2009 ANNUAL REPORT
WASTE MANAGEMENT
OTTAWA LANDFILL

PREPARED FOR:

WASTE MANAGEMENT OF CANADA CORPORATION
2301 Carp Road, R.R. # 3
Carp (Ottawa), Ontario
K0A 1L0

WASTE MANAGEMENT

WESA
A Better Environment For Business

FINAL REPORT

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Ottawa District Office
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Attention: Mr. Remi Godin, P.Eng. Senior District Engineer
Eastern Canada

In providing the 2009 Annual Report for the Ottawa Landfill, Waste Management of Canada Corporation wishes to confirm that it considers some of the information contained in the report to be commercially sensitive. The release of such information could significantly prejudice the competitive position of Waste Management and interfere with the relations of Waste Management in the waste marketplace. As such, Waste Management expects that it will be contacted for its approval prior to any release of the report.

EXECUTIVE SUMMARY

This report provides a summary and analysis of the operational activities and the environmental monitoring program at the Waste Management of Canada, Ottawa Landfill Site during the period from January 1 to December 31, 2009. The report is prepared in accordance with Condition 4.2 (Annual Report) of Certificate of Approval A461002 for the Ottawa Landfill and in conformance with the Environmental Monitoring Plan approved by MOE in April 2008.

Environmental Monitoring

The environmental monitoring program included water quality analyses for leachate, groundwater and surface water on and around the site, as well as landfill gas monitoring across the property.

The groundwater flow directions and the calculated hydraulic gradients interpreted from the 2009 monitoring program are consistent with the results obtained in previous years, with no significant changes being noted. The direction of groundwater flow in the overburden/shallow bedrock is predominantly towards the north-northeast. The predominant direction of groundwater flow in the deep bedrock unit is towards the northeast. Groundwater elevations in the overburden/shallow bedrock unit are depressed in the area along the Carp Road boundary of the site as a result of the purge well pumping system's operation.

Potential groundwater impacts from the WM Ottawa Landfill are assessed using a suite of parameters known as the Assessment Parameters. Exceedances of five general water quality Assessment Parameter limits (COD, ammonia, nitrate, TKN and potassium), and five volatile organic compounds (trichloroethylene, vinyl chloride, 1,1-dichloroethane, cis-1,2-dichloroethylene and chloroethane) were observed during the 2009 reporting period in monitoring wells located downgradient from the landfill footprint.

Generally, groundwater concentrations in monitoring wells downgradient of the purge well system remain stable or have decreased from peak concentrations since commissioning of the forcemain in November 2001. The overall improvement in groundwater and surface water quality indicates that the purge well system is effective in reducing the downgradient groundwater impacts. Further evaluation of groundwater conditions is recommended in two areas: east of the landfill on the CAZ and MTO properties (W48-2, W56-2 and W79), and north of the landfill at W64.

The surface water quality in the ditch north of Highway 417, to the east of the landfill site has shown improvements since the start of purge well system operations. Parameters that exceeded the PWQO during this reporting period included iron and boron. The drainage ditch receives runoff from the highway and potential sources other than the landfill site, which may be contributing to the observed concentrations of these and other parameters.

Landfill gas monitoring results in gas probes installed around the site remain at low levels. No exceedances of the trigger limit for combustible gas readings were observed in 2009.

Site Operations

Approximately 90,032 tonnes of solid waste was accepted at the WM Ottawa Landfill during the 12-month period from January 1 to December 31, 2009. Approximately 19,229 tonnes of solid waste (excluding recyclable products and cover material) was disposed at the landfill during the reporting period. As of December 31, 2009, Waste Management estimates that there is available airspace remaining for approximately 75,589 tonnes of waste to be disposed at the site.

In 2009, the purge well system was upgraded to improve pumping rates and the effectiveness of hydraulic capture along the eastern boundary of the site. The small-diameter individual discharge pipes were replaced with a common discharge header, and the electrical system was upgraded. Individual sampling ports and flowmeters were installed at each purge well to permit sampling and flow monitoring.

The landfill gas extraction system at the landfill was expanded during this reporting period. At the end of 2009, the gas extraction system included a total of 177 vertical wells on and around the existing landfill and 5 vertical wells around the closed south cell.

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1.0 INTRODUCTION

This report provides a summary and analysis of environmental monitoring and operational activities at the Waste Management of Canada (WM) Ottawa Landfill site during the 2009 reporting period (January 1 to December 31). The report is prepared in accordance with Condition 4.2 of Certificate of Approval A461002 for the landfill site.

The scope and rationale of the environmental monitoring program are described in the Environmental Monitoring Plan (EMP), which was approved by the MOE in April 2008. The current EMP represents an update of the previous version approved in 1995. Modifications were made to the monitoring program to reflect the addition of a Contaminant Attenuation Zone (CAZ) to the landfill site. In October 2008, a subsequent amendment was made to the EMP to include four groundwater monitoring locations east of Carp Road in the monitoring program.

The methodology and results of the water quality monitoring program are presented in Sections 2.0 and 3.0, respectively. A summary of site operations and a volumetric evaluation are presented in Section 4.0. A review of environmental projects undertaken at the site during the past year is also presented in Section 4.0.

The WM Ottawa Landfill is comprised of a 35 hectare landfill area within a 104 hectare landfill site located on Lots 3 and 4, Concession III of the former Township of West Carleton (Geographic Township of Huntley) in the City of Ottawa, Ontario (see Figure 1). An additional 29.02 hectares of land east of the landfill site is designated as a Contaminant Attenuation Zone (CAZ). The landfill site is licensed to receive domestic, commercial and non-hazardous solid industrial wastes. The landfill site layout, including all of the 2009 monitoring locations, is shown on Figure 2. Note that the topographic contours and features shown on Figure 2 reflect the conditions on the landfill site and surrounding area established from digital mapping based on a flyover on June 29, 2007. Updated topographic contours of the landfill site, from aerial photography completed on April 27, 2009, are presented in Section 4.0 (Site Operations).

2.0 METHODOLOGY

The 2009 environmental monitoring programs were all completed in accordance with the approved EMP. All of the monitoring and sampling activities were completed by trained WESA personnel experienced in WM protocols and quality assurance techniques.

2.1 PRE-SAMPLING PROCEDURES

Prior to the start of each sampling event, the following procedures were completed:

- Sample bottles were ordered and sample sets were checked and labelled;
- Sufficient extra sample sets were included to cover QA/QC sampling requirements;
- Sample bottle preservative requirements were checked;
- Instruments used to measure field parameters were checked and calibrated (instrument calibrations and/or checks were performed on a regular basis and records of calibration are kept on file);
- All sampling team members provided written verification of their knowledge of, and commitment to WM procedures, protocols and quality assurance techniques.

2.2 GROUNDWATER MONITORING

Groundwater monitoring locations in the vicinity of the Ottawa Landfill site are divided into the following three categories:

- P series monitors - screened above bedrock (in the overburden layer);
- W series monitors - screened within the bedrock unit or across the overburden-bedrock interface;
- PW series monitors - either screened across the overburden-bedrock interface or within shallow fractured bedrock (the PW designation indicates that these wells are part of the purge well system).

Water Levels

All water level measurements were obtained using an electronic water level tape that was decontaminated prior to use at each location. Water level measurements are referenced to the top of the well casing at each monitoring well location. Surface water elevations at monitoring locations S1, S2 and S3 (in the ditch on the north side of Highway 417) are referenced to staff gauges installed at each monitoring location. Surface water elevations at the Pond and Retention Pond (S17) locations on the landfill site were surveyed using a level.

A complete set of water level data, including all operational monitoring wells located on and around the Ottawa Landfill site was collected on April 28, 2009. Groundwater and surface water elevation data are plotted on Figures 3 and 4 for the overburden/shallow bedrock and deep bedrock units, respectively.

Water levels are also collected on a monthly basis at 33 selected monitoring wells and surface water locations to assess the effectiveness of the purge well system.

Well Purging

All P and W series monitoring wells were purged and sampled using dedicated positive displacement foot valve pumps and polyethylene tubing. Well purging methodology was based on previous knowledge of the yield of each monitoring well as discussed below:

- Flow cell techniques were used for high yield wells that could provide sufficient water for continual pumping. At these locations, purging continued until the pH, temperature and conductivity had stabilized (using a multi-meter/flow cell). All readings were recorded on WM field information forms.
- Low yield monitoring wells were pumped until at least one borehole volume had been removed by pumping the water level down to the top of the screen and then allowing the well to recover until additional water could be removed. Field parameters were obtained from the available purge water.
- The PW series purge wells are continuously pumping and the flow from each well can be sampled from individual numbered sampling ports located in the on-site sampling and control building.

Groundwater Field Parameters

Field parameters were measured at each groundwater monitoring location with sufficient water using a YSI model 556 MPS multi-meter. The instrument was calibrated and/or checked on a daily basis for pH, conductivity and dissolved oxygen (DO). As discussed above, all records of calibration are kept on file.

Irrespective of the yield characteristics of each well, an attempt was made at each location to collect basic field parameters (pH, temperature and conductivity).

Field parameters and other site-specific information were recorded on WM field information forms at the time of data collection. Field information forms were collated, checked and filed according to WM quality assurance procedures. Any deviations from WM approved methodology and protocols were documented on the field information forms along with a rationale explaining the deviation and all subsequent actions taken.

Groundwater Sampling

All groundwater samples were collected in accordance with WM and standard industry protocols. Samples were collected in new laboratory-provided sample containers. Upon collection, samples were placed immediately into a cooler with ice. All samples were delivered to Maxxam Analytics Inc. in Ottawa, Ontario for analysis under strict chain of custody procedures. Holding times for all samples conformed to laboratory defined requirements. Analytical requirements were all cross-referenced to the current WM/Maxxam laboratory master list.

Details of the groundwater monitoring program, including locations, frequency and analytical requirements, are presented in Table 1. Monitoring well locations are indicated on Figure 2.

2.3 SURFACE WATER MONITORING

All surface water samples were collected in accordance with WM and standard industry protocols. Upon collection, samples were placed immediately into a cooler with ice. All samples were delivered to Maxxam Analytics Inc. in Ottawa, Ontario for analysis under strict chain of custody procedures. Holding times for all samples conformed to laboratory defined requirements. Analytical requirements were all cross-referenced to the current WM/Maxxam laboratory master list.

Details of the surface water monitoring program, including locations, frequency and analytical requirements, are presented in Table 2. Surface water monitoring locations are indicated on Figure 2.

Surface Water Field Parameters

Field parameters were measured at each surface water location using a YSI model 556 MPS multi-meter. Calibration procedures were all completed according to WM protocols.

Field measurements of pH, temperature, conductivity and dissolved oxygen were taken from the surface water bodies at the time of sample collection. Estimates of surface water flow were recorded, where possible. Field parameters and other site-specific information were recorded on WM field information forms at the time of data collection. Field information forms were collated, checked and filed according to WM quality assurance procedures.

2.4 ANALYTICAL REQUIREMENTS

All groundwater samples were analyzed for the site-specific parameter list as specified in the Environmental Monitoring Program:

Primary Indicator List (PIL) - Assessment Parameters	Secondary Indicator List (SIL)	
Ammonia (total)	Alkalinity	Conductivity
Boron	pH	Cyanide (free)
Chemical oxygen demand	Hardness	Dissolved organic carbon
Nitrate	Total dissolved solids	Iron
Nitrite	Barium	Magnesium
Potassium	Calcium	Manganese
Total kjeldahl nitrogen	Cadmium	Sodium
	Chloride	Sulphate
	Chromium (total)	Lead

In addition, groundwater samples from W44-3, W48-2, [redacted] W56-2, W72, W79, W80, W81 [redacted] were analyzed for the following volatile organic compounds (VOCs):

Volatile Organic Compound (VOC) List		
Primary Indicator List (PIL) – Assessment Parameters	Secondary Indicator List (SIL)	
Benzene	Bromodichloromethane	Cis-1,3-Dichloropropylene
Trichloroethylene	Bromoform	Trans-1,3-Dichloropropylene
Vinyl chloride	Bromomethane	Ethylbenzene
Chlorobenzene	Carbon tetrachloride	Styrene
1,4-Dichlorobenzene	Chloroform	1,1,2,2-Tetrachloroethane
1,1-Dichloroethane	Chloromethane	1,1,1,2-Tetrachloroethane
Chloroethane	Dibromochloromethane	Tetrachloroethylene
Cis-1,2-Dichloroethylene	1,2-Dibromoethane	Toluene
	1,2-Dichlorobenzene	1,1,1-Trichloroethane
	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	1,2-Dichloroethane	Trichlorofluoromethane
	1,1-Dichloroethylene	1,3,5-Trimethylbenzene
	Trans-1,2-Dichloroethylene	m&p-Xylene
	1,2-Dichloropropane	o-Xylene
	Methylene chloride	

Surface water samples were analyzed for the list of parameters included in the Primary and Secondary Indicator Lists (PIL and SIL). Samples collected in the Spring of 2009 from locations S1 and S3 in the Highway 417 ditch were analyzed for VOCs.

Samples that are representative of leachate quality at the WM Ottawa Landfill were collected at the discharge from pumping station No. 3 at the GDT treatment building. This leachate is generated within the lined areas of the landfill. A leachate sample was also collected from purge well PW8 (drilled through waste at the downgradient end of the closed south cell). This leachate is representative of older waste disposed in the south cell. The leachate samples were collected twice in 2008 (Spring and Fall), and analyzed for the list of Primary (PIL), Secondary (SIL) and VOC parameters specified in the EMP.

2.5 LANDFILL GAS MONITORING

Landfill gas was monitored on a monthly basis using a hand-held combustible gas detector (Gastech 1238ME operated and calibrated in full gas mode). Readings were collected from eight on-site gas monitoring wells (GM1 to GM8) during each monitoring event. Gas monitoring locations are shown on Figure 2. Note that the gas monitoring program in the EMP is in addition to monitoring completed for the landfill gas extraction and recovery system installed at the site.

2.6 QA/QC PROGRAM

A comprehensive quality assurance/quality control (QA/QC) program was implemented in accordance with WM requirements. Requisite numbers of blind field duplicates, trip blanks, field blanks and equipment blanks were collected and submitted for analysis during each sampling program according to WM protocols.

Analytical data from the 2009 sampling programs were checked and verified according to the requirements of the WM monitoring and reporting QA/QC evaluation checklist, as detailed below:

- Field information sheets were checked for completeness;
- Chain of custody forms were checked for accuracy and completeness;
- All hard copies, including instrument calibration forms, field information sheets and chain of custody forms, were filed for future reference if required;
- Analytical data were checked to ensure all required analyses were performed;

- Analytical results for each parameter were compared to available historical data for each sample interval using SiteFX software;
- Duplicate samples were compared against their corresponding regular sample counterpart using SiteFX software;
- Field blank samples were checked to ensure there were no detections;
- Data Quality Review (DQR) requests were submitted to Maxxam if duplicate sample analytical results were outside of WM's established limits for variance;
- DQR requests were submitted to Maxxam if individual analytical results were outside of WM's established limits for variance with respect to available historical data; and,
- DQR requests were submitted to Maxxam if detections were identified in any field blank or trip blank samples.

QA/QC program findings are presented in Section 3.4 below.

3.0 RESULTS AND DISCUSSION

The figures and tables referenced in the following sections are all located at the end of the report text. Results are presented and compared with historical data and MOE criteria where applicable. Information on the site physiography, hydrogeology and surface hydrology has previously been documented and will not be repeated herein.

3.1 GROUNDWATER ELEVATIONS

Water level data collected during the annual monitoring event on April 28, 2009 are presented in Tables 3 and 4 for overburden/shallow bedrock and deep bedrock monitoring wells, respectively. Groundwater and surface water elevation data are plotted on Figure 3 for the overburden/shallow bedrock zone, and on Figure 4 for the deep bedrock zone. In general, the directions of groundwater flow interpreted for the overburden/shallow bedrock and for the deep bedrock are consistent with previous findings.

Overburden/Shallow Bedrock

As shown on Figure 3, the 2009 water level data indicate that across the majority of the landfill site, the direction of groundwater flow within the overburden/shallow bedrock aquifer is towards the north-northeast, with an average gradient of approximately 0.006 to 0.009. Larger hydraulic gradients are observed along the eastern boundary of the site and onto the CAZ where the gradient is approximately 0.016 to 0.020.

Groundwater elevation data in the vicinity of the Carp Road site boundary reflects the influence of the purge well capture system. Groundwater elevations are generally depressed in the purge wells relative to adjacent monitoring wells, indicating that a zone of capture has been established along the Carp Road property boundary. The water levels in the vicinity of the purge well system are measured monthly (see discussion in Section 4.5 and monitoring results in Appendix C).

In the northwest corner of the site, groundwater appears to flow locally toward the northwest as a result of mounding in the northwest corner of the landfill footprint (see Figure 3). Based on the water level elevations observed in peripheral wells located north and west of the landfill property (eg., W60-2[redacted]the horizontal extent of this mounding effect on groundwater flow is confirmed to be localized and is confined to the northwest corner of the landfill site. Away from the influence of localized mounding, groundwater flow is in a north-northeasterly orientation in this area.

