	3.3
	61.0	4	-0.4
	0	1	-0.8
	0	2	-0.6
	0	4	-0.5
	61.0	4	-0.3
	0	1	-0.1
	0	2	2.5
	0	4	3.5
	61.0	4	3.8
	0	1	3.1
	0	2	2.3
	0	4	0.0
	61.0	4	-0.9
	0	1	-2.2
	0	2	-3.2
	0	4	-4.0
	61.0	4	-5.8
	0	1	57.7
	0	2	55.8
	0	4	-2.2
	61.0	4	-3.2

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
53.5	51.0	49.7	49.1	51.1	57.1	61.8	62.4	62.2	62.3	62.4	62.8	62.8	62.9	63.1	63.5	64.0	63.6	62.4	61.2	60.4	59.7	57.7	55.8
Total Road Traffic Leq (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

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
53.5	51.0	49.7	49.1	51.1	57.1	61.8	62.4	62.2	62.3	62.4	62.8	62.8	62.9	63.1	63.5	64.0	63.6	62.4	61.2	60.4	59.7	57.7	55.8
Road+Stationary Leq (1)																							

Guideline Limits

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
NPC 205 Leq(1) minimum limit																							
53.5	51.0	49.7	49.1	51.1	57.1	61.8	62.4	62.2	62.3	62.4	62.8	62.8	62.9	63.1	63.5	64.0	63.6	62.4	61.2	60.4	59.7	57.7	55.8
AMBIENT GUIDELINE LIMIT LEQ(1)																							
Total Leq(day)												day = 0700 through 2200											
74.4												74.4											
Road Leq(day)												Road Leq(night)											
64.8												night = 2300 through 0600											
Total Leq(night)												Total Leq											
64.8												64.8											
Daytime												Evening											
62.2												Night-time											
57.7												49.1											

Road Traffic Noise at NR3 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume
0000	0100
0100	0200
0200	0300
0300	0400
0400	0500
0500	0600
0600	0700
0700	0800
0800	0900
0900	1000
1000	1100
1100	1200
1200	1300
1300	1400
1400	1500
1500	1600
1600	1700
1700	1800
1800	1900
1900	2000
2000	2100
2100	2200
2200	2300

[illegible]

Road Source	24 hr Leq value (dBA)	Assign distribution number
ITE % Traffic Distribution	0	1
Distribution from CAA Journal 2008	0	2
Highway 417 - West of Highway 7	56.3	4
	0	1

Total Road Traffic Leg (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	48.8	46.2	45.0	44.4	46.3	52.4	57.0	57.7	57.4	57.6	57.7	58.1	58.0	58.1	58.4	58.7	59.3	58.9	57.7	56.4	55.7	55.0	53.0	51.1

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

Board/Stationary	Leq (1)	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
48.8	46.2	45.0	44.4	46.3	52.4	57.0	57.7	57.4	57.6	57.7	58.1	58.0	58.1	58.4	58.7	59.3	58.9	57.7	56.4	55.7	55.0	53.0	51.1		

Guideline Limits

NPC 205 Leq(1) minimum limit	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
AMBIENT GUIDELINE LIMIT LEQ(1)	48.8	46.2	45.0	45.0	46.3	52.4	57.0	57.7	57.4	57.6	57.7	58.1	58.0	58.1	58.4	58.7	59.3	58.9	57.7	56.4	55.7	55.0	53.0	51.1
Daytime Evening Night-time 57.4 53.0 45.0 Total Leq(day) Total Leq(night) 69.6 60.1 Road Leq(day) Road Leq(night) 69.6 60.1 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																							
Highway 417 - West of Carp		#/N/A																							
		0																							
		0																							
		0																							

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
ITE % Traffic Distribution		1	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Distribution from CAA Journal 2008		2	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 - West of Carp		3	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
Highway 417 Traffic Distribution		4	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%
		5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Road Source		24 hr Leq		Assign distribution																							
		value (dBA)	number																								
ITE % Traffic Distribution	0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2	
	0	2	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0	
	55.9	4	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	
Distribution from CAA Journal 2008																											
Highway 417 - West of Carp	0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2	

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

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

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
48.4	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
Road+Stationary Leq (1)																							

Guideline Limits

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
NPC 205 Leq(1) minimum limit																							
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
AMBIENT GUIDELINE LIMIT LEQ(1)																							
				Total Leq(day)				Road Leq(day)				day = 0700 through 2200				Road Leq(night)				night = 2300 through 0600			
				69.2				69.2				69.2				59.7				59.7			
				57.0				52.6															
				Evening				Night-time															
				45.0																			
				Daytime																			
				52.6																			
				Night-time																			
				45.0																			

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																									
Richardson Road - East of Carp Road		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300		
	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A		
	0																										
	0																										
		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	
ITE % Traffic Distribution		1	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%	
Distribution from CAA Journal 2008		2	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%	
Richardson Road - East of Carp Road		3	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	
Highway 417 Traffic Distribution		4	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%	
		5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4
Total Road Traffic Leq (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

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4

Guideline Limits

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
NPC 205 Leq(1) minimum limit																							
56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4
AMBIENT GUIDELINE LIMIT LEQ(1)																							
Total Leq(day)												day = 0700 through 2200											
76.8												Road Leq(day)											
61.0												Road Leq(night)											
51.9												night = 2300 through 0600											
Night-time																							

Road Traffic Noise at RR1 1 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																							
Highway 417 - West of Highway 7	#/N/A	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
	0	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
	0	0																							
	0	0																							
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
ITE % Traffic Distribution	1	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%
Distribution from CAA Journal 2008	2	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%
Highway 417 - West of Highway 7	3	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A
Highway 417 Traffic Distribution	4	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%
	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Road Source																									
24 hr Leq																									
Assign distribution																									
value (dBA)																									
number																									
ITE % Traffic Distribution	0	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2
Distribution from CAA Journal 2008	0	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0
Highway 417 - West of Highway 7	59.5	52.0	49.4	48.2	47.6	49.5	55.6	60.2	60.9	60.6	60.8	60.9	61.3	61.2	61.3	61.5	61.9	62.4	62.0	60.9	59.6	58.9	58.1	56.2	54.3
	0	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2

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
52.0	49.4	48.2	47.6	49.5	55.6	60.2	60.9	60.6	60.8	60.9	61.3	61.2	61.3	61.5	61.9	62.4	62.0	60.9	59.6	58.9	58.1	56.2	54.3

Guideline Limits

NPC 205 Leq(1) minimum limit

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45

AMBIENT GUIDELINE LIMIT LEQ(1)

52.0	49.4	48.2	47.6	49.5	55.6	60.2	60.9	60.6	60.8	60.9	61.3	61.2	61.3	61.5	61.9	62.4	62.0	60.9	59.6	58.9	58.1	56.2	54.3
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Daytime	60.6
Evening	56.2
Night-time	47.6

Total Leq(day)

72.8

Road Leq(day)

72.8

Total Leq(night)

63.3

Road Leq(night)

63.3

day = 0700 through 2200

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
0100	0200
0200	0300
0300	0400
0400	0500
0500	0600
0600	0700
0700	0800
0800	0900
0900	1000
1000	1100
1100	1200
1200	1300
1300	1400
1400	1500
1500	1600
1600	1700
1700	1800
1800	1900
1900	2000
2000	2100
2100	2200
2200	2300

[illegible]

Road Source	24 hr Leq value (dBA)	Assign distribution number
ITE % Traffic Distribution	0	1
Distribution from CAA Journal 2008	0	2
Highway 417 - West of Highway 7	61.6	4
	0	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
	54.1	51.5	50.3	49.7	51.7	57.7	62.4	63.0	62.8	62.9	63.0	63.4	63.4	63.4	63.7	64.0	64.6	64.2	63.0	61.8	61.0	60.3	58.3	56.4