Deep Bedrock

The potentiometric elevations measured in deep bedrock monitoring wells during the 2009 annual monitoring event are shown on Figure 4. Groundwater flow in the deep bedrock is considered to be controlled by isolated fracture zones, which do not appear to be well-connected hydraulically based on the variable hydraulic heads observed across the site.

The 2009 data show that hydraulic heads in the deep bedrock are variable across the site and the nearby properties, ranging from 92.78 to 128.43 metres above sea level (masl). For this reason, groundwater elevations have not been contoured (ie., the deep bedrock zone appears to be discontinuous). Upgradient and along the western boundary of the site, where the bedrock is found at shallower depths, the hydraulic heads in the deep bedrock zone are all greater than 120 masl and are generally consistent with those in the overburden/shallow bedrock zone. This indicates that there may be more hydraulic connectivity between the shallow and deep bedrock in this area. Further to the east, the hydraulic heads in the deep bedrock range between 92.0 and 117.5 masl, and are generally not consistent with the shallow bedrock, indicating less vertical and horizontal connectivity. Overall, groundwater flow in the deep bedrock appears to be controlled by the regional groundwater flow system, oriented toward the Carp River. No significant changes in the deep bedrock groundwater flow direction were noted relative to monitoring programs conducted in previous years.

3.2 GROUNDWATER CHEMISTRY

3.2.1 Background Groundwater Quality

Background groundwater quality in the overburden/shallow bedrock zone is monitored at three locations:

- W57-2[redacted]

The 2009 results for these monitors are included on Table 5. The results for the background monitors indicate relatively low concentrations of water quality parameters, and are generally consistent with previous results. The COD concentration at W57-2 appears slightly elevated; however, no other constituents show similarly elevated concentrations.

3.2.2 Leachate Chemistry

Leachate from the unlined waste disposal areas at the WM Ottawa Landfill is characterized by the following parameters:

Leachate Assessment Parameters
boron
chemical oxygen demand (COD)
dissolved organic carbon (DOC)
potassium
ammonia
total kjeldahl nitrogen (TKN)

VOCs have been detected at low concentrations in the leachate and in wells immediately downgradient of the unlined disposal areas at the site. VOCs that are generally detected include:

Active Unlined Areas
benzene
1,1-dichloroethane
chloroethane
trichloroethylene
cis-1,2-dichloroethylene
vinyl chloride

Closed South Cell
benzene
chlorobenzene
1,4-dichlorobenzene (p)
toluene

In 2009, leachate was monitored at PW8 (closed south cell) and at the discharge from Pumping Station No. 3 (P3) in the GDT Building (leachate from lined cells). The results are presented in Table 5 (PIL and SIL parameters) and Table 6 (VOCs). Concentrations of the leachate indicators remain elevated at the leachate monitoring locations.

3.2.3 Groundwater Quality

Groundwater quality analytical results for samples collected from the overburden-shallow bedrock monitoring wells are presented in Table 5 (PIL and SIL parameters) and Table 6 (VOCs). Historical data from 2000 onwards are also shown in the tables. Results from dates prior to 2000 are available in the 2007 Annual Report. The following discussion is divided into three areas: on-site, western and northern boundaries, and eastern boundary/downgradient. The locations of the monitoring wells are shown on Figure 2, and the results for the water quality assessment parameters for the WM Ottawa Landfill are shown on Figure 5.

<u>On-site Groundwater Quality, Active Waste Disposal Area</u>

Groundwater quality is monitored on-site at the following locations adjacent to the northern unlined footprint:

- P79, P80-1 and W63

The concentrations of leachate indicator parameters at P79, immediately adjacent to the unlined landfill, have gradually increased since 2000. The concentrations observed in 2009 are similar to the 2008 levels. At P80-1, located to the west, the concentrations have remained stable or have increased slightly since 2000 (eg., ammonia, iron, COD, conductivity). Monitoring well W63 is located in the former Dibblee Pit area, north of the unlined landfill and east of the retention pond. The concentrations of most dissolved parameters at this location have increased since 2004; however, the 2009 concentrations are generally similar to or less than the 2008 concentrations.

Western and Northern Boundaries

Groundwater quality in the overburden/shallow bedrock zone along the western and northern boundaries of the site is measured at the following locations:

- Western boundary – W60-2, W61
- Northern boundary – W62-2, W64

Monitoring well W60-2 is located in the northwest corner of WM property, and W61 is located at the northwest corner of the landfill footprint. Relatively low concentrations of dissolved solids, consistent with background concentrations were observed in these monitors along the western boundary of the site in 2009. Concentrations of some parameters, including sodium and boron, are noted to have increased at W60-2 since 2004; however, overall TDS and conductivity remain low.

Monitoring wells W62-2 and W64 are located from west to east, respectively, along the central portion of the northern boundary of WM property. The 2009 concentrations of dissolved parameters at W62-2 generally reflect background groundwater conditions, with the exception of calcium, hardness, COD, iron and manganese. However, the extremely high levels reported by the laboratory (eg., calcium at 1000 mg/L) are considered anomalous, since the ionic balance of the reported water quality cannot be accurate (cation/anion ratio = 10.4). This will be confirmed in the 2010 sampling period.

Monitor W64 is situated at the downgradient end of an area of ponded water that collects runoff from a swale that originates at the northwest corner of the landfill footprint. The concentrations of indicator parameters at W64 are generally higher than at W62-2, and have increased since 2004. The 2009 concentrations are similar to those seen in 2008. The dissolved concentrations at W64 are lower than those seen upgradient at P79 and W63, closer to the landfill footprint.

Eastern Boundary and Downgradient

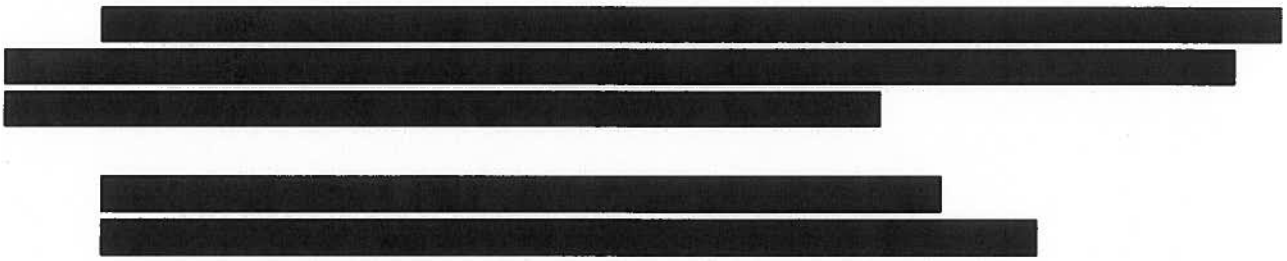
Groundwater quality in the overburden/shallow bedrock zone on the downgradient side of the landfill is represented by the following monitoring well locations:

- Purge wells – PW1 to PW10, and PW20
- On-site along eastern boundary, north of the CAZ – W65-2, W72, W80 and W81
- [redacted]
- CAZ property – W44-3, W56-2 and W79
- MTO property (Highway 417) – W48-2

Concentrations of dissolved parameters observed in samples collected from the purge wells (denoted as PW) represent leachate-impacted groundwater that is being pumped from the subsurface and removed along the downgradient boundary of the landfill site. As expected, the concentrations of leachate indicator parameters (PIL and SIL) are generally higher in the purge wells than in the downgradient monitoring wells. Along the alignment of the purge well system, the highest concentrations are generally observed in the core area (eg., from PW4 to PW8), with lower concentrations to the north and south.

The monitoring wells located in the northeast corner of WM property (W65-2 and W72) have been sampled in 2004, 2008 and 2009. At W65-2, the concentrations of parameters have decreased since 2008. The concentrations of dissolved parameters at W72 are consistent with previous years.

Monitoring wells W80 and W81, installed in 2008, are located immediately downgradient of the purge well system on WM property, and are within the hydraulic influence of the system. The concentrations of the leachate indicator parameters are elevated at these monitors relative to background conditions, as is expected. In general, the concentrations at W80 are higher than at W81, located further to the south. The exceptions are for chloride and sodium (and corresponding conductivity and TDS) which are higher at W81.



The CAZ property is monitored at three locations (listed from north to south): W79, W44-3 and W56-2. Monitor W79 was installed in May 2008; the concentrations of leachate indicators have increased since that time. The 2009 sodium, chloride and calcium concentrations at W79 are higher than those observed in groundwater on the landfill property (eg., purge wells, W80 and W81). Hence, the concentrations are indicative of a secondary source of these constituents, such as the storage of road salt and/or dust control products on the quarry property. Lower concentrations to these are seen at W44-3 and W56-2, further to the south on the CAZ property. Discussion of the observed concentrations in relation to the Assessment Limits is presented in the following section.

Monitoring well W48-2, located on MTO property north of Highway 417, shows elevated concentrations of leachate indicator parameters, specifically ammonia, TKN, COD and potassium. The 2009 concentrations are within the historical ranges observed since implementation of the purge well system, with the exception of a single COD reading of 82 mg/L (versus a previous maximum of 79 mg/L). The concentrations in the spring are typically less than those seen in fall, which is consistent with the seasonal trends observed historically at this monitor location.

The following eleven monitoring wells were sampled in April 2009 for volatile organic compounds (VOCs) in accordance with the EMP:

- W44-3
- W48-2
- [redacted]
- W56-2
- W72
- W79
- W80
- W81
- [redacted]

The results for the VOC groundwater monitoring are presented in Table 6. In 2009, the following VOCs were detected above laboratory reporting limits:

Compound	RDL	W44-3	W48-2	[redacted]	[redacted]	[redacted]	W56-2	W72	W79	W80	W81	[redacted]
1,1-dichloroethane	0.1	0.1	0.2	[redacted]	[redacted]	[redacted]	---	0.2	0.1	1.2	0.4	[redacted]
1,4-dichlorobenzene	0.2	---	---	[redacted]	[redacted]	[redacted]	---	---	---	0.3	---	[redacted]
benzene	0.1	---	---	[redacted]	[redacted]	[redacted]	---	---	---	0.7	0.3	[redacted]
chlorobenzene	0.1	---	0.3	[redacted]	[redacted]	[redacted]	---	---	---	1.1	0.1	[redacted]
chloroethane	0.2	---	---	[redacted]	[redacted]	[redacted]	---	0.3	---	1.3	0.3	[redacted]
cis-1,2-dichloroethene	0.1	0.7	0.1	[redacted]	[redacted]	[redacted]	---	0.9	0.7	1.4	5.2	[redacted]
ethylbenzene	0.1	---	---	[redacted]	[redacted]	[redacted]	0.7	---	---	---	---	[redacted]
tetrachloroethene	0.1	---	---	[redacted]	[redacted]	[redacted]	---	0.5	---	---	9.1	[redacted]
trichloroethene	0.1	---	---	[redacted]	[redacted]	[redacted]	---	1.4	0.1	1.7	4.7	[redacted]
vinyl chloride	0.2	---	---	[redacted]	[redacted]	[redacted]	---	---	---	0.3	0.4	[redacted]

Note: All results expressed as µg/L. [redacted] other wells were sampled in Spring only.

The concentrations of VOCs that are listed as Assessment Parameters (see below) are shown on Figure 5 for these locations. The low levels of VOCs observed in 2009 (chlorinated aliphatic hydrocarbons, chlorobenzenes and BTEX parameters) are consistent with previous monitoring results in terms of locations, constituents and concentrations.

3.2.4 Guideline B7 (Reasonable Use) and Assessment Parameter Limits

Potential groundwater impacts from the WM Ottawa Landfill are assessed using a suite of parameters denoted "Assessment Parameters", as agreed to with the Ontario Ministry of Environment. These parameters include nitrogen compounds (ammonia, TKN, nitrate and nitrite), potassium, COD, boron, and selected VOCs. The Assessment Parameters have low and relatively uniform background concentrations, elevated concentrations in the leachate, and no other apparent significant sources that affect groundwater concentrations at the monitoring locations. A summary of the parameters that are used to assess groundwater conditions downgradient from the WM Ottawa Landfill are presented below:

Assessment Parameters with Reasonable Use Limits (mg/L)		Assessment Parameters with Prediction Limits (mg/L)	
Boron	1.29	Ammonia	1.09
Nitrate (as N)	2.58	TKN	0.76
Nitrite (as N)	0.33	COD	52
Benzene	0.0013	Potassium	3
Trichloroethylene	0.0013	1,1-Dichloroethane	0.0001
Vinyl chloride	0.0007	Chloroethane	0.0002
Chlorobenzene	0.0201	Cis-1,2-Dichloroethene	0.0001
1,4-Dichlorobenzene	0.0014		

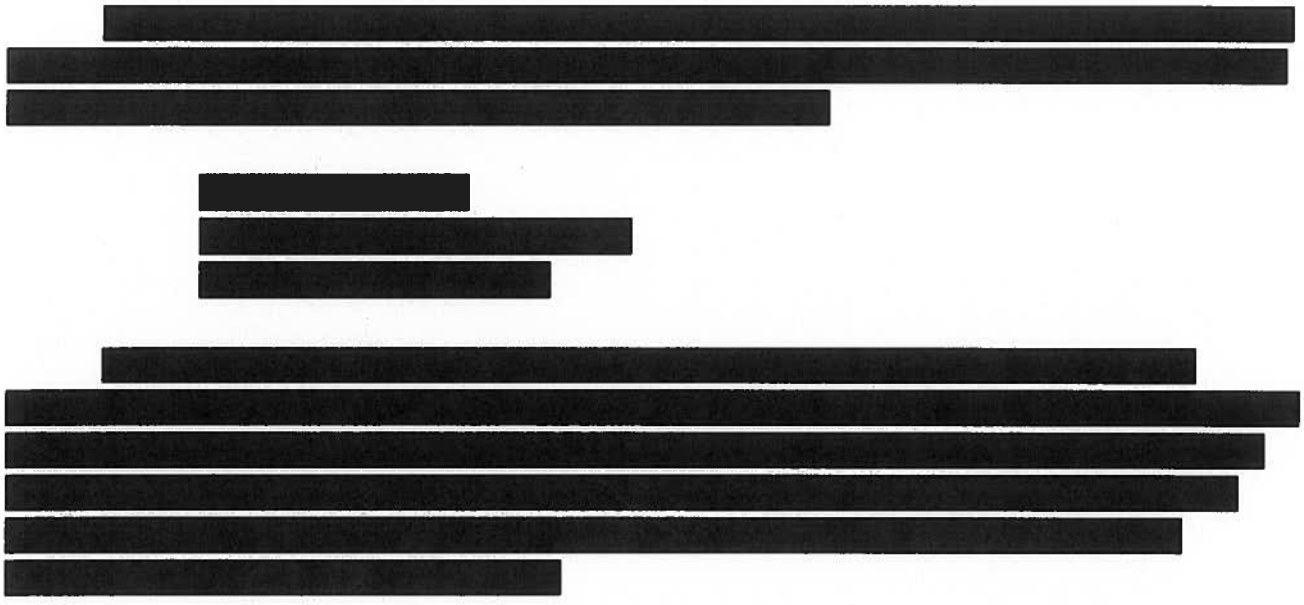
The locations and concentrations of parameters that were higher than these limits in downgradient monitoring wells sampled as part of the Environmental Monitoring Program in 2009 are listed in Table 9. These locations are divided into four areas: western boundary, eastern boundary, northern boundary and the CAZ. The wells on the eastern boundary and the CAZ are all within the influence of (W72, W80 and W81), or downgradient from (W44-3, W48-2, [redacted] W56-2, W79 [redacted]), the purge well system. The Assessment Parameter concentrations at these wells reflect the residual groundwater impacts remaining after implementation of the purge well system.

Monitoring wells on the CAZ (W44-3, W56-2 and W79) and the MTO property (W48-2) do not exceed the Reasonable Use Limits (RUL) for any leachate indicators. Exceedances of statistical prediction limits are noted for ammonia, TKN, potassium, COD, 1,1-dichloroethane and cis-1,2-dichloroethylene. It should be noted that these parameters do not have any health or aesthetic-related standards specified in the *Ontario Drinking Water Standards, Objectives and Guidelines.*

Plots of the concentrations of selected leachate indicator parameters (ammonia, nitrate, TKN, COD, potassium and boron) versus time for monitoring wells on the CAZ and MTO properties are presented in Appendix A. From the plots, it is seen that the concentrations at W44-3 have remained stable over time. Concentrations of some parameters (ammonia, TKN and COD) appear to be gradually increasing at W56-2 and W79. At monitoring well W48-2 on the MTO property, concentrations have decreased from their historic high levels; however, for some parameters (ammonia, TKN and COD) the concentrations appear to have increased since 2007.

Although there are indications that some of the increasing parameter concentrations are not related to the landfill (eg., sodium and chloride at W79 as noted above in Section 3.2.3), other parameters may be landfill related (ammonia, TKN, COD). As is described below in Section 4.5, measures have already been taken in 2009 by WM to upgrade the purge well system and to improve its overall effectiveness. In addition, it is recommended that the following steps outlined in the approved EMP for further groundwater evaluation be adopted:

- Quarterly monitoring frequency for one year at W48-2, W79 and W56-2 with analysis of PIL and SIL parameters;
- Alternate source evaluation.



Along the western boundary of the site, one slight exceedance of the statistical prediction limit for potassium is observed at W60-2 (3.6 mg/L versus 3 mg/L). No RUL exceedances were observed in 2009. The water quality at this monitoring well reflects background groundwater conditions, and will be re-confirmed in the Spring 2010 sampling event.