Stationary Noise Sources

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

Total of Road + Stationary Sources

Board/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
	54.1	51.5	50.3	49.7	51.7	57.7	62.4	63.0	62.8	62.9	63.0	63.4	63.4	63.4	63.4	63.7	64.0	64.6	64.2	63.0	61.8	61.0	60.3	58.3	56.4

Guideline Limits

NPC 205 Leq(1) minimum limit	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300														
	45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45														
	AMBIENT GUIDELINE LIMIT LEQ(1)																																					
	54.1	51.5	50.3	49.7	51.7	57.7	62.4	63.0	62.8	62.9	63.0	63.4	63.4	63.4	63.7	64.0	64.6	64.2	63.0	61.8	61.0	60.3	58.3	56.4														
	Total Leq(day)												75.0	Road Leq(day)												75.0	day = 0700 through 2200											
	Total Leq(night)												65.4	Road Leq(night)												65.4	night = 2300 through 0600											
	Daytime		62.8																																			
	Evening		58.3																																			
	Night-time		49.7																																			

Road Traffic Noise at RR13 - Based on 24-hr Measurements

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume	Total Volume
0000	0100
0100	0200
0200	0300
0300	0400
0400	0500
0500	0600
0600	0700
0700	0800
0800	0900
0900	1000
1000	1100
1100	1200
1200	1300
1300	1400
1400	1500
1500	1600
1600	1700
1700	1800
1800	1900
1900	2000
2000	2100
2100	2200
2200	2300

[illegible]

Road Source	24 hr Leq value (dBA)	Assign distribution number
ITE % Traffic Distribution	0	1
Distribution from CAA Journal 2008	0	2
Highway 7 - South of 417	44.9	2
	0	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
	38.1	35.6	34.3	33.5	34.3	38.5	43.1	45.8	46.9	46.2	46.1	46.5	46.8	46.7	46.9	47.4	47.7	47.6	46.7	45.8	44.8	44.0	42.5	40.9

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

Board/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
Board/Stationary	38.1	35.6	34.3	33.5	34.3	38.5	43.1	45.8	46.9	46.2	46.1	46.5	46.8	46.7	46.9	47.4	47.7	47.6	46.7	45.8	44.8	44.0	42.5	40.9	

Guideline Limits

[illegible]

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																										
Richardson Road - West of Carp Road	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300				
	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			
	0																											
	0																											
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		
ITE % Traffic Distribution		1	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%		
Distribution from CAA Journal 2008		2	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%		
Richardson Road - West of Carp Road		3	0.4%	0.1%	0.1%	0.2%	0.2%	1.8%	5.9%	8.7%	6.8%	5.5%	8.4%	5.0%	5.0%	5.3%	5.1%	7.2%	9.4%	8.1%	5.5%	3.6%	3.0%	2.1%	2.0%	0.8%		
Highway 417 Traffic Distribution		4	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%		
		5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
Road Source																												
24 hr Leq		Assign distribution																										
value (dBA)		number																										
ITE % Traffic Distribution		0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2	
Distribution from CAA Journal 2008		0	2	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0	
Richardson Road - West of Carp Road		60.3	3	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	
		0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2	

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

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
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

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45
NPC 205 Leq(1) minimum limit																							

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
AMBIENT GUIDELINE LIMIT LEQ(1)																							

Daytime	Evening	Night-time	Total Leq(day)	Road Leq(day)	day = 0700 through 2200
61.1	57.0	45.0	73.7	73.7	night = 2300 through 0600
			Total Leq(night)	Road Leq(night)	
			63.9	63.9	