Along the northern boundary, no exceedances of RUL were observed. Exceedances of the statistical prediction limits for ammonia, TKN, and potassium were observed at W64 and for COD and potassium at W62-2. The concentrations seen at W64 are similar to those reported in the 2008 Annual Report. It is recommended that further groundwater evaluation be implemented at W64 according to the approved EMP:

- Quarterly monitoring frequency for one year with analysis of PIL and SIL parameters;
- Alternate source evaluation.

As noted in Section 3.2.3 above, the reported water quality at W62-2 for 2009 is anomalous; this water quality will be re-confirmed in the Spring 2010 sampling event.

3.3 SURFACE WATER QUALITY

The analytical results from the 2009 surface water sampling programs are presented in Tables 7 and 8. The sampling locations are shown on Figure 2, and the results for the leachate indicators are shown on Figure 5. The surface water Assessment Parameters and Limits for the WM Ottawa Landfill are as follows (as per the approved EMP):

Parameter	PWQO (mg/L)
Primary Indicators (PIL)	
Un-ionized Ammonia	0.02
Boron	0.2
Benzene	0.100
Trichloroethylene	0.020
1,2-Dichloroethylene (cis & trans)	0.200
Vinyl chloride	0.600
1,1-Dichloroethane	0.200
Chlorobenzene	0.015
1,4-Dichlorobenzene	0.004

Off-site surface water quality is monitored at three locations along the ditch north of Highway 417. These locations are denoted as S1, S3 and S10, and are shown on Figure 2. The 2009 results for these locations are consistent with previous years. The primary leachate indicators (ammonia, TKN, potassium, COD, etc.) are generally found at the lower limit of their historical ranges. A comparison of the 2009 water quality results to the Provincial Water Quality Objectives (PWQO) shows that exceedences were found for the following Assessment Parameter:

		Boron
	PWQO	*0.20*
S1	29Apr-09	0.49
	29-Oct-09	0.49
S3	29Apr-09	0.30
	29-Oct-09	0.21
S10	29Apr-09	0.28
	29-Oct-09	---

All units in mg/L

---- indicates parameter concentration did not exceed PWQO.

In the 2009 environmental monitoring program, there were no PWQO exceedances of un-ionized ammonia. Boron slightly exceeded the PWQO at S1, S3, and S10 (April only). The boron concentrations decrease with distance along the ditch. Iron continued to exceed the PWQO at S1, S3 and S10. It should be noted that iron is not an Assessment Parameter for the WM Ottawa Landfill. The presence of iron-stained sediment and suspended material at S1 and S3 may influence the iron concentrations observed in these samples.

There were no VOCs detected in the surface water samples collected in 2009. Since 2003 there have been eight separate sampling events for VOCs at S1 and S3, representing a total of 590 VOC analytical results. In that time, only three VOC detections have been observed, and no PWQO exceedances have been encountered. Therefore, based on a lack of observed VOC impact to surface water, it is recommended that VOCs be eliminated from the surface water monitoring program. This recommendation requires the concurrence of the MOE Ottawa District Office prior to being implemented.

3.4 QA/QC Program Results

In 2009, the sampling and analytical quality assurance/quality control program for groundwater monitoring included field duplicate samples, trip blanks, and field blanks.

Historical Screening

A total of 75 individual parameter concentration results from the spring 2009 monitoring event were identified as possible outliers when compared to historical concentration ranges. Of these, 88% (or 66 results) occurred at monitoring locations were the historical data sets were not sufficient to be considered statistically significant (ie. at monitors where the parameters in question

had been analyzed six times or fewer). One result was clearly a laboratory error as it was an order of magnitude out of range for typical results at the site. Of the remaining eight possible outliers, two were considered not statistically significant as the results in question were very close to the laboratory method detection limits (MDLs); five had a relative percent differences (RPDs) between the results and the historical points of comparison of less than 50% and only one had an RPD of greater than 50%.

A total of 77 individual parameter concentration results from the fall 2009 monitoring event were identified as possible outliers when compared to historical concentration ranges. Of these 77, 90% (or 69 results) occurred at monitoring locations were the historical data sets were not sufficient to be considered statistically significant (ie. at monitors where the parameters in question had been analyzed six times or fewer). Of the remaining eight possible outliers, one was considered not statistically significant as the result in question was very close to the laboratory method detection limit (MDL); five had a relative percent differences (RPDs) between the results and the historical points of comparison of less than 50% and only two had RPDs of greater than 50%.

Overall, the 2009 monitoring results were consistent with the historical data set for the site. Once the data sets for new wells and parameters that were added to the updated EMP increase to include sufficient information, historical screening will be performed on subsequent results.

Blind Field Duplicates

Field duplicate samples were also closely scrutinized to identify parameters potentially exceeding WM's acceptable variability range. No discrepancies of any significance were noted in the 2009 results. Minor discrepancies included the following:

- W79: Iron reported as 7.3 mg/L in the regular sample; <0.1 mg/L in the duplicate (regular sample result accepted based on historic readings);
- W57-2: Chromium reported as 0.07 mg/L in the regular sample; <0.005 mg/L in the duplicate (regular sample result accepted based on historic readings).

Field Blanks

The results for most field blank sample parameters were below detection limits. A total of eight low level detections were identified (alkalinity, boron, conductivity, dissolved organic carbon, sodium, calcium, hardness, magnesium and manganese). None of these low level detections indicated any significant potential concerns with the analytical results.

Trip Blanks

The results for most trip blank sample parameters were below detection limits. One low level detection of toluene was identified, but it did not indicate any significant potential concern with the analytical results.

Equipment Blanks

All sampling equipment used during the April 2009 monitoring event was dedicated, so no non-dedicated sampling equipment (ie. down-hole pumps or peristaltic pumps) was used to sample any wells. Consequently, no equipment blanks were required.

QA/QC Summary

Overall, the QA/QC sample results reflect the suitability of field methods and sample handling procedures used in the monitoring program. The variations noted above do not affect any of the interpretations made in this report.

Other elements of the QA/QC program (ie., checking of documentation and results for variant data) were successful in that a small number of minor errors and omissions were positively identified, and were subject to corrective actions. The resultant data set can therefore be relied on, in terms of overall accuracy and repeatability.

3.5 LANDFILL GAS MONITORING

Eight gas monitoring probes (GM1 – GM8) are installed at locations between the landfill area and buildings, and along the eastern boundary of the landfill site. During the 2009 monitoring year, gas measurements were collected at monthly intervals using a hand-held combustible gas detector. The 2009 monitoring results are presented in Table 10 along with the historical data collected since 2003.

In 2009 the combustible gas readings were similar to the previous year's results. Concentrations at GM5 and GM6, located at the northeast corner of the site upstream of the air barrier showed decreased concentrations from the previous year. Readings at GM7 and GM8, located at the northeast corner of the site downstream of the air barrier showed an increase in April 2009 (to a maximum reading of 10% LEL); however, the readings were reduced to below detection limits when the flow in the air barrier system was adjusted.

None of the 2009 combustible gas readings exceeded the trigger level of 50% LEL for further landfill gas evaluation.

4.0 SITE OPERATIONS

In the following sections of this report, a summary of site operations for the period covering January 1 to December 31, 2009 is presented in accordance with Condition 4.2 of Certificate of Approval No. A461002. Included in the summary are such issues as waste placement and cell development, waste quantities, operational procedures, construction of additional facilities, and an estimate of remaining site capacity. Responses to public enquiries and/or complaints are also documented.

4.1 WASTE PLACEMENT AND CELL DEVELOPMENT

A monthly summary of the various waste streams received at the landfill site during this reporting period is presented in Table 11. Based on site records, the total amount of solid waste, recyclables and cover material that was accepted at the landfill during the period from January 1 to December 31, 2009 was 90,032 metric tonnes. Included in this total is the landfilled waste (residential/commercial/industrial waste and special waste), Special Waste used as cover material, sewage treatment plant grits and screenings, and recycled products.

The total amount of solid waste that was landfilled during the 12-month reporting period was 19,229 tonnes, as summarized on Table 11 (including the Special Waste disposed on the landfill, but not including the Special Waste cover material). A total of 15,821 tonnes of residential, institutional, commercial and industrial solid waste were disposed at the WM Ottawa landfill during the reporting period (not including Special Waste or sewage grits and screenings).

Special Waste includes materials that require different handling procedures than residential, commercial, industrial and institutional solid waste. Approximately 2,712 tonnes of Special Waste were disposed as waste material during the reporting period. The remaining portion of Special Waste, approximately 70,784 tonnes, consisted of hydrocarbon-impacted soil material, which was used as daily cover.

A site plan illustrating the areas of waste placement, buffers, site facilities, and topographic features is presented on Figure 6.

The active area of the landfill site during this reporting period was restricted to the top of the waste mound, as illustrated on Figure 6. The disposal activities followed the phasing plan described in the report entitled, *Development and Operations Report, Laidlaw Waste Systems (Ottawa) Ltd., West Carleton Landfill Site, December 1994*, which was prepared by Henderson, Paddon Environmental Inc.

4.2 Landfill Slope Inspections

During the period from January to December 2009, WM's landfill operations manager and landfill engineer conducted regular visual inspections along the landfill side slopes. Repairs were completed as necessary to mitigate gas and leachate seepage. Repairs involved excavating into the waste and backfilling with clear stone to improve drainage, or drilling into the waste to promote vertical drainage. In some areas, French drains were installed along the landfill slope.

Surface water drainage ditches were cleaned along the northwest, west and north sides of the landfill toe. The ditch along the base of the south slope was also re-graded.

4.2.1 Final Cover Placement

During this reporting period, the first phase of the "Beanie Cap" for final cover and landfill gas management was constructed on the west side of the top of the landfill footprint. The Beanie Cap was covered with topsoil and hydroseeded. An area of approximately 40,000 m^2 on the north slope of the landfill was covered with final clay cap.

Approximately 22 hectares of final cap that had been applied in 2008 was covered with topsoil and hydroseeded in the summer of 2009.

4.3 Changes to Operational Procedures and Site Facilities

No major changes occurred to operational procedures during the reporting period. In general, waste disposal and covering operations at the WM Ottawa Landfill remained consistent with previous years' procedures, as described in the Development and Operations Report (Henderson Paddon Environmental, 1994).

The following changes were made to site structures and facilities during this reporting period:

- Construction of the Landfill Gas to Energy plant was completed; once the Feed-in Tariff (FIT) contract is executed, the plant is ready to begin energy production.
- The hybrid poplar tree cap on the closed south cell was maintained. The blend of irrigation water was gradually changed to a mixture of 25% pond water and 75% leachate.
- The landfill gas extraction system was expanded (see details below).
- A public recycling drop-off facility was added, as well as an electronics waste recycling (e-cycle) drop off centre.
- A new recycling drop-off centre for used construction and renovation products was established at 2383 Carp Road, on property owned by Waste Management north of the main landfill entrance. The facility is a partnership with Habitat for Humanity.

One CAT 826 compactor was removed from the landfill site during this reporting period; no new equipment was added to the site.

4.3.1 Complaints & Enquiries

Odour complaints received directly and/or forwarded to Waste Management by other parties are documented and addressed in accordance with the comprehensive site-wide Certificate of Approval (Air) for the landfill which was issued on November 29, 2006. In this regard, a quarterly report is submitted to the Ontario Ministry of Environment.

No other complaints regarding landfill site operations were received by Waste Management during this reporting period.

4.4 Remaining Site Capacity

An aerial topographic survey was completed at the Ottawa landfill on April 27, 2009. The updated topography is shown on Figure 6. Based on the survey results and incorporating the amount of waste disposed at the site from that date until the end of the year, Waste Management estimates that there is sufficient capacity for approximately 75,589 tonnes of waste disposal operations including daily cover, but excluding the final cover, as of December 31, 2009.

4.5 OTHER ACTIVITIES

During the period from January to December 2009, several activities related to environmental issues and landfill development were completed by WM at the site. A brief description of these activities follows.

Purge Well System Operations & Maintenance

During this reporting period, a total of 241,458 cubic metres of liquid was discharged to the forcemain system and treated at the sewage treatment plant. Regular monitoring of the effluent quality was completed in accordance with the Leachate Agreement. Occasional exceedances of Total Kjeldahl Nitrogen (TKN) were noted in some of the weekly samples and were reported to the City of Ottawa in the regular monthly reports. The TKN concentrations are believed to be related to the proportion of leachate being discharged to the forcemain system. During 2009, upgrades were being made to the purge well pumping system (see below) which would result in occasional variations in groundwater pumping rates during construction and commissioning activities.

The following operational activities for the purge well system were undertaken during this reporting period:

- A new header system was installed for the purge wells to discharge into. A gradual decline in purge well pumping volumes had been noted since the previous year, and a build-up of sediment and encrustation had been observed in the pipes during routine maintenance activities. To improve pumping rates, the small-diameter individual discharge pipes were replaced with a 200 mm common discharge header. Individual sampling ports and flowmeters were installed at each purge well to permit sampling and flow monitoring. In addition, the electrical system for the purge wells was upgraded. The upgrades to the purge well system were commissioned in January and February 2010. The upgrades are expected to improve the purge well flows and the effectiveness of hydraulic capture along the eastern boundary of the site.
- The wetland biofilter pilot test (WBPT) was operated and maintained throughout 2009. The pilot test is scheduled to operate until December 2010.

Monitoring of Purge Well System Effectiveness

Pumping of the purge wells was conducted following the conditions of Permit to Take Water No. 8737-7FZNB4, issued on July 14, 2008. This permit allows the pumping of all purge wells at specified rates, with a total permitted taking of 2,495,700 litres per day.

Groundwater levels were measured in the purge wells and surrounding monitoring wells monthly during the reporting period in order to observe the effectiveness of the purge well system. The groundwater level monitoring results are used to confirm that the system is able to maintain the hydraulic heads in the purge wells below the elevations of surrounding downgradient monitoring wells, effectively creating a hydraulic trap along the Carp Road boundary of the site.

As noted in the 2008 Annual Report, there were periods of the year when capture was not as apparent in the central sections of the purge well system. The upgrades to the system described above were implemented in 2009 in an attempt to increase pumping rates and improve hydraulic capture across the system. The monthly groundwater elevations are presented in Appendix C.

Landfill Gas Extraction System

During this reporting period, Waste Management completed the installation and commissioning of 21 vertical wells outside of the landfill footprint (16 northeast of the landfill, and 5 in the vicinity of the closed south cell). At the end of 2009, the gas extraction system included a total of 177 vertical wells on and around the existing landfill and 5 vertical wells around the closed south cell. A total of 1,600 metres of horizontal gas collector were installed around the landfill footprint in 2009.

Air emission surveys were completed in April, June, August and October 2009. The surveys were used to evaluate the performance of the final clay cap and to located new LFG extraction wells. The results of the surveys were sent to the MOE and posted on the WM website.

The landfill gas (LFG) collection system was monitored on a daily basis during this reporting period. The LFG field was balanced weekly by WM technicians. The operational performance data were entered into the Landfill Gas Management System (LGMS) for analysis by the LFG operations manager.

Operational records and monitoring information are collected and retained on-site in accordance with the Certificate of Approval (Air) for the landfill gas system. Regular preventative maintenance was completed on the LFG collection and blower system. A quarterly report was submitted to the Ontario Ministry of Environment, as per the requirements of the Certificate of Approval (Air).

The air barrier system, where air is injected into the subsurface to prevent the off-site movement of landfill gas, continued to operate along the eastern boundary of the landfill site.