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

WCEC Ottawa Landfill - Project # 1100798

Road Noise Sources

Hourly Traffic Volume		Total Volume																									
Richardson Road - East of Carp Road		0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300		
		#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A			
		0																									
		0																									
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	
ITE % Traffic Distribution		1	1.5%	1.0%	0.5%	0.3%	0.2%	0.5%	2.7%	7.4%	9.0%	3.8%	3.5%	3.6%	3.7%	3.9%	4.1%	7.4%	9.3%	10.0%	8.5%	7.0%	4.2%	3.4%	2.5%	2.0%	
Distribution from CAA Journal 2008		2	0.87%	0.49%	0.36%	0.30%	0.36%	0.95%	2.75%	5.05%	6.55%	5.62%	5.50%	6.04%	6.48%	6.26%	6.60%	7.41%	7.82%	7.65%	6.27%	5.12%	4.09%	3.41%	2.41%	1.67%	
Richardson Road - East of Carp Road		3	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	#/N/A	
Highway 417 Traffic Distribution		4	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%	
		5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
		6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Road Source																											
24 hr Leq		Assign distribution																									
value (dBA)		number																									
ITE % Traffic Distribution		0	1																								
Distribution from CAA Journal 2008		0	2	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2
Richardson Road - East of Carp Road		63.4	2	-6.8	-9.3	-10.6	-11.4	-10.6	-6.4	-1.8	0.8	2.0	1.3	1.2	1.6	1.9	1.8	2.0	2.5	2.7	2.6	1.8	0.9	-0.1	-0.9	-2.4	-4.0
		0	1	56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4
		0	1	-4.4	-6.2	-9.2	-11.4	-13.2	-9.2	-1.9	2.5	3.3	-0.4	-0.8	-0.6	-0.5	-0.3	-0.1	2.5	3.5	3.8	3.1	2.3	0.0	-0.9	-2.2	-3.2

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4
Total Road Traffic Leq (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
56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4

Guideline Limits

NPC 205 Leq(1) minimum limit

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
45	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	47	47	47	47	45

AMBIENT GUIDELINE LIMIT LEQ(1)

56.6	54.1	52.7	51.9	52.7	57.0	61.6	64.2	65.3	64.7	64.6	65.0	65.3	65.1	65.4	65.9	66.1	66.0	65.1	64.3	63.3	62.5	61.0	59.4

Daytime	64.2	Total Leq(day)	76.8	Road Leq(day)	76.8	day = 0700 through 2200
Evening	61.0	Total Leq(night)	66.1	Road Leq(night)	66.1	night = 2300 through 0600
Night-time	51.9					

Table C2.8: Road Traffic Noise Summary

WCEC Ottawa Landfill - Project # 1100798

Notes to Table:

1. Applicable worst-case NPC-205 / NPC-232 sound level limit.

Receptor ID	Receptor Description	Receptor Height	ORNAMENT Predicted Sound Levels	Higher of MOE Default Limit or ORNAMENT ^[1]
			Day (dBA)	Day (dBA)
1-Hour Leq (1)				
PR2	Previous 2-storey home Carp Road Central	4.5	60	60
PR3	Previous 2-storey home at 569 William Mooney Road NNW	4.5	50	50
PR4	Previous 2-storey home on Richardson Side Road NNW	4.5	59	59
PR5	Previous 2-storey home at 505 William Mooney Road NW	4.5	Default	55
PR6	Previous 2-storey home at 381 William Mooney Road SW	4.5	56	56
PR7	Previous 2-storey home at 2096 Carp Road South	4.5	59	59
PR9	Previous 2-storey home David Manchester Road	4.5	56	56
NR1	Nearest 2-storey home at 2485 Carp Road North	4.5	52	52
NR2	Nearest 2-storey home at 2166 Carp Road East	4.5	61	61
NR3	Nearest 2-storey home at 427 William Mooney Road West	4.5	56	56
NR4	Nearest 2-storey home at 292 Moonstone Road South	4.5	63	63
NR5	1-storey St. Stephen Catholic Elementary School	1.5	Default	55
NR6	Huntleigh United Cemetery	1.5	Default	55
NR7	Lloydalex Park	1.5	Default	55
NR8	2-storey Terrace Youth Residential Services	4.5	56	56
NR9	Nearest 2-storey Sensitive Business Operation	4.5	63	63
RR10	Representative 2-storey Spruce Ridge Road Central	4.5	Default	55
RR11	Representative 2-storey David Manchester Road North	4.5	61	61
RR12	Representative 2-storey David Manchester Road Central	4.5	63	63
RR13	Representative 2-storey David Manchester Road South	4.5	50	50
RR14	Representative 2-storey William Mooney Road	4.5	61	61
RR15	Representative 2-storey Wilbert Cox Drive	4.5	Default	55
RR16	Representative 2-storey Carp Road North	4.5	Default	55
RR17	Representative 2-storey Oak Creek Road	4.5	64	64
RR18	Representative 2-storey West Carleton Industrial Park	4.5	Default	55
RR19	Representative 2-storey Timbermere	4.5	Default	55
RR20	Representative 2-storey Stittsville	4.5	Default	55
RR21	Representative 2-storey Jackson Trails	4.5	Default	55
RR22	Representative 2-storey Fairwinds	4.5	Default	55
RR23	Representative 2-storey Arcadia	4.5	Default	55
RR24	Representative 2-storey Kanata West	4.5	Default	55

Table C2.9: Summary of Cumulative Baseline Sound Levels

WCEC Ottawa Landfill - Project # 1100798

Notes to Table:

1. Applicable worst-case NPC-205 / NPC-232 sound level limit.

Receptor ID	Receptor Description	Receptor Height	Noise Impacts from Stationary Sources	Noise Impacts from Roadway Sources	Cumulative Baseline Sound Levels
			Day (dBA)	Day (dBA)	Day (dBA)
1-Hour Leq (1)					
PR2	Previous 2-storey home Carp Road Central	4.5	66	60	67
PR3	Previous 2-storey home at 569 William Mooney Road NNW	4.5	46	50	52
PR4	Previous 2-storey home on Richardson Side Road NNW	4.5	44	59	59
PR5	Previous 2-storey home at 505 William Mooney Road NW	4.5	48	55	56
PR6	Previous 2-storey home at 381 William Mooney Road SW	4.5	52	56	57
PR7	Previous 2-storey home at 2096 Carp Road South	4.5	54	59	60
PR9	Previous 2-storey home David Manchester Road	4.5	47	56	57
NR1	Nearest 2-storey home at 2485 Carp Road North	4.5	56	52	58
NR2	Nearest 2-storey home at 2166 Carp Road East	4.5	57	61	63
NR3	Nearest 2-storey home at 427 William Mooney Road West	4.5	49	56	57
NR4	Nearest 2-storey home at 292 Moonstone Road South	4.5	57	63	64
NR5	1-storey St. Stephen Catholic Elementary School	1.5	42	55	55
NR6	Huntleigh United Cemetery	1.5	47	55	56
NR7	Lloydalex Park	1.5	44	55	55
NR8	2-storey Terrace Youth Residential Services	4.5	54	56	58
NR9	Nearest 2-storey Sensitive Business Operation	4.5	56	63	64
RR10	Representative 2-storey Spruce Ridge Road Central	4.5	33	55	55
RR11	Representative 2-storey David Manchester Road North	4.5	38	61	61
RR12	Representative 2-storey David Manchester Road Central	4.5	42	63	63
RR13	Representative 2-storey David Manchester Road South	4.5	51	50	54
RR14	Representative 2-storey William Mooney Road	4.5	46	61	61
RR15	Representative 2-storey Wilbert Cox Drive	4.5	44	55	55
RR16	Representative 2-storey Carp Road North	4.5	44	55	55
RR17	Representative 2-storey Oak Creek Road	4.5	51	64	64
RR18	Representative 2-storey West Carleton Industrial Park	4.5	54	55	57
RR19	Representative 2-storey Timbermere	4.5	54	55	57
RR20	Representative 2-storey Stittsville	4.5	47	55	56
RR21	Representative 2-storey Jackson Trails	4.5	47	55	56
RR22	Representative 2-storey Fairwinds	4.5	43	55	55
RR23	Representative 2-storey Arcadia	4.5	43	55	55
RR24	Representative 2-storey Kanata West	4.5	38	55	55