Community Activities

Waste Management continued its community outreach program in 2009, providing sponsorship to a number of local events. The most notable of these sponsorships and community activities during this reporting period included the following:

- Stittsville Food Bank
- Kanata Food Cupboard
- West Carleton Emergency Food Aid
- The Carp Agricultural Society - Carp Fair
- Stittsville Village Association – Village Fest & Canada Day Fireworks
- City of Ottawa – Concerts in the Park series (Fitzroy & Stittsville village square)
- Kanata Canada Day festivities
- Barrhaven Canada Day festivities
- Habitat for Humanity
- Children's Hospital of Eastern Ontario – Telethon & Teddy Bear Picnic
- West Carleton Seniors Council
- Earth Day Ottawa
- Ottawa Eco-Stewardship Fair
- Ottawa Public Library – Diefenbooker Classic
- Riverside Jam
- Down Syndrome Association
- St. Stephen's School (Stittsville) Playground Structure

Respectfully submitted,

David Harding, M.Sc. P.Eng.
Project Manager

TABLE 1: SUMMARY OF GROUNDWATER MONITORING PROGRAM
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Monitor Locations	Parameters	Monitoring Frequency
Overburden/Shallow Bedrock		
P31, P32, P37, P51, P55, P65, P68, P79, P80-1, P80-2, P83, P84, P85; W2-3, W3-3, W16-3, W19, W42-2, W44-3, W46-2, W48-2, W48-3, W49-3, W50-2, W50-3[redacted] W55-2, W56-2, W57-2, W59-2, W60-2, W61, W62-2, W63, W64, W65-2, W66, W67-2, W69,[redacted] W72,[redacted] W79, W80, W81; PW1, PW2, PW3, PW4, PW5, PW6, PW7, PW8, PW9, PW10, PW11, PW13, PW15, PW17, PW19, PW20, PW25.	Groundwater Elevation	Once each year, in Spring
P31, P32, P85; W16-3, W19, W46-2, W48-3, W49-3, W55-2, W56-2, W66, W67-2, W69, W80, W81; PW1, PW2, PW3, PW4, PW5, PW6, PW7, PW8, PW9, PW10, PW11, PW13, PW20, PW25.	Groundwater Elevation	Once each month
P79, P80-1; W57-2, W60-2, W61, W62-2, W63, W64, W65-2,[redacted]	PIL and SIL	Once each year, in Spring
PW1, PW2, PW3, PW4, PW5, PW6, PW7, PW8, PW9, PW10, PW20; W44-3, W48-2,[redacted] W56-2, W72, W79, W80, W81, WS2.	PIL and SIL	Twice each year, in Spring and Fall
W44-3, W48-2,[redacted] W56-2, W72, W79, W80, W81, WS2.	VOCs	Once each year, in Spring
Deep Bedrock		
W42-1, W44-1, W46-1, W48-1, W50-1[redacted] W56-1, W57-1, W59-1, W60-1, W62-1, W65-1R, W67-1,[redacted]	Groundwater Elevation	Once each year, in Spring

TABLE 2: SUMMARY OF SURFACE WATER MONITORING PROGRAM
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Monitor Locations	Parameters	Monitoring Frequency
On-site		
S17 (southeast stormwater recharge pond)	Surface Water Elevation	Once each year, in Spring
Pond (on the former Bradley Pit)	Surface Water Elevation	Monthly
Upgradien [redacted]		
[redacted]		
Downgradient: Highway 417 Ditch		
S1, S2, S3	Surface Water Elevation	Monthly
S1, S3, S10	PIL and SIL	Twice each year, in Spring and Fall
S1, S3	VOCs	Once each year, in Spring

TABLE 3: WATER LEVELS - OVERBURDEN/SHALLOW BEDROCK AND SURFACE WATER
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Name	Most Recent Top of Casing Elevation (various dates) (masl)	Water Level (mbtoc)	Water Level Elevation (masl)
		28-Apr-09	
P31	129.29	blocked	---
P32	129.84	dry	---
P37	128.70	3.16	125.54
P51	128.27	2.58	125.68
P55	128.29	2.98	125.31
P65	133.21	10.60	122.61
P68	128.86	3.08	125.78
P79	127.95	2.06	125.90
P80-1	128.78	2.75	126.03
P80-2	128.78	2.55	126.23
P83	127.06	1.03	126.03
P84	129.84	1.98	127.86
P85	129.64	12.25	117.39
W2-3	130.21	3.99	126.22
W3-3	127.09	2.03	125.06
W16-3	125.47	3.97	121.50
W19	130.12	11.9	118.22
W42-2	127.07	1.04	126.04
W44-3	115.05	2.39	112.66
W46-2	131.37	13.48	117.89
W48-2	120.81	3.245	117.56
W48-3	120.77	3.24	117.53
W49-3	118.64	2.475	116.16
W50-2	124.07	2.38	121.69
W50-3	124.14	2.64	121.50
W55-2	115.59	2.41	113.18
W56-2	115.26	3.53	111.73
W57-2	130.43	1.97	128.46
W59-2	127.51	1.283	126.23
W60-2	125.62	1.64	123.98
W61	127.51	2.53	124.99
W62-2	126.24	1.47	124.77
W63	125.23	2.37	122.86
W64	126.45	4.36	122.10
W65-2	127.60	10.55	117.05
W66	128.51	10.605	117.91
W67-2	128.28	9.57	118.71
W69	130.74	9.31	121.43
W72	131.75	12.95	118.80
W79	113.74	1.53	112.21
W80	127.71	10.11	117.60
W81	129.22	12.26	116.96

TABLE 3: WATER LEVELS - OVERBURDEN/SHALLOW BEDROCK AND SURFACE WATER
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Name	Most Recent Top of Casing Elevation (various dates) (masl)	Water Level (mbtoc)	Water Level Elevation (masl)
		28-Apr-09	
PW1	127.76	12.29	115.47
PW2	128.01	12.7	115.31
PW3	128.54	11.41	117.13
PW4	128.99	12.11	116.88
PW5	128.62	11.14	117.48
PW6	131.07	13.75	117.32
PW7	133.34	16.11	117.23
PW8	132.98	--	--
PW9	127.28	10.78	116.50
PW10	126.38	8.94	117.44
PW11	126.04	4.57	121.47
PW13	124.49	1.05	123.44
PW15	124.78	0.61	124.17
PW17	127.88	2.51	125.37
PW19	129.04	3.143	125.89
PW20	131.50	17.6	113.90
PW25	119.02	1.56	117.46
SG-S1	115.61	0.68	114.93
SG-S2	114.38	0.85	113.53
SG-S3	111.35	0.8	110.55
SG-S17	N/A	124.357	124.54
SG-Pond	N/A	123.82	123.17

Note:
-1: deepest well in a multilevel monitor
-2: intermediate well in a multilevel monitor
-3: shallowest well in a multilevel monitor
PW : Purge Well
SG: Staff Gauge (at surface water monitoring locations)

TABLE 4: WATER LEVEL DATA - DEEP BEDROCK
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Name	Top of Casing Elevation May-07 (masl)	Water Level (mbtoc)	Water Level Elevation (masl)
		28-Apr-09	
W42-1	127.07	1.24	125.84
W44-1	115.05	11.63	103.42
W46-1	131.37	24.32	107.05
W48-1	120.80	4.665	116.13
W50-1	123.84	31.055	92.78
[redacted]			
W56-1	115.70	18.61	97.09
W57-1	130.20	1.768	128.43
W59-1	127.29	1.85	125.44
W60-1	125.72	1.77	123.95
W62-1	126.20	2.43	123.77
W65-1R	127.83	15.60	112.23
W67-1	128.21	10.79	117.42
[redacted]			

Note:
-1: deepest well in a multilevel monitor

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
P79	17-May-00	350	0.91	0.18	0.1	< 0.005	261	87	96	< 0.01	1570		< 0.02			11.3	< 0.002	46	0.66	< 0.1	< 0.1		3	50	486		2.09
P79	8-May-01	459	1.34	0.56	0.18	< 0.005	270	76	51	< 0.01	1580		0.008			19	< 0.001	46	0.94	< 0.1	< 0.1		5	40	397		2.43
P79	14-May-02	398	1.49	0.13	0.19	< 0.005	256	68	51	< 0.001	1510		< 0.005			21.5	< 0.001	38	0.71	< 0.1	< 0.1		7	36	385		3.19
P79	21-May-03	494	1.37	0.12	0.18	< 0.001	258	63	66	< 0.005	1510		0.005			18.8	< 0.001	41	0.95	< 0.1	< 0.1		9	40	390		2.75
P79	27-Apr-04	542	1.07	0.19	0.31	< 0.001	233	61	96	< 0.005	1490		< 0.005			23.3	< 0.001	38	1.05	< 0.1	< 0.1		11	79	167		2.68
P79	3-May-05	542	0.98	0.25	0.22	< 0.0001	233	52	138	0.004	1660		0.005			25.4	< 0.001	51	1.3	< 0.1	< 0.1		11	79	226		2.49
P79	28-Apr-06	545	1.12	0.25	0.21	< 0.0001	271	64	196	0.004	1840		< 0.005			23.5	< 0.001	43	0.86	< 0.1	< 0.1		10	92	189		2.55
P79	26-Apr-07	636	1.02	0.26	0.25	< 0.0001	276	91	252	0.006	2140		< 0.005			36.1	< 0.001	51	1.28	< 0.1	< 0.1		10	102	176		3.06
P79	26-May-08	654	1.55	0.12	0.26	< 0.0001	370	170	380	0.018	2850	< 0.002		48	1300	13	< 0.0005	92	0.99	< 0.1	< 0.01	7.5	15	240	405	1710	< 7
P79	29-Apr-09	793	1.92	0.17	0.31	< 0.0001	290	150	330	0.019	2800	< 0.002		46.7	1000	29	< 0.0005	70	0.81	< 0.1	< 0.01	7.5	14	220	270	1810	6
P80-1	17-May-00	296	0.08	0.26	0.02	< 0.005	184	18	148	< 0.01	1150		< 0.02			0.97	< 0.001	43	0.1	< 0.1	< 0.1		2	8	128		0.16
P80-1	8-May-01	403	0.06	0.46	0.02	< 0.005	239	44	109	< 0.01	1440		< 0.005			1.66	< 0.001	49	0.11	< 0.1	< 0.1		2	10	250		0.61
P80-1	15-May-02	452	0.15	0.07	< 0.05	< 0.005	244	45	87	0.001	1420		< 0.005			1.75	< 0.001	54	0.09	< 0.1	< 0.1		2	14	192		0.92
P80-1	21-May-03	525	0.05	0.07	< 0.05	< 0.001	251	34	91	< 0.005	1510		< 0.005			1.98	< 0.001	61	0.16	< 0.1	< 0.1		2	19	300		0.69
P80-1	27-Apr-04	454	0.12	0.08	0.05	< 0.001	227	30	67	< 0.005	1240		< 0.005			3.86	< 0.001	55	0.32	< 0.1	< 0.1		2	19	173		0.61
P80-1	3-May-05	569	0.13	0.1	0.02	< 0.0001	212	30	62	0.002	1400		< 0.005			2.76	< 0.001	67	0.46	< 0.1	< 0.1		3	21	178		0.58
P80-1	28-Apr-06	683	0.09	0.11	0.03	< 0.0001	250	38	64	0.003	1600		< 0.005			2.64	< 0.001	61	0.72	< 0.1	< 0.1		2	22	181		0.74
P80-1	26-Apr-07	687	0.09	0.09	0.03	< 0.0001	259	34	61	0.002	1580		< 0.005			3.18	< 0.001	62	0.71	0.13	< 0.1		2	23	175		0.82
P80-1	26-May-08	723	< 0.15	0.13	0.037	< 0.0001	250	47	74	< 0.005	1620	< 0.002		11.8	900	2.8	< 0.0005	69	0.43	< 0.1	< 0.01	7.6	2.8	28	142	985	< 4
P80-1	29-Apr-09	746	0.23	0.12	0.036	< 0.0001	250	110	65	< 0.005	1660	< 0.002		14.4	910	4	< 0.0005	70	0.36	< 0.1	< 0.01	7.5	2.7	27	120	1110	< 7
W44-3	17-May-00	418	0.41	0.31	0.09	< 0.005	237	21	289	< 0.01	1680		< 0.02			4.53	< 0.001	45	1.47	< 0.1	< 0.1		3	88	283		0.56
W44-3	10-May-01	385	0.44	0.41	0.27	< 0.005	192	21	172	< 0.01	1700		< 0.005			3.61	< 0.001	38	1.24	< 0.1	< 0.1		3	72	280		0.63
W44-3	16-May-02	442	0.51	0.2	0.05	< 0.005	264	15	170	< 0.001	1760		< 0.005			5.2	< 0.001	44	1.57	< 0.1	< 0.1		3	86	274		1.07
W44-3	5-Jun-03	385	0.57	0.23	0.07	< 0.001	273	12	202	< 0.005	1880		< 0.005			4.58	< 0.001	45	1.73	< 0.1	< 0.1		3	93	349		0.9
W44-3	27-Jun-03	393	0.54	0.22	0.08	< 0.001	237	10	103	< 0.005	1840		< 0.005			5.21	< 0.001	40	1.64	< 0.1	< 0.1		2	82	343		1.24
W44-3	6-May-04	387	0.55	0.27	0.07	< 0.0001	259	17	222	0.002	1980		< 0.005			5.2	< 0.001	49	1.97	< 0.1	< 0.1		3	97	382		1.2
W44-3	28-Apr-05	401	0.69	0.27	0.13	< 0.0001	262	7	227	< 0.001	1990		< 0.005			8.57	< 0.001	49	1.63	< 0.1	< 0.1		3	104	358		0.82
W44-3	27-Apr-06	449	0.59	0.25	0.07	< 0.0001	255	14	224	0.005	2020		< 0.005			8	< 0.001	47	1.8	< 0.1	< 0.1		3	98	357		1.06
W44-3 FD	27-Apr-06	447	0.6	0.25	0.07	< 0.0001	259	15	221	0.006	2010		< 0.005			7.93	< 0.001	45	1.77	< 0.1	< 0.1		3	95	351		0.94
W44-3	25-Apr-07	391	0.55	0.25	0.09	< 0.0001	258	13	221	0.007	1990		< 0.005			7.69	< 0.001	48	1.67	< 0.1	< 0.1		3	112	382		0.92
W44-3	23-May-08	515	0.59	0.26	0.079	< 0.0001	260	35	230	< 0.005	2020	< 0.002		5.9	830	7.6	< 0.0005	46	1.8	< 0.1	< 0.01	7.5	3.1	110	347	1210	1.4
W44-3	19-Nov-08	416	0.78	0.26	0.076	< 0.0001	240	38	220	< 0.005	2050	0.098		6.3	780	8.9	< 0.0005	44	1.5	< 0.1	< 0.01	7.9	3.3	97	367	1300	< 4
W44-3	29-Apr-09	440	0.62	0.24	0.086	< 0.0001	250	19	230	< 0.005	2050	< 0.002		6.9	820	8	< 0.0005	48	1.6	< 0.1	< 0.01	7.6	3.3	110	370	1350	2
W44-3	28-Oct-09	424	0.83	0.27	0.084	< 0.0001	270	12	220	< 0.005	2060	< 0.002		6.5	870	9.1	< 0.0005	50	1.6	< 0.1	< 0.01	7.5	3.7	120	400	1310	1.1
W48-2	7-Nov-02	523	17.1	0.39	0.42	< 0.001	179	79	340	0.002	2210		< 0.005			11	< 0.001	37	0.84	< 0.1	< 0.1		37	206	102		19.7
W48-2	6-Feb-03	554	18.8	0.41	0.5	< 0.001	167	50	379	< 0.005	2270		< 0.005			9.14	< 0.001	44	0.83	0.22	< 0.1		25	194	117		20.7
W48-2	26-May-03	361	4.78	< 0.01	< 0.05	< 0.001	163	33	281	< 0.005	1760		< 0.005			0.05	< 0.001	32	< 0.005	0.67	< 0.1		16	178	141		8.33
W48-2	5-Nov-03	504	13.4	0.37	0.5	< 0.001	171	43	371	0.007	2240		< 0.005			3.49	< 0.001	40	0.94	< 0.1	< 0.1		32	231	92		15
W48-2	11-Feb-04	361	6.96	0.27	0.62	0.001	161	40	376	0.013	2060		0.005			0.77	0.001	35	0.87	0.65	0.1		23	227	169		8.26
W48-2	5-May-04	387	7.92	0.24	0.48	< 0.0001	152	47	291	0.004	1780		< 0.005			0.89	< 0.001	34	0.89	< 0.1	< 0.1		16	176	144		11.7
W48-2	11-Nov-04	455	10.8	0.34	0.46	< 0.0001	164	49	311	0.003	1990		< 0.005			12.7	< 0.001	37	1.58	< 0.1	< 0.1		20	179	86		13.2
W48-2	28-Apr-05	392	7.96	0.29	0.48	< 0.0001	159	30	297	< 0.001	1880		< 0.005			3.77	< 0.001	35	0.82	0.29	< 0.1		15	174	115		8.65
W48-2	28-Nov-05	490	12.5	0.41	0.55	< 0.0001	172	55	363	0.006	2150		< 0.005			17.5	< 0.001	40	0.95	< 0.1	< 0.1		22	203	81		13.6
W48-2 FD	28-Nov-05	492	12.3	0.41	0.49	< 0.0001	169	54	380	0.006	2160		< 0.005			17.8	< 0.001	40	0.93	< 0.1	< 0.1		21	199	82		13.6
W48-2	28-Apr-06	384	4.73	0.27	0.91	< 0.0001	163	36	443	0.006	2370		< 0.005			0.91	0.001	34	0.61	0.78	< 0.1		13	273	170		6.83
W48-2	9-Nov-06	435	9.28	0.32	0.56	< 0.0001	165	46	330	0.005	2130		< 0.005			10.2	< 0.001	40	0.99	< 0.1	< 0.1		17	206	113		9.53
W48-2	25-Apr-07	352	3.74	0.21	0.58	< 0.0001	154	30	303	0.004	1900		< 0.005			1.69	< 0.001	36	0.79	< 0.1	< 0.1		12	208	165		4.68
W48-2	27-Nov-07	569	13.9	0.4	0.41	< 0.0001	161	53	352	0.002	2160		< 0.005			18.5	< 0.001	40	0.87	< 0.1	< 0.1		20	188	75		15.2
W48-2	23-May-08	363	3.74	0.23	1.2	< 0.0001	170	34	390	< 0.005	2250	< 0.002		10.5	580	0.25	< 0.0005	39	0.69	1	0.01	7.9	14	270	192	1380	5
W48-2	19-Nov-08	634	18.2	0.41	0.65	< 0.0001	180	65	340	< 0.005	2360	< 0.002		22.4	640	15	< 0.0005	47	1	< 0.1	< 0.01	7.9	23	190	97	1500	15
W48-2	29-Apr-09	377	7.93	0.27	0.72	< 0.0001	150	45	430	< 0.005	2310	< 0.002		12.8	520	1.8	< 0.0005	36	0.69	0.2	0.03	7.4	15	240	130	1470	9
W48-2	29-Oct-09	451	14.1	0.32	0.56	< 0.0001	170	82	400	< 0.005	2290	< 0.002		15.1	600	13	< 0.0005	44	1	< 0.1	0.01	7.5	21	250	94	1500	12