Draft Work Plan



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

Submitted by:
Waste Management of Canada Corporation

June 2010

DRAFT WORK PLAN FOR ENVIRONMENTAL ASSESSMENT

1.0 INTRODUCTION

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

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

2.0 EA APPROACH

2.1 Phased Approach

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

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

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

2.2 Environmental Components

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

Environmental Components

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

Technical Criteria

- Site Design and Operations



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2.3 Study Areas

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

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

2.4 Time Frame

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

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

3.0 WORK SCOPE

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

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

3.1.1 Task 1 - Identifying Alternative Methods for New Landfill Footprint

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

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

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



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

3.1.2 Task 2 - Describing Environment Potentially Affected

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

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

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

3.1.4 Task 4 - Predict Environmental Effects for Each Alternative

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

3.2 Phase 2 - Assess Effects and Identify Preferred Alternative

3.2.1 Task 5 - Refine Mitigation Measures and Determine Net Effects

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

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

3.2.2 Task 6 - Compare Alternatives

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

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

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

3.2.3 Task 7 - Identify Preferred Alternative and Detailed Assessment

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

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

3.2.4 Task 8 – Conduct Cumulative Effects Assessment

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

3.3 Phase 3 - Prepare and Submit EA Documentation

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

3.3.1 Task 9 - Prepare EA Reports/TSDs

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

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

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

3.3.3 Task 11 - Submit Final EA Report to MOE

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



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3.3.4 Task 12 - Technical Support During Review Period

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

3.4 Consultation

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

3.4.1 Task 13 – EA Open House #1

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

3.4.2 Task 14 - Workshop #1

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

3.4.3 Task 15 - Open House #2

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

3.4.4 Task 16 – Workshop #2

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

3.4.4 Task 17 - Open House #3

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

3.4.5 Task 18 – Workshop #3

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

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3.4.5 Task 19 – Open House #4

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

3.4.5 Task 20 – Open House #5

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

3.4.6 Task 21 - Roundtable Discussions and Special Technical Sessions

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

3.4.7 Task 22 – Aboriginal Consultation

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

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

Consultation activities associated with Aboriginal communities will include the following:

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

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

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

3.4.8 Task 23 - Website, EA Newsletters and Email Blasts

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



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3.4.9 Task 24 - Agency Coordination and Meetings

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

4.0 SCHEDULE

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

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

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

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Attachment 2 - Atmosphere Work Plan

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

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

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

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

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

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

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

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

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

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

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

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TABLE 1-2 – CRITERIA, INDICATORS AND DATA SOURCES

Component	Criteria	Rationale	Indicators	Data Sources
Atmospheric Environment	Air quality	Waste disposal facilities and associated operations can produce gases containing contaminants that degrade air quality if they are emitted to the atmosphere. Construction and operation activities at a waste disposal facility can lead to increased levels of particulates (dust) in the air. Changes in air quality may affect human health.	- Modelled air concentrations of indicator compounds (organics, particulates) - Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions)	- Environment Canada or MOE hourly meteorological data and climate normals - Site studies, reports and air quality monitoring data - Aerial photographic mapping and field reconnaissance - Air quality assessment
	Noise	Construction and operation activities at the facility may result in increased noise levels resulting from the site.	- Predicted site-related noise - Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions)	- Site equipment noise measurements - Aerial photographic mapping and field reconnaissance - Noise prediction assessment
	Odour	Continued operation of the waste disposal facility may result in changes in the degree and frequency of odours from the site	- Predicted odour emissions - Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions)	- Published and odour source data (including previous reports completed on site) - Environment Canada or MOE hourly meteorological data - Odour complaints history - Aerial photographic mapping and field reconnaissance - Odour assessment