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
[redacted]																											

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
W56-2	6-Dec-01	643	1.62	0.66	0.05	< 0.005	229	22	159	< 0.01	1560		< 0.005			7.02	< 0.001	46	0.2	< 0.1	< 0.1		4	40	42		1.62
W56-2	17-Jan-02	654	0.93	0.72	< 0.05	< 0.005	255	25	162	0.002	1670		< 0.005			8.49	< 0.001	45	0.21	< 0.1	< 0.1		3	35	55		2.19
W56-2	14-May-02	649	1.17	0.85	< 0.05	< 0.005	270	35	171	< 0.001	1720		< 0.005			7.34	< 0.001	47	0.18	< 0.1	< 0.1		4	42	61		1.91
W56-2	6-Feb-03	705	2.4	< 0.01	< 0.05	< 0.001	277	20	156	< 0.005	1850		0.04			< 0.01	< 0.001	47	< 0.005	< 0.1	< 0.1		3	40	131		2.41
W56-2	26-May-03	683	1.58	0.85	< 0.05	< 0.001	348	23	99	< 0.005	1910		< 0.005			10.1	< 0.001	53	0.24	< 0.1	< 0.1		3	49	174		2.68
W56-2	4-Nov-03	691	1.54	0.82	< 0.05	< 0.001	282	< 5	86	0.02	1910		< 0.005			10.5	< 0.001	50	0.27	< 0.1	< 0.1		5	52	155		2.67
W56-2	11-Feb-04	678	1.63	0.68	0.05	0.001	340	5	187	0.04	2040		0.005			12.3	0.001	58	0.34	0.1	0.1		7	58	271		2.32
W56-2	3-May-04	628	1.11	0.59	< 0.05	< 0.0001	396	17	210	0.003	2370		< 0.005			17.7	< 0.001	61	0.46	< 0.1	< 0.1		4	66	452		2.61
W56-2 FD	3-May-04	625	1.17	0.68	< 0.05	< 0.001	389	16	207	0.003	2340		< 0.005			18.4	< 0.001	60	0.46	< 0.1	< 0.1		4	65	441		2.86
W56-2	11-Nov-04	689	2.06	0.6	0.04	< 0.0001	426	26	214	0.004	2340		< 0.005			16.2	< 0.001	66	0.36	< 0.1	< 0.1		4	81	381		2.86
W56-2	28-Apr-05	671	2.5	0.47	0.03	< 0.0001	382	27	224	< 0.001	2350		< 0.005			15.7	< 0.001	61	0.33	< 0.1	< 0.1		4	72	435		2.85
W56-2	2-May-05	605	9.66	2.06	0.41	< 0.0001	312	45	1110	< 0.005	4250		< 0.005			10.2	< 0.001	197	0.13	< 0.1	< 0.1		21	268	21		11.8
W56-2	28-Nov-05	721	2.64	0.44	0.04	< 0.0001	360	41	214	0.003	2330		< 0.005			14.8	< 0.001	59	0.34	< 0.1	< 0.1		4	72	347		3.08
W56-2	27-Apr-06	726	2.79	0.44	0.02	< 0.0001	356	25	211	0.006	2380		< 0.005			12.8	< 0.001	57	0.29	< 0.1	< 0.1		4	72	361		3.04
W56-2	9-Nov-06	724	2.62	0.46	0.02	< 0.0001	370	30	212	0.006	2370		< 0.005			14.9	0.01	56	0.3	< 0.1	< 0.1		4	74	307		3.05
W56-2	26-Apr-07	685	2.19	0.47	0.04	< 0.0001	355	30	217	0.007	2390		< 0.005			16	< 0.001	53	0.33	0.44	< 0.1		4	80	355		2.56
W56-2 FD	26-Apr-07	690	2.19	0.4	0.02	< 0.0001	365	31	213	0.006	2390		< 0.005			15.8	< 0.001	55	0.31	0.19	0.14		4	80	347		2.52
W56-2	28-Nov-07	753	2.84	0.44	0.03	< 0.0001	364	17	211	0.005	2360		< 0.005			14.8	< 0.001	55	0.32	< 0.1	< 0.1		4	74	288		3.07
W56-2	23-May-08	859	2.88	0.4	0.023	< 0.0001	350	38	220	< 0.005	2290	< 0.002		11.1	1100	15	< 0.0005	53	0.29	< 0.1	0.02	7.4	4.1	81	296	1430	4
W56-2	19-Nov-08	778	2.9	0.44	0.026	< 0.0001	330	47	200	< 0.005	2270	0.012		11.1	1100	12	< 0.0005	55	0.27	< 0.1	< 0.01	7.9	4.2	73	248	1500	< 4
W56-2	29-Apr-09	748	3.03	0.43	0.024	< 0.0001	340	40	190	< 0.005	2320	< 0.002		12.4	1100	14	< 0.0005	56	0.28	< 0.1	0.01	7.5	4.3	81	280	1500	4
W56-2	28-Oct-09	781	3.11	0.4	0.027	< 0.0001	360	84	200	0.012	2290	< 0.002		11.9	1100	13	< 0.0005	58	0.28	< 0.1	0.02	7.5	4.6	81	270	1510	< 7
W57-2	24-Feb-04	192	0.02	0.04	0.05	0.001	65	5	25	0.006	444		0.005			0.02	0.001	14	0.05	0.1	0.1		2	8	18		0.12
W57-2	6-May-04	173	0.04	0.04	< 0.01	< 0.0001	61	< 5	19	< 0.001	411		< 0.005	1.1		0.02	< 0.001	15	< 0.1	0.11	< 0.1		2	6	17		0.11
W57-2	26-May-08	166	< 0.15	0.047	< 0.02	< 0.0001	66	23	49	0.11	492	< 0.002		1.1	230	< 0.1	< 0.0005	17	0.007	< 0.1	< 0.01	8.1	1.5	7.3	18	325	< 10
W57-2	29-Apr-09	177	< 0.15	0.047	< 0.02	< 0.0001	61	76	47	0.07	493	< 0.002		1.7	220	< 0.1	< 0.0005	15	0.005	0.1	< 0.01	7.3	1.3	6.3	18	330	< 7
W57-2 FD	29-Apr-09	173	< 0.15	0.051	< 0.01	< 0.0001	70	77	45	< 0.005	496	< 0.002		1.7	250	< 0.1	< 0.0005	17	< 0.002	0.1	< 0.01	7.7	1.6	7	20	330	< 0.7
W60-2	24-Feb-04	266	0.14	0.24	0.11	0.001	83	14	4	0.005	513		0.005			0.55	0.001	20	0.03	0.1	0.1		1	5	28		0.57
W60-2	6-May-04	256	0.17	0.31	< 0.01	< 0.0001	81	15	3	< 0.001	507		< 0.005	6.1		0.7	< 0.001	20	0.04	< 0.1	< 0.1		1	4	27		0.44
W60-2	26-May-08	127	0.34	0.033	0.36	< 0.0001	10	15	12	< 0.005	356	< 0.002		2.7	39	< 0.1	< 0.0005	3.3	< 0.002	< 0.1	< 0.01	8.8	3.2	68	33	351	< 4
W60-2	29-Apr-09	210	0.28	0.052	0.45	< 0.0001	8.8	12	10	< 0.005	457	< 0.002		3.4	45	< 0.1	< 0.0005	5.7	< 0.002	< 0.1	< 0.01	7.7	3.6	79	33	295	< 0.7
W61	24-Feb-04	269	0.03	0.21	0.05	0.001	86	5	16	0.006	563		0.005			0.45	0.001	19	0.02	0.1	0.1		2	7	24		0.09
W61	6-May-04	269	0.05	0.22	< 0.01	< 0.0001	90	< 5	12	< 0.001	581		< 0.005	1.6		0.6	< 0.001	20	0.02	< 0.1	< 0.1		2	8	33		0.18
W61	26-May-08	263	< 0.15	0.24	< 0.02	< 0.0001	88	12	17	0.019	568	< 0.002		1.5	310	0.68	< 0.0005	22	0.018	< 0.1	< 0.01	8.1	1.7	6.7	30	385	< 4
W61	29-Apr-09	277	< 0.15	0.23	< 0.02	< 0.0001	85	< 4	17	< 0.005	616	< 0.002		3.1	300	0.8	< 0.0005	21	0.018	< 0.1	< 0.01	7.8	1.6	6.5	31	410	< 0.7
W62-2	25-Feb-04	185	0.05	0.15	0.05	0.001	66	5	7	0.005	392		0.005			0.07	0.001	14	0.05	0.1	0.1		2	4	24		0.16
W62-2	5-May-04	234	0.05	0.17	0.02	< 0.0001	89	7	11	0.001	519		< 0.005	1.9		0.65	< 0.001	17	0.16	< 0.1	< 0.1		< 1	4	37		0.43
W62-2	26-May-08	244	< 0.15	0.19	< 0.02	< 0.0001	91	22	21	0.012	575	< 0.002		1.6	310	0.44	< 0.0005	20	0.13	< 0.1	< 0.01	8.1	1.1	3.4	40	378	< 4
W62-2	29-Apr-09	234	< 0.15	0.44	0.021	0.0001	1000	76	19	0.008	554	< 0.002		3.8	2700	12	0.0051	41	1.1	< 0.1	< 0.01	7.7	4.1	4	37	380	< 4
W63	24-Feb-04	1030	0.25	0.48	0.14	0.001	327	77	253	0.035	2490		0.005			21	0.001	95	0.66	0.1	0.1		4	122	74		1.85
W63	7-May-04	1100	0.29	0.49	0.11	< 0.0001	338	89	264	0.001	2660		< 0.005	28.2		22.2	< 0.001	97	0.59	< 0.1	< 0.1		3	127	62		2.1
W63	26-May-08	1300	16.3	0.87	0.29	< 0.0001	380	120	430	< 0.005	3350	< 0.002		37.4	1400	1.4	< 0.0005	120	0.43	< 0.1	< 0.01	7.4	12	280	47	2320	18
W63	29-Apr-09	1240	23.7	0.93	0.29	< 0.0001	300	100	390	< 0.005	3290	< 0.002		36.2	1100	19	< 0.0005	96	0.38	< 0.1	< 0.01	7.4	12	220	75	2160	23
W64	25-Feb-04	407	0.37	0.16	0.09	0.001	160	29	61	0.01	1090		0.005			0.16	0.001	37	1.17	0.1	0.1		6	42	115		1.02
W64	5-May-04	332	0.61	0.13	0.1	< 0.0001	116	20	53	0.001	856		< 0.005	8.8		0.4	< 0.001	25	1.02	< 0.1	< 0.1		5	36	61		1.47
W64	26-May-08	401	3.68	0.22	0.19	< 0.0001	130	34	93	< 0.005	1160	< 0.002		10.9	460	5.5	< 0.0005	32	0.72	< 0.1	0.01	7.9	8.3	70	95	738	5
W64 FD	26-May-08	403	3.69	0.22	0.19	< 0.0001	130	34	94	< 0.005	1160	< 0.002		10.8	450	5.3	< 0.0005	32	0.71	< 0.1	< 0.01	8	8.1	69	94	711	5
W64	29-Apr-09	405	3.71	0.24	0.17	< 0.0001	200	35	110	< 0.005	1190	< 0.002		12.2	650	6	0.0013	34	0.84	< 0.1	< 0.01	7.6	8.2	69	77	780	6
W65-2	25-Feb-04	267	0.03	0.12	0.05	0.001	114	5	40	0.005	783		0.005			0.01	0.001	20	0.05	5.42	0.1		3	34	74		0.36
W65-2	27-Apr-04	222	0.03	0.1	0.04	< 0.001	91	7	40	< 0.005	671		< 0.005			< 0.01	< 0.001	16	< 0.01	< 0.1	< 0.1		2	25	57		0.27
W65-2	5-May-04	210	< 0.02	0.09	0.05	< 0.0001	91	< 5	40	< 0.001	627		< 0.005	2.2		< 0.01	< 0.001	16	< 0.01	2.19	< 0.1		2	25	59		0.23
W65-2	26-May-08	201	< 0.15	0.17	0.07	< 0.0001	120	22	190	0.005	1260	< 0.002		6.5	380	< 0.1	< 0.0005	21	< 0.002	4.6	0.05	8	4	100	111	773	< 1
W65-2	29-Apr-09	210	< 0.15	0.12	0.031	< 0.0001	100	9	140	0.01	892	< 0.002		3.6	330	0.91	0.0011	18	0.12	1.1	< 0.01	7.6	2.2	64	38	585	< 1

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

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Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
[redacted]																											
W72	25-Feb-04	618	0.12	0.23	0.05	0.001	231	12	51	0.017	1290		0.005			0.89	0.001	38	1.57	0.1	0.1		3	29	60		0.45
W72	23-May-08	208	0.32	0.23	0.092	< 0.0001	130	32	210	< 0.005	1360	< 0.002		9.5	420	< 0.1	< 0.0005	24	< 0.002	4.7	0.12	8.1	5.4	100	136	855	1.6
W72	19-Nov-08	298	< 0.15	0.14	0.058	< 0.0001	120	12	150	< 0.005	1140	< 0.002		2.9	400	< 0.1	< 0.0005	24	< 0.002	2.9	< 0.01	8	1.8	63	65	745	< 0.7
W72	29-Apr-09	418	< 0.15	0.19	0.079	< 0.0001	150	13	100	< 0.005	1190	< 0.002		6.3	510	< 0.1	< 0.0005	29	0.004	1	< 0.01	7.6	2.3	55	65	850	0.9
W72	28-Oct-09	502	< 0.15	0.24	0.11	< 0.0001	180	17	120	< 0.005	1390	< 0.002		8.6	600	< 0.1	< 0.0005	34	1.2	< 0.1	< 0.01	7.4	2.6	74	82	895	< 0.7
[redacted]																											
W79	23-May-08	456	0.93	0.22	0.098	< 0.0001	260	18	280	< 0.005	2190	< 0.002		5.1	830	5.4	< 0.0005	46	2.8	< 0.1	< 0.01	7.6	3.5	160	340	1350	1.6
W79 FD	23-May-08	464	0.91	0.23	0.098	< 0.0001	250	19	270	< 0.005	2200	< 0.002		5	810	5.5	< 0.0005	45	2.9	< 0.1	< 0.01	7.6	3.6	160	359	1330	2.8
W79	19-Nov-08	431	1.02	0.21	0.14	< 0.0001	260	21	280	0.006	2210	< 0.002		5.5	880	5.3	< 0.0005	55	2.6	< 0.1	< 0.01	8	4.9	200	365	1350	2
W79	29-Apr-09	453	1.19	0.34	0.092	< 0.0001	320	18	800	< 0.005	3770	< 0.002		6.3	1100	7.3	< 0.0005	62	3.6	< 0.1	< 0.01	7.6	4.2	340	330	2400	1.9
W79 FD	29-Apr-09	457	1.17	0.32	0.092	< 0.0001	320	20	790	< 0.005	3760	< 0.002		6	1100	< 0.1	< 0.0005	61	3.7	< 0.1	< 0.01	7.6	4.2	330	320	2400	1.8
W79	28-Oct-09	431	1.68	0.62	0.12	< 0.0001	420	27	1600	< 0.005	6070	< 0.002		6.8	1300	8.9	< 0.0005	72	4.5	< 0.1	< 0.01	7.4	6.2	740	340	3800	3.3
W80	23-May-08	635	13.6	0.39	0.29	< 0.0001	190	75	240	0.033	2110	< 0.002		16.6	620	0.15	< 0.0005	36	0.97	0.4	0.02	7.9	20	170	120	1230	17
W80	19-Nov-08	525	0.87	0.2	0.21	< 0.0001	260	29	420	0.005	2660	< 0.002		8.4	790	< 0.1	< 0.0005	37	0.68	9	0.07	7.9	14	280	200	1600	1.7
W80	29-Apr-09	586	15.2	0.46	0.49	< 0.0001	190	68	370	0.033	2610	< 0.002		21	670	5.8	< 0.0005	44	0.93	24	0.1	7.6	28	250	120	1700	18
W80	28-Oct-09	633	1.85	0.21	0.33	< 0.0001	250	32	360	0.008	2630	< 0.002		16.7	800	2.9	< 0.0005	45	0.6	12	0.05	7.5	17	260	180	1610	2.6
W81	23-May-08	370	3.27	0.42	0.045	< 0.0001	330	65	1400	0.008	5280	< 0.002		6	950	0.25	< 0.0005	33	0.096	5.6	< 0.01	7.8	5.3	690	159	2860	5
W81	19-Nov-08	377	< 0.15	0.3	0.033	< 0.0001	250	29	1300	0.011	4960	< 0.002		4.8	750	< 0.1	< 0.0005	28	0.022	3.4	< 0.01	7.9	3.5	670	145	3160	< 1
W81	29-Apr-09	529	4.63	0.32	0.086	< 0.0001	240	43	910	0.01	3930	< 0.002		7.9	730	2.6	< 0.0005	30	0.6	2.8	< 0.01	7.6	7.8	580	120	2600	6
W81	28-Oct-09	432	1.5	0.24	0.059	< 0.0001	190	24	830	< 0.005	3570	< 0.002		5.8	580	1.4	< 0.0005	24	0.18	4.5	< 0.01	7.5	5	540	100	2290	2
[redacted]																											

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW1	16-May-00	688	15.3	0.82	0.31		224	41	211		1960					12			1.28				27	126	77		20
PW1 FD	16-May-00		15.6	0.81	0.32	< 0.005	222	41	208	< 0.01	1980		< 0.02			12.1	< 0.002	47	1.26	0.1	< 0.1		27	125	77		19
PW1	22-Nov-00	674	12.4	0.98	0.31	< 0.005	216	77	269	< 0.01	2020		< 0.005			15.2	< 0.001	47	1.79	< 0.1	< 0.1		25	123	73		14.3
PW1	9-May-01	679	12.5	1	0.33	< 0.005	229	48	221	< 0.01	1960		0.007			9.81	< 0.001	46	1.74	< 0.1	< 0.1		22	110	99		12.6
PW1 FD	9-May-01	678	10.9	0.89	0.32	< 0.005	229	48	221	< 0.01	1960		< 0.005			9.67	< 0.001	46	1.74	< 0.1	< 0.1		22	108	98		11.9
PW1	6-Dec-01	730	12	0.59	0.36	< 0.005	200	43	203	< 0.01	2060		< 0.005			17	< 0.001	51	1.4	< 0.1	< 0.1		23	121	106		12
PW1	30-Aug-02	745	12.8	0.85	0.37	< 0.001	252	58	246	< 0.001	2230	< 0.005	< 0.005			32.4	< 0.001	47	1.5	< 0.1	< 0.1		26	155	96		14.5
PW1	7-Nov-02	649	5.96	0.48	0.13	< 0.001	250	26	143	0.001	1680		< 0.005			16.7	< 0.001	38	2.43	< 0.1	< 0.1		19	87	103		5.98
PW1	22-May-03	658	4.07	0.47	0.17	< 0.001	274	29	186	< 0.005	1700		< 0.005			20.3	< 0.001	45	2.43	< 0.1	< 0.1		12	77	102		5.28
PW1	4-Nov-03	694	6.4	0.68	0.28	< 0.001	264	34	228	< 0.005	2010		< 0.005			27.4	< 0.001	47	2.36	< 0.1	< 0.1		21	118	104		9.91
PW1	4-May-04	695	6.02	0.61	0.21	< 0.001	247	39	181	0.01	1890		< 0.005			19.3	< 0.001	46	2.68	< 0.1	< 0.1		14	101	107		8.92
PW1	5-Nov-04	621	3.76	0.44	0.18	< 0.0001	153	31	146	0.002	1620		< 0.005			17.1	< 0.001	41	2.81	< 0.1	< 0.1		8	82	88		4.81
PW1	4-May-05	576	8.23	0.39	0.15	< 0.0001	199	26	119	< 0.001	1480		< 0.005			14	< 0.001	34	2.23	< 0.1	< 0.1		8	61	79		9.72
PW1	24-Nov-05	629	2.05	0.34	0.14	< 0.0001	232	28	153	0.007	1650		< 0.005			14.5	< 0.001	38	2.97	< 0.1	< 0.1		6	65	72		2.7
PW1 FD	24-Nov-05	630	2.05	0.34	0.1	< 0.0001	225	29	146	0.007	1660		< 0.005			11.2	< 0.001	37	2.83	< 0.1	< 0.1		6	65	74		2.81
PW1	28-Apr-06	658	2.91	0.43	0.15	< 0.0001	250	24	167	0.005	1750		< 0.005			26.2	< 0.001	39	2.62	< 0.1	< 0.1		8	79	72		4.3
PW1	7-Nov-06	749	8.3	0.6	0.26	< 0.0001	291	47	257	0.005	2220		< 0.005			29.3	< 0.001	53	2.2	< 0.1	< 0.1		14	149	62		8.52
PW1	24-Apr-07	707	7.37	0.56	0.25	< 0.0001	210	48	244	0.008	2060		< 0.005			28.4	< 0.001	43	1.94	0.21	< 0.1		13	118	48		14.4
PW1	29-Nov-07	691	8.47	0.49	0.26	< 0.0001	211	46	223	0.005	1980		< 0.005			14.8	< 0.001	42	1.74	< 0.1	< 0.1		12	123	35		8.89
PW1	22-May-08	491	9.59	0.46	0.25	< 0.0001	170	43	210	< 0.005	1730	< 0.002		11.9	530	14	0.0006	38	0.91	0.4	< 0.01	7.6	15	130	95	1060	9
PW1	19-Nov-08	662	12.5	0.55	0.32	0.0005	210	51	260	< 0.005	2090	< 0.002		15.4	670	16	0.0005	47	1.7	< 0.1	< 0.01	7.8	15	150	77	1380	11
PW1	30-Apr-09	718	17.8	0.69	0.55	< 0.0001	240	73	370	< 0.005	2580	< 0.002		25.4	710	13	< 0.0005	65	1.4	< 0.1	< 0.01	7.4	25	250	75	1690	18
PW1	28-Oct-09	806	33.3	0.74	0.69	< 0.0001	220	83	360	< 0.005	2770	< 0.002		29.5	760	5.6	< 0.0005	68	1.1	< 0.1	< 0.01	7.6	36	250	85	1800	29
PW2	22-Nov-00	774	< 0.02	0.89	0.45	< 0.005	225	49	372	< 0.01	2400		< 0.005			18.8	< 0.001	58	0.96	< 0.1	< 0.1		42	184	40		33.1
PW2	9-May-01	692	14.9	0.65	0.26	< 0.005	215	42	164	< 0.01	1870		< 0.005			23.9	< 0.001	49	1.06	< 0.1	< 0.1		27	93	107		15.7
PW2	6-Dec-01	718	13.9	0.38	0.48	< 0.005	232	65	186	< 0.01	1870		< 0.005			0.36	< 0.001	51	1.07	< 0.1	< 0.1		20	101	93		13.9
PW2	18-Dec-01	437	18.4	0.19	0.38	< 0.005	190	19	316	< 0.01	2070		< 0.005			8.97	< 0.001	45	0.54	< 0.1	< 0.1		32	195	236		40
PW2	29-May-02	737	19.3	0.53	0.41	< 0.005	250	62	269	< 0.001	2270		< 0.005			17.8	< 0.001	53	1.16	< 0.1	< 0.1		24	147	101		19
PW2	7-Nov-02	797	20.5	0.49	0.51	< 0.001	268	73	259	0.002	2310		< 0.005			8	< 0.001	47	1.2	< 0.1	< 0.1		44	167	100		21.7
PW2	22-May-03	841	22.3	0.67	0.63	< 0.001	280	79	305	< 0.005	2410		< 0.005			21.1	< 0.001	58	1.31	< 0.1	< 0.1		36	168	93		22.5
PW2	4-Nov-03	799	17.9	0.73	0.45	< 0.001	262	51	283	< 0.005	2380		< 0.005			27.6	< 0.001	51	1.42	< 0.1	< 0.1		42	172	100		25.7
PW2	4-May-04	814	18.5	0.8	0.38	< 0.001	262	71	307	0.01	2530		< 0.005			30.9	< 0.001	56	1.36	0.11	< 0.1		38	172	134		24.2
PW2	5-Nov-04	843	21.9	0.79	0.67	< 0.0001	202	85	387	0.004	2680		< 0.005			14.9	< 0.001	62	1.31	< 0.1	< 0.1		44	225	94		30.3
PW2	4-May-05	814	21.3	0.82	0.57	< 0.0001	234	67	355	0.002	2670		< 0.005			29.2	< 0.001	65	1.2	< 0.1	< 0.1		41	190	110		24.9
PW2	24-Nov-05	870	26.7	0.93	0.69	< 0.0001	225	88	470	< 0.005	3080		< 0.005			24	< 0.001	61	1.27	< 0.1	< 0.1		38	230	76		31.4
PW2	28-Apr-06	854	20.8	0.74	0.52	< 0.0001	252	72	434	< 0.005	2890		< 0.005			32.8	0.001	62	1.17	< 0.1	< 0.1		33	227	74		23.8
PW2	7-Nov-06	957	41.1	0.85	0.5	< 0.0001	284	88	541	0.008	3450		< 0.005			34.7	< 0.001	61	1.04	< 0.1	< 0.1		68	354	69		48.1
PW2 FD	7-Nov-06	955	42.4	0.88	0.5	< 0.0001	240	86	542	0.008	3420		< 0.005			33.2	< 0.001	59	1.03	< 0.1	< 0.1		65	372	79		47.7
PW2	24-Apr-07	950	39.2	0.89	0.54	< 0.0001	224	89	497	< 0.005	3300		< 0.005			37.9	< 0.001	55	1.19	0.29	< 0.1		54	261	64		43.9
PW2	29-Nov-07	935	31.5	0.79	0.61	< 0.0001	263	80	526	0.009	3320		< 0.005			14.5	0.008	62	1.17	< 0.1	< 0.1		40	261	45		33.1
PW2	22-May-08	680	15.2	0.33	0.37	< 0.0001	220	61	260	< 0.005	2220	< 0.002		21.6	690	13	0.0021	55	1.6	< 0.1	< 0.01	7.8	24	160	138	1330	15
PW2	19-Nov-08	819	37	0.7	0.61	< 0.0001	230	87	400	< 0.005	2870	0.005		26.3	760	20	0.014	63	0.92	< 0.1	< 0.01	7.8	44	230	100	1800	33
PW2	30-Apr-09	799	27.4	0.63	0.6	< 0.0001	240	87	420	< 0.005	2860	< 0.002		30.6	780	8.8	< 0.0005	69	1	0.2	0.01	7.5	38	240	77	1810	27

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

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Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW3	9-May-01	751	23.4	1.04	0.41	< 0.005	214	59	340	< 0.01	2450		< 0.005			33.7	< 0.001	54	0.73	< 0.1	< 0.1		30	169	43		25.4
PW3	6-Dec-01	806	31.2	0.76	0.47	< 0.005	223	63	390	< 0.01	2630		< 0.005			19.8	< 0.001	66	0.48	< 0.1	< 0.1		35	207	80		31.2
PW3	29-May-02	759	19.8	1.07	0.46	< 0.005	217	55	316	< 0.001	2450		< 0.005			20.9	< 0.001	65	0.54	< 0.1	< 0.1		36	178	102		31.4
PW3	7-Nov-02	757	24	0.61	0.41	< 0.001	239	65	360	0.002	2640		< 0.005			3.06	< 0.001	47	0.58	< 0.1	< 0.1		58	237	129		28.5
PW3	22-May-03	837	23	0.84	0.5	< 0.001	258	71	337	< 0.005	2490		< 0.005			27.1	< 0.001	53	0.774	< 0.1	< 0.1		45	195	106		28.8
PW3	4-Nov-03	803	25	0.99	0.49	< 0.001	248	57	299	< 0.005	2450		< 0.005			35.3	< 0.01	53	0.97	< 0.1	< 0.1		55	184	112		30.1
PW3	4-May-04	822	32	0.94	0.4	< 0.001	247	72	302	0.01	2670		< 0.005			36.3	< 0.001	57	1.08	< 0.1	< 0.1		45	194	205		36
PW3 FD	4-May-04	823	29	0.94	0.43	< 0.001	250	68	315	< 0.01	2670		< 0.005			36.4	< 0.001	58	1.06	< 0.1	< 0.1		46	196	200		36
PW3	5-Nov-04	802	23.9	0.74	0.59	< 0.0001	196	81	366	0.004	2640		< 0.005			24.5	< 0.001	59	1.1	< 0.1	< 0.1		45	219	117		30.1
PW3	4-May-05	871	25.6	0.86	0.64	< 0.0001	240	78	439	0.003	2960		< 0.005			32	< 0.001	70	0.99	< 0.1	< 0.1		55	233	94		30
PW3	24-Nov-05	970	35.5	0.9	0.66	< 0.0001	262	99	548	< 0.005	3520		< 0.005			26.1	< 0.001	61	0.82	< 0.1	< 0.1		52	269	80		38
PW3	28-Apr-06	1050	28	0.89	0.62	< 0.0001	276	85	592	< 0.005	3620		< 0.005			32.3	< 0.001	64	1.05	< 0.1	< 0.1		58	331	75		39
PW3	7-Nov-06	955	47.8	0.88	0.53	< 0.0001	296	86	523	0.009	3450		< 0.005			33.7	< 0.001	58	1.03	< 0.1	< 0.1		65	375	70		50.8
PW3	24-Apr-07	955	39.7	0.91	0.55	< 0.0001	219	89	487	< 0.005	3300		< 0.005			35.2	< 0.001	54	1.18	0.3	< 0.1		52	257	63		42.4
PW3	29-Nov-07	973	35.9	0.93	0.59	< 0.0001	247	91	505	< 0.005	3340		< 0.005			25.9	< 0.001	59	1.02	< 0.1	< 0.1		48	264	48		40.3
PW3	22-May-08	855	36.5	0.76	0.45	< 0.0001	240	79	320	< 0.005	2770	< 0.002		26	750	36	< 0.0005	64	0.98	< 0.1	< 0.01	7.7	53	220	179	1560	32
PW3	19-Nov-08	735	32.1	0.64	0.43	< 0.0001	220	63	270	< 0.005	2450	< 0.002		20.8	720	28	< 0.0005	58	0.94	< 0.1	< 0.01	7.8	46	200	141	1610	28
PW3	30-Apr-09	687	27.7	0.5	0.35	< 0.0001	210	55	260	< 0.005	2310	< 0.002		18.8	680	24	< 0.0005	54	1	< 0.1	< 0.01	7.4	39	160	130	1460	24
PW3	28-Oct-09	682	26.6	0.5	0.42	< 0.0001	200	62	270	< 0.005	2320	< 0.002		22.1	700	22	< 0.0005	56	0.92	< 0.1	< 0.01	7.4	40	180	110	1500	24
PW4	6-Dec-01	808	26.9	0.94	0.42	< 0.005	262	84	646	< 0.01	3160		< 0.005			24	< 0.001	81	0.48	< 0.1	< 0.1		41	283	91		26.9
PW4	29-May-02	829	32	1.24	0.54	< 0.005	234	70	492	< 0.001	3270		< 0.005			23.7	< 0.001	71	0.54	< 0.1	< 0.1		66	317	164		38.8
PW4	7-Nov-02	711	26	0.74	0.41	< 0.001	232	65	411	0.002	2880		< 0.005			22.3	< 0.001	56	0.54	< 0.1	< 0.1		85	260	186		30.9
PW4	22-May-03	808	27	0.64	0.52	< 0.001	244	63	347	< 0.005	2620		< 0.005			23.5	< 0.001	62	0.591	< 0.1	< 0.1		73	217	162		32.5
PW4	4-Nov-03	642	25	0.58	0.41	< 0.001	198	48	234	< 0.005	2200		< 0.005			21	< 0.001	57	0.61	< 0.1	< 0.1		80	155	230		38.8
PW4	4-May-04	656	17.6	0.5	0.32	< 0.001	213	66	224	< 0.01	2210		< 0.005			27.5	< 0.001	58	0.74	< 0.1	< 0.1		58	142	200		21.7
PW4	5-Nov-04	670	19.1	0.45	0.51	< 0.0001	177	70	398	0.003	2610		< 0.005			25.2	< 0.001	57	0.72	< 0.1	< 0.1		51	220	148		21.2
PW4 FD	5-Nov-04	674	19.3	0.44	0.47	< 0.0001	183	67	397	0.003	2600		< 0.005			24.1	< 0.001	58	0.69	< 0.1	< 0.1		51	223	132		21.7
PW4	27-Apr-05	187	1.11	0.07	0.26	< 0.0001	149	11	280	< 0.001	1870		< 0.005			0.21	< 0.001	44	0.04	3.13	< 0.1		12	212	322		2.05
PW4	4-May-05	5650	291	0.59	2.52	< 0.0001	163	485	1750	0.012	13500		0.005			12.5	< 0.001	137	1.7	< 0.5	< 0.1		324	655	40		389
PW4 FD	4-May-05	4900	350	0.59	2.38	< 0.0001	147	546	1570	0.012	12400		0.009			12.3	< 0.001	122	1.75	< 0.1	< 0.1		320	664	51		656
PW4	13-Jul-05	599	2.56	0.37	0.13	< 0.0001	227	24	131	0.005	1510		< 0.005			17.8	< 0.001	39	2.75	< 0.1	< 0.1		7	62	94		3.68
PW4 FD	13-Jul-05	589	2.62	0.37	0.13	< 0.0001	217	22	138	0.005	1510		< 0.005			18.2	< 0.001	38	2.74	< 0.1	< 0.1		6	60	98		3.4
PW4	24-Nov-05	1040	29.6	0.61	0.71	< 0.0001	236	93	649	< 0.005	3990		< 0.005			21.4	< 0.001	67	0.57	< 0.1	< 0.1		81	321	71		58
PW4	28-Apr-06	988	40	0.83	0.74	< 0.0001	233	97	597	< 0.005	3650		< 0.005			25.7	0.011	63	0.62	< 0.1	< 0.1		75	340	68		47
PW4	7-Nov-06	819	41.1	0.63	0.59	< 0.0001	186	78	451	0.007	2990		< 0.005			18.5	< 0.001	55	0.54	< 0.1	< 0.1		65	287	75		43.8
PW4	24-Apr-07	858	38.5	0.69	0.66	< 0.0001	186	84	466	< 0.005	3080		< 0.005			20.3	0.002	55	0.61	0.28	< 0.1		64	258	69		40.9
PW4 FD	24-Apr-07	853	39.4	0.67	0.63	< 0.0001	187	88	458	< 0.005	3090		< 0.005			20.1	< 0.001	55	0.62	0.27	< 0.1		64	256	68		40.6
PW4	29-Nov-07	1110	50.8	1.1	1.1	< 0.001	222	116	593	0.02	3930		< 0.005			24.9	< 0.01	78	0.7	< 0.1	< 0.1		87	358	60		56.7
PW4	22-May-08	682	46	0.61	0.57	< 0.0001	160	77	270	< 0.005	2490	< 0.002		26.8	560	19	< 0.0005	58	0.48	< 0.1	< 0.01	7.8	76	200	214	1500	45
PW4 FD	22-May-08	683	46	0.63	0.63	< 0.0001	160	80	270	< 0.005	2500	< 0.002		25.2	560	19	< 0.0005	59	0.51	< 0.1	< 0.01	7.9	78	210	198	1490	44
PW4	19-Nov-08	491	27.2	0.35	0.46	< 0.0001	120	54	190	< 0.005	1730	< 0.002		20	450	12	< 0.0005	41	0.44	< 0.1	< 0.01	7.8	50	120	129	1120	24
PW4 FD	19-Nov-08	494	29	0.35	0.47	< 0.0001	120	58	190	< 0.005	1730	< 0.002		18.9	460	12	< 0.0005	42	0.44	< 0.1	< 0.01	8.1	50	130	128	1150	24
PW4	30-Apr-09	477	25.3	0.36	0.37	< 0.0001	140	56	180	< 0.005	1770	< 0.002		19.9	480	14	0.015	43	0.52	< 0.1	< 0.01	7.5	45	120	140	1190	23
PW4	28-Oct-09	501	20.8	0.34	0.4	< 0.0001	140	53	190	< 0.005	1770	< 0.002		19	500	12	< 0.0005	43	0.48	< 0.1	< 0.01	7.6	40	130	93	1150	21

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW5	23-Nov-00	650	15.2	0.75	0.34	< 0.005	256	100	312	< 0.01	2190		< 0.005			21.2	< 0.001	55	0.81	< 0.1	< 0.1		16	144	92		15.8
PW5	9-May-01	646	12.5	0.77	0.28	< 0.005	200	65	310	< 0.01	2210		< 0.005			16.4	< 0.001	56	0.71	< 0.1	< 0.1		17	123	102		13.6
PW5	6-Dec-01	762	30.4	0.65	0.46	< 0.005	276	74	400	< 0.01	2720		< 0.005			20.1	< 0.001	75	0.54	< 0.1	< 0.1		32	183	171		30.4
PW5	29-May-02	660	21	0.58	0.48	< 0.005	282	72	450	< 0.001	2920		< 0.005			18.7	< 0.001	66	0.68	< 0.1	< 0.1		32	208	220		30.1
PW5	7-Nov-02	645	23.1	0.44	0.32	< 0.001	263	57	438	0.001	2760		< 0.005			17.5	< 0.001	54	0.6	< 0.1	< 0.1		50	227	201		25.3
PW5	22-May-03	658	18.4	0.37	0.33	< 0.001	274	61	358	< 0.005	2500		< 0.005			15.5	< 0.001	61	0.62	< 0.1	< 0.1		29	184	237		20.1
PW5	4-Nov-03	674	17	0.39	0.48	< 0.001	268	54	323	< 0.005	2550		< 0.005			11.6	< 0.001	60	0.7	< 0.1	< 0.1		48	203	273		30.7
PW5	4-May-04	828	20.8	0.85	0.36	< 0.001	260	73	311	< 0.01	2540		< 0.005			32	0.004	55	1.35	< 0.1	< 0.1		39	172	147		27.4
PW5	5-Nov-04	828	19	0.75	0.64	< 0.0001	188	83	380	0.004	2650		< 0.005			16.3	< 0.001	60	1.2	< 0.1	< 0.1		42	220	100		30.1
PW5	4-May-05	837	18.3	0.82	0.6	< 0.0001	233	63	404	0.003	2720		< 0.005			30	< 0.001	67	1.18	< 0.1	< 0.1		44	198	98		24.8
PW5	24-Nov-05	839	26.2	0.82	0.77	< 0.0001	226	108	499	< 0.005	3160		< 0.005			21.9	< 0.001	62	0.99	< 0.1	< 0.1		42	257	101		28
PW5	28-Apr-06	784	19.7	0.36	0.48	< 0.0001	240	84	509	< 0.005	3020		< 0.005			26.3	< 0.001	60	0.9	< 0.1	< 0.1		31	260	98		23
PW5	7-Nov-06	739	23.1	0.36	0.52	< 0.0001	189	91	391	0.006	2690		< 0.005			20.6	< 0.001	48	0.71	< 0.1	< 0.1		32	243	99		25
PW5	24-Apr-07	720	19.5	0.37	0.59	< 0.0001	176	78	365	< 0.005	2560		< 0.005			19.8	< 0.001	49	0.74	0.23	< 0.1		39	219	86		22.2
PW5	29-Nov-07	856	28.6	0.55	0.68	< 0.0001	188	90	413	0.009	2940		< 0.005			17.6	< 0.001	56	0.64	< 0.1	< 0.1		46	251	77		32.4
PW5	22-May-08	725	31.3	0.45	0.69	< 0.0001	220	94	300	< 0.005	2660	< 0.002		31.2	680	23	< 0.0005	69	0.71	< 0.1	< 0.01	7.9	59	250	242	1520	33
PW5	19-Nov-08	606	33.3	0.33	0.56	< 0.0001	150	72	180	< 0.005	2080	0.028		22.1	570	13	< 0.0005	48	0.51	< 0.1	< 0.01	7.9	46	160	227	1330	28
PW5	30-Apr-09	546	28.8	0.28	0.48	< 0.0001	160	64	180	< 0.005	1910	< 0.002		22.9	530	14	< 0.0005	51	0.63	< 0.1	< 0.01	7.7	43	150	220	1230	27
PW5	28-Oct-09	565	27.9	0.25	0.49	< 0.0001	150	66	170	< 0.005	1810	< 0.002		22.8	530	13	< 0.0005	46	0.67	< 0.1	< 0.01	7.4	42	130	150	1180	25
PW6	16-May-00	870	45.2	0.77	0.57	< 0.005	252	96	329	< 0.01	2610		< 0.02			15.2	< 0.002	64	1.05	< 0.1	< 0.1		46	168	73		45.2
PW6	22-Nov-00	888	40.6	0.89	0.73	< 0.005	260	118	311	< 0.01	2560		< 0.005			19.2	< 0.001	60	1.19	< 0.1	< 0.1		48	167	96		45.9
PW6	9-May-01	839	42.1	0.85	0.67	< 0.005	197	107	283	< 0.01	2500		< 0.005			17.2	< 0.001	54	1.04	< 0.1	< 0.1		43	155	107		43.6
PW6	6-Dec-01	772	45.6	0.49	0.8	< 0.005	280	89	589	< 0.01	3180		< 0.005			2.76	< 0.001	70	0.77	< 0.1	< 0.1		50	257	176		45.6
PW6	29-May-02	709	40	0.49	0.78	< 0.005	276	91	542	< 0.001	3350		< 0.005			17	< 0.001	64	0.83	< 0.1	< 0.1		59	284	239		46.2
PW6	7-Nov-02	602	24	0.19	0.39	< 0.001	260	68	447	0.001	2910		< 0.005			13.2	< 0.001	45	0.84	< 0.1	< 0.1		63	260	311		30.7
PW6	22-May-03	701	30	0.17	0.54	< 0.001	288	82	294	< 0.005	2500		< 0.005			15.7	< 0.001	53	0.93	< 0.1	< 0.1		50	164	270		33.3
PW6	4-Nov-03	740	36	0.22	0.52	< 0.001	253	75	195	< 0.005	2260		< 0.005			18.2	< 0.001	53	1	< 0.1	< 0.1		69	127	247		37.3
PW6	4-May-04	777	44	0.29	0.49	< 0.001	245	102	262	0.01	2580		< 0.005			21.4	< 0.001	56	1.12	< 0.1	< 0.1		58	155	224		68.9
PW6	5-Nov-04	647	9.13	0.42	0.32	< 0.0001	253	51	255	0.002	2030		< 0.005			21.1	< 0.001	47	1.56	< 0.1	< 0.1		25	140	115		11.2
PW6	4-May-05	988	34.3	0.37	0.75	< 0.0001	231	93	535	0.003	3520		< 0.005			17.5	< 0.001	65	0.95	< 0.1	< 0.1		69	259	124		71
PW6	24-Nov-05	764	35.6	0.35	0.74	< 0.0001	230	90	634	< 0.005	3440		< 0.005			14.5	< 0.001	51	0.65	< 0.1	< 0.1		55	297	129		37
PW6	28-Apr-06	929	48	0.51	0.97	< 0.0001	205	142	739	< 0.005	3810		< 0.005			18	0.002	54	0.68	< 0.1	< 0.1		85	384	95		91
PW6	7-Nov-06	784	43.9	0.46	0.75	< 0.0001	145	96	302	0.006	2590		< 0.005			13.4	< 0.001	45	0.65	< 0.1	< 0.1		72	215	83		44.5
PW6	24-Apr-07	901	16.9	0.57	0.76	< 0.0001	174	103	384	< 0.005	2980		< 0.005			16	< 0.001	57	0.79	0.35	< 0.1		80	227	65		44.5
PW6	29-Nov-07	934	39.4	0.72	0.79	< 0.0001	192	110	402	0.009	3090		< 0.005			15.2	0.001	65	0.84	< 0.1	< 0.1		82	263	100		43.9
PW6	22-May-08	698	59	0.21	0.79	< 0.0001	200	100	240	< 0.005	2820	< 0.002		35.9	730	17	0.0015	71	0.86	< 0.1	< 0.01	7.9	90	190	452	1600	55
PW6	19-Nov-08	584	34	0.16	0.58	< 0.0001	160	70	160	< 0.005	2020	0.013		22.3	600	11	< 0.0005	49	0.72	< 0.1	< 0.01	7.9	65	120	271	1290	33
PW6	30-Apr-09	567	36	0.18	0.53	< 0.0001	170	74	190	< 0.005	1910	< 0.002		26.4	550	13	< 0.0005	50	0.79	< 0.1	< 0.01	7.6	60	130	180	1240	32
PW6	28-Oct-09	522	21.4	0.17	0.4	< 0.0001	150	72	170	< 0.005	1640	< 0.002		24.5	500	10	< 0.0005	41	0.78	< 0.1	< 0.01	7.5	42	100	94	1050	20
PW6 FD	28-Oct-09	517	21.6	0.17	0.37	< 0.0001	140	72	170	< 0.005	1640	< 0.002		23.9	510	11	< 0.0005	39	0.76	< 0.1	< 0.01	7.6	40	100	93	1040	20

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Waste Management Ottawa Landfill

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Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW7	16-May-00	799	27.9	0.76	0.34	< 0.005	269	75	291	< 0.01	2410		< 0.02			25.1	< 0.002	67	1.53	< 0.1	< 0.1		32	135	112		27.7
PW7	22-Nov-00	748	25.6	0.85	0.42	< 0.005	235	105	334	< 0.01	2350		< 0.005			19	< 0.001	57	0.93	< 0.1	< 0.1		36	165	53		29.4
PW7	9-May-01	803	26.9	0.73	0.42	< 0.005	223	87	217	< 0.01	2230		< 0.005			23.9	< 0.001	57	1.5	< 0.1	< 0.1		32	115	126		29.4
PW7	6-Dec-01	889	34	0.48	0.43	< 0.005	276	89	241	< 0.01	2450		< 0.005			26.5	< 0.001	72	1.38	< 0.1	< 0.1		25	126	148		34.5
PW7	29-May-02	889	47	0.71	0.79	< 0.005	269	113	264	0.002	2810		< 0.005			27.6	< 0.001	65	1.16	< 0.1	< 0.1		69	166	227		58.5
PW7	7-Nov-02	849	26	0.4	0.43	< 0.001	270	99	200	0.002	2430		< 0.005			16.9	< 0.001	55	1.52	< 0.1	< 0.1		70	128	252		34.5
PW7	22-May-03	773	31	0.37	0.46	< 0.001	266	89	152	< 0.005	2080		< 0.005			21.8	< 0.001	55	1.23	< 0.1	< 0.1		48	89	197		35.5
PW7	28-Nov-03	786	28	0.45	0.43	< 0.001	232	98	209	< 0.005	2280		< 0.005			22.8	< 0.001	59	1.54	< 0.1	< 0.1			118	198		31
PW7	4-May-04	816	21.7	0.85	0.38	< 0.001	258	73	302	< 0.01	2530		< 0.005			32.4	< 0.001	55	1.35	< 0.1	< 0.1		38	172	157		33.1
PW7	5-Nov-04	813	28.4	0.5	0.58	< 0.0001	238	100	235	0.004	2780		< 0.005			23.2	< 0.001	57	1.42	< 0.1	< 0.1		58	234	139		31
PW7	4-May-05	917	36.1	0.76	0.64	< 0.0001	232	108	514	0.004	3060		< 0.005			24.6	< 0.001	74	1.48	< 0.1	< 0.1		76	281	81		39
PW7	13-Jul-05	1000	48.1	0.95	0.7	< 0.0001	263	133	633	0.009	3440		< 0.005			24.3	< 0.001	68	1.28	< 0.1	< 0.1		77	323	105		52
PW7	24-Nov-05	1020	52.2	0.82	0.83	< 0.0001	226	133	556	< 0.005	3680		< 0.005			19.8	< 0.001	60	0.97	< 0.1	< 0.1		81	309	81		53
PW7	28-Apr-06	1040	56	0.81	1.04	< 0.0001	214	144	464	< 0.005	3370		< 0.005			32.4	< 0.001	58	0.83	< 0.1	< 0.1		96	268	86		64
PW7	7-Nov-06	1140	87.7	0.73	1.35	< 0.0001	172	182	341	0.009	3290		< 0.005			19	< 0.001	64	0.77	< 0.1	< 0.1		108	237	76		92.6
PW7	24-Apr-07	1230	83.5	0.9	1.05	< 0.0001	202	192	388	< 0.005	3490		< 0.005			24.5	< 0.001	68	0.99	< 0.1	< 0.1		104	226	51		88.5
PW7	29-Nov-07	1160	65.3	0.83	0.97	< 0.0001	235	146	354	< 0.005	3380		< 0.005			24	< 0.001	68	1.19	< 0.1	< 0.1		87	215	135		72.5
PW7	22-May-08	949	82.6	0.52	1.1	< 0.0001	220	150	260	< 0.005	3190	< 0.002		51.3	750	31	0.0011	77	0.91	< 0.1	< 0.01	7.9	110	190	350	1800	86
PW7	19-Nov-08	803	59.1	0.39	0.72	< 0.0001	180	100	240	< 0.005	2500	5		33	640	23	< 0.0005	55	0.77	< 0.1	< 0.01	7.8	75	140	167	1600	53
PW7	30-Apr-09	910	73.3	0.56	1.1	< 0.0001	200	140	280	< 0.005	2780	< 0.002		47.9	660	26	0.0005	66	0.76	< 0.1	< 0.01	7.6	94	190	120	1800	77
PW7	28-Oct-09	860	60	0.46	0.74	< 0.0001	200	130	260	< 0.005	2530	< 0.002		41.6	690	27	0.0011	61	0.89	< 0.1	< 0.01	7.4	67	170	70	1650	53
PW8	16-May-00	1410	171	0.97	2.05	< 0.005	179	269	457	< 0.01	4030		< 0.02			14.9	< 0.002	71	0.45	< 0.1	< 0.1		163	321	67		172
PW8	6-Dec-01	1630	201	0.71	2.46	< 0.005	212	411	628	< 0.01	4700		0.009			0.3	< 0.001	86	0.38	< 0.1	< 0.1		199	373	75		245
PW8	29-May-02	1600	167	1.17	2.85	< 0.005	189	408	604	0.008	4910		0.005			13.4	< 0.001	76	0.34	< 0.1	< 0.1		219	443	82		201
PW8	7-Nov-02	1470	158	1.1	2.25	< 0.001	190	343	459	0.007	4260		< 0.005			15.4	< 0.001	62	0.37	< 0.1	< 0.1		201	312	75		217
PW8	22-May-03	1350	143	0.85	2.1	< 0.001	187	302	479	< 0.005	4050		0.006			11.2	< 0.001	72	0.27	< 0.1	< 0.1		189	339	132		177
PW8	28-Nov-03	1160	109	0.89	1.5	< 0.001	190	205	473	< 0.005	3770		< 0.005			6.87	< 0.001	61	0.36	< 0.1	< 0.1			305	128		123
PW8	4-May-04	1190	113	0.95	1.3	< 0.001	182	229	426	< 0.01	3660		< 0.005			15.3	< 0.001	58	0.53	< 0.1	< 0.1		120	269	112		154
PW8	5-Nov-04	1180	114	0.93	1.77	< 0.0001	202	247	491	0.008	3730		< 0.005			16.6	< 0.001	60	0.49	< 0.1	< 0.1		122	270	80		127
PW8	4-May-05	1090	104	0.78	1.51	< 0.0001	169	155	422	0.006	3250		< 0.005			8.85	< 0.001	58	0.42	0.16	< 0.1		126	259	98		106
PW8	13-Jul-05	1080	107	0.83	1.75	< 0.0001	164	199	478	< 0.005	3280		< 0.005			10.6	< 0.001	49	0.34	< 0.1	< 0.1		108	254	110		108
PW8	24-Nov-05	1320	113	0.99	1.69	< 0.0001	203	210	553	< 0.005	4230		< 0.005			15.4	< 0.001	64	0.39	< 0.1	< 0.1		115	293	81		126
PW8	28-Apr-06	1210	107	0.79	1.59	< 0.0001	193	216	447	< 0.005	3740		0.005			13.6	< 0.001	56	0.35	< 0.1	< 0.1		127	291	125		121
PW8 FD	28-Apr-06	1200	100	0.79	1.62	< 0.0001	185	221	456	< 0.005	3770		< 0.005			12.9	< 0.001	55	0.34	< 0.1	< 0.1		122	281	128		120
PW8	7-Nov-06	777	29.4	0.54	0.56	< 0.0001	201	78	324	0.006	2540		< 0.005			20.4	< 0.001	50	1.19	< 0.1	< 0.1		53	203	70		29.6
PW8	24-Apr-07	1450	131	0.79	1.51	< 0.0001	190	223	614	< 0.005	4600		0.005			29.2	0.025	75	0.74	< 0.1	< 0.1		155	371	53		141
PW8	29-Nov-07	1570	147	1.1	2.7	< 0.001	191	330	517	0.03	4580		0.008			17	< 0.01	68	0.4	< 0.1	< 0.1		133	339	46		165
PW8	22-May-08	1430	131	1.1	2.3	< 0.0001	200	270	500	0.007	4330	< 0.002		98.5	650	22	0.0015	73	0.36	< 0.1	< 0.01	7.9	170	350	99	2730	150
PW8	19-Nov-08	1240	102	0.85	1.5	< 0.0001	240	190	460	< 0.005	3740	< 0.002		62.3	790	5.7	0.001	83	0.42	< 0.1	< 0.01	7.9	110	290	87	2500	95
PW8	30-Apr-09	1050	112	0.84	1.6	< 0.0001	200	190	430	0.02	3530	< 0.002		65.2	650	21	0.0021	67	0.43	< 0.1	< 0.01	7.6	120	290	110	2260	95
PW8 FD	30-Apr-09	1060	107	0.84	1.7	< 0.0001	200	180	430	0.015	3530	< 0.002		64.7	660	20	0.0014	68	0.42	< 0.1	< 0.01	7.6	120	290	110	2350	110
PW8	28-Oct-09	1310	136	0.87	1.9	< 0.0001	200	230	450	< 0.005	4010	< 0.002		79	730	12	< 0.0005	72	0.35	< 0.1	< 0.01	7.6	130	310	79	2460	130

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW9	16-May-00	395	0.8	0.31	0.24	< 0.005	159	44	22	< 0.01	1710		< 0.02			12.4	< 0.002	35	0.9	1.26	< 0.1		23	124	120		15
PW9	22-Nov-00	742	20.3	0.84	0.41	< 0.005	220	105	333	< 0.01	2360		< 0.005			19.6	< 0.001	53	0.91	< 0.1	< 0.1		34	165	57		27.8
PW9	10-May-01	408	13.6	0.4	0.25	< 0.005	137	41	268	< 0.01	1630		0.006			11.9	< 0.001	30	0.97	< 0.1	< 0.1		19	126	98		14.3
PW9	6-Dec-01	732	61.8	0.48	0.87	< 0.005	231	97	537	< 0.01	3020		< 0.005			17.5	< 0.001	55	0.81	< 0.1	< 0.1		57	275	99		65.5
PW9	29-May-02	490	19.8	0.29	0.39	< 0.005	204	45	347	< 0.001	2250		< 0.005			10.8	< 0.001	36	0.88	0.51	< 0.1		25	171	156		22.2
PW9	7-Nov-02	619	22	0.36	0.58	< 0.001	205	63	339	0.002	2330		< 0.005			12.4	< 0.001	38	1.09	< 0.1	< 0.1		51	204	119		28.5
PW9	22-May-03	535	19.7	0.35	0.47	< 0.001	223	54	315	< 0.005	2100		< 0.005			14	< 0.001	41	1.12	0.26	< 0.1		30	172	142		21.4
PW9	4-Nov-03	552	20.9	0.42	0.46	< 0.001	189	40	326	< 0.005	2110		< 0.005			12.7	< 0.001	39	1.2	< 0.1	< 0.1		39	182	102		28.4
PW9	4-May-04	419	13.4	0.29	0.28	< 0.001	176	35	297	< 0.01	1980		< 0.005			7.38	< 0.001	36	0.97	1.11	< 0.1		17	178	212		17.8
PW9	5-Nov-04	455	12.8	0.3	0.41	< 0.0001	166	44	285	0.002	1850		< 0.005			11	< 0.001	32	1.13	0.13	< 0.1		22	176	94		14.9
PW9	4-May-05	3740	60.3	0.57	0.61	< 0.0001	239	106	1270	0.004	9950		< 0.005			17.2	< 0.001	179	1.22	< 0.1	< 0.1		429	962	78		555
PW9	13-Jul-05	394	8.12	0.26	0.31	< 0.0001	151	39	291	0.005	1760		< 0.005			8.54	< 0.001	32	0.92	0.95	< 0.1		15	151	132		11.09
PW9	24-Nov-05	527	15	0.37	0.35	< 0.0001	164	61	295	0.008	2000		< 0.005			16.4	< 0.001	33	0.89	< 0.1	< 0.1		22	155	78		19.2
PW9	28-Apr-06	471	9.46	0.32	0.29	< 0.0001	205	36	325	0.007	2140		< 0.005			9.08	< 0.001	41	0.95	3.89	< 0.1		18	187	170		12.1
PW9	7-Nov-06	533	16.4	0.36	0.4	< 0.0001	211	51	287	0.005	2090		< 0.005			13.4	< 0.001	45	1.1	0.18	< 0.1		18	184	100		13.1
PW9	24-Apr-07	548	14.5	0.38	0.43	< 0.0001	174	49	274	0.006	2120		< 0.005			15.8	< 0.001	41	1.18	< 0.1	< 0.1		22	170	125		15.3
PW9	29-Nov-07	534	15.7	0.29	0.48	< 0.0001	191	51	352	0.007	2400		< 0.005			6.75	< 0.001	40	0.96	0.89	< 0.1		22	207	150		17.7
PW9 FD	29-Nov-07	535	15.9	0.3	0.51	< 0.0001	190	51	341	0.006	2410		< 0.005			6.63	< 0.001	39	0.97	0.81	< 0.1		21	203	146		18.5
PW9	22-May-08	425	8.85	0.23	0.65	< 0.0001	190	48	340	< 0.005	2240	< 0.002		12.6	620	6.1	< 0.0005	43	0.75	4	0.02	8	16	210	205	1340	9
PW9	19-Nov-08	670	40	0.37	0.63	< 0.0001	230	110	370	< 0.005	2610	0.2		32.7	710	8.2	< 0.0005	51	1.1	0.3	< 0.01	7.8	29	230	141	1700	35
PW9	30-Apr-09	417	12.6	0.28	0.42	< 0.0001	200	38	320	< 0.005	2180	< 0.002		13.2	610	6.6	< 0.0005	48	0.86	4.2	0.01	7.5	20	210	210	1390	11
PW9	28-Oct-09	457	19.6	0.34	0.42	< 0.0001	180	46	350	< 0.005	2210	< 0.002		15.1	620	25	< 0.0005	41	1	< 0.1	< 0.01	7.5	25	220	130	1450	23
PW10	22-Nov-00	571	18.5	0.56	0.5	< 0.005	187	92	312	< 0.01	2050		< 0.005			17.9	< 0.001	44	1.36	< 0.1	< 0.1		27	148	65		20.3
PW10	10-May-01	313	5.91	0.21	0.12	< 0.005	126	44	271	< 0.01	1520		< 0.005			2.52	< 0.001	24	0.97	< 0.1	< 0.1		12	130	97		6.95
PW10	6-Dec-01	594	26.5	0.38	0.54	< 0.005	206	68	313	< 0.01	2150		< 0.005			6.73	< 0.001	51	0.88	1.47	0.31		28	172	103		26.7
PW10	29-May-02	317	9.22	0.18	0.21	< 0.0001	169	58	311	< 0.001	1870		< 0.005			0.3	< 0.001	34	0.99	3.07	< 0.1		13	167	163		10.5
PW10	7-Nov-02	800	43	0.47	0.68	< 0.001	233	90	339	0.002	2740		< 0.005			12.4	< 0.001	47	1.02	< 0.1	< 0.1		84	210	165		51.1
PW10	22-May-03	289	4.34	0.18	0.29	< 0.001	151	41	250	< 0.005	1550		< 0.005			0.4	< 0.001	30	0.981	0.71	< 0.1		12	143	156		5.86
PW10	4-Nov-03	515	15.5	0.44	0.58	< 0.001	175	36	322	< 0.005	2090		< 0.005			12.4	< 0.001	40	1.42	< 0.1	< 0.1		33	197	116		17.5
PW10	4-May-04	273	3.89	0.19	0.22	< 0.001	122	34	221	< 0.01	1440		< 0.005			0.45	< 0.001	27	1.06	0.12	< 0.1		12	135	148		5.69
PW10	17-Nov-04	355	8.64	0.3	0.29	< 0.0001	141	41	311	0.004	1720		< 0.005			10.1	< 0.001	32	1.24	< 0.1	< 0.1		15	164	80		10.2
PW10	4-May-05	10400	1420	1.3	8.9	< 0.001	41	2000	3280	0.051	24400		0.037			2.7	< 0.01	364	< 0.1	< 0.5	< 0.1		1140	2560	4		1520
PW10	13-Jul-05	232	2.75	0.17	0.22	< 0.0001	104	31	288	0.003	1470		< 0.005			4.95	< 0.001	23	1.03	< 0.1	< 0.1		11	152	111		4
PW10	24-Nov-05	462	10.2	0.38	0.34	< 0.0001	154	56	340	0.007	2060		< 0.005			12.5	< 0.001	36	1.18	< 0.1	< 0.1		19	175	87		15.9
PW10	28-Apr-06	308	3.26	0.2	0.35	< 0.0001	134	37	262	0.006	1650		< 0.005			1.36	0.002	32	0.86	1.06	< 0.1		11	166	156		6.14
PW10	7-Nov-06	343	5.3	0.25	0.41	< 0.0001	153	41	331	0.005	1960		< 0.005			7.55	< 0.001	40	1.2	< 0.1	< 0.1		12	221	116		6.56
PW10	24-Apr-07	2790	360	0.7	4.3	< 0.001	168	927	1440	< 0.05	9540		0.029			30	< 0.01	155	1.2	< 0.1	< 0.1		391	919	42		381
PW10	29-Nov-07	653	19.5	0.48	0.59	< 0.0001	167	66	271	0.011	2190		< 0.005			12.6	0.001	43	1.08	0.12	< 0.1		26	170	64		19.5
PW10	22-May-08	334	4.71	0.23	0.42	< 0.0001	170	43	190	< 0.005	1730	< 0.002		11.8	560	2.6	0.0007	43	1.5	0.2	< 0.01	8	14	140	252	1040	6
PW10	19-Nov-08	886	2.71	1.1	0.69	< 0.0001	240	47	310	< 0.005	2670	0.028		13	820	83	0.0079	57	1.5	< 0.1	< 0.01	7.9	39	180	84	1600	3.5
PW10	30-Apr-09	278	3.56	0.19	0.26	< 0.0001	160	30	300	< 0.005	1830	< 0.002		11.7	480	2.3	< 0.0005	39	1.1	0.1	< 0.01	7.5	13	200	170	1170	4
PW10	28-Oct-09	498	20.5	0.37	0.49	< 0.0001	170	51	360	< 0.005	2220	< 0.002		19.5	600	12	< 0.0005	43	1.1	< 0.1	< 0.01	7.5	25	230	77	1430	18

TABLE 5: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
PW20	16-May-00	471	1.5	0.19	0.07	< 0.005	185	23	54	< 0.01	1150		< 0.02			5.41	0.005	39	1.2	< 0.1	< 0.1		4	28	119		1.67
PW20	10-May-01	501	1.34	0.34	0.07	< 0.005	174	28	76	< 0.01	1200		< 0.005			8.93	< 0.001	33	1.39	< 0.1	< 0.1		3	26	114		1.78
PW20	6-Dec-01	604	3.92	0.22	0.22	< 0.005	225	36	98	< 0.01	1480		< 0.005			8.49	< 0.001	47	1.24	< 0.1	< 0.1		7	48	107		4.51
PW20	29-May-02	531	0.75	0.23	0.06	< 0.005	208	28	73	< 0.001	1340		< 0.005			14.3	< 0.001	41	2.67	< 0.1	< 0.1		2	31	118		1.15
PW20	7-Nov-02	547	0.65	0.23	0.09	< 0.001	225	27	76	0.001	1330		< 0.005			20.7	< 0.001	37	1.6	< 0.1	< 0.1		5	39	108		2.17
PW20	22-May-03	565	0.84	0.22	0.07	< 0.001	252	31	46	< 0.005	1350		< 0.005			22.3	< 0.001	42	1.66	< 0.1	< 0.1		3	37	124		1.49
PW20	4-Nov-03	578	1.61	0.3	0.12	< 0.001	224	22	86	< 0.005	1400		< 0.005			24	< 0.001	44	1.49	< 0.1	< 0.1		6	48	117		10.3
PW20	4-May-04	619	0.88	0.35	0.09	< 0.001	257	26	112	< 0.01	1730		< 0.005			31.9	< 0.001	56	1.94	< 0.1	< 0.1		3	49	258		2.42
PW20	5-Nov-04	598	1.33	0.28	0.16	< 0.0001	173	28	103	0.001	1500		< 0.005			24.3	< 0.001	44	1.42	< 0.1	< 0.1		5	63	92		2.34
PW20	4-May-05	8570	1130	1.07	7.04	< 0.0001	78	1780	3000	0.031	22100		0.055			5.97	0.002	322	0.43	< 0.1	< 0.1		877	1920	19		1350
PW20	13-Jul-05	556	0.77	0.26	0.1	< 0.0001	191	27	113	0.004	1410		< 0.005			21.2	< 0.001	39	1.84	< 0.1	< 0.1		3	51	102		1.45
PW20	24-Nov-05	646	0.99	0.27	0.09	< 0.0001	235	42	136	0.006	1640		< 0.005			21.7	< 0.001	43	1.63	< 0.1	< 0.1		3	62	80		1.95
PW20	28-Apr-06	804	21.9	0.47	0.41	< 0.0001	245	97	241	< 0.005	2210		< 0.005			21.3	< 0.001	45	2.17	< 0.1	< 0.1		30	124	72		50
PW20	8-Nov-06	701	4.22	0.35	0.16	< 0.0001	242	46	166	0.003	1800		< 0.005			23.1	< 0.001	49	1.31	< 0.1	< 0.1		9	92	28		5.6
PW20	24-Apr-07	1250	121	0.63	1.72	< 0.0001	184	219	384	< 0.005	3790		< 0.005			14.8	< 0.001	56	0.55	< 0.1	< 0.1		120	240	118		128
PW20	29-Nov-07	744	4.95	0.42	0.25	< 0.0001	224	52	188	0.006	1920		< 0.005			22.6	< 0.001	48	1.23	< 0.1	< 0.1		8	102	11		5.62
PW20	22-May-08	631	0.28	0.35	0.12	< 0.0001	220	37	140	< 0.005	1630	< 0.002		10	680	17	< 0.0005	44	2	< 0.1	< 0.01	7.9	3.7	84	75	994	1.3
PW20	19-Nov-08	646	21.4	0.32	0.21	< 0.0001	210	67	180	< 0.005	1740	< 0.002		20.6	630	20	< 0.0005	47	1.2	< 0.1	< 0.01	7.9	6.3	110	49	1100	19
PW20	30-Apr-09	578	1.65	0.31	0.19	< 0.0001	210	44	180	< 0.005	1690	< 0.002		14.5	640	14	< 0.0005	53	1.3	< 0.1	< 0.01	7.4	6.1	120	94	1100	2.5
PW20	28-Oct-09	657	8.29	0.38	0.3	< 0.0001	190	49	180	< 0.005	1830	< 0.002		18.3	680	14	< 0.0005	52	1	< 0.1	< 0.01	7.5	11	140	50	1180	8
Leachate from	30-May-08	588	3.31	0.37	0.18	< 0.0001	220	37	180	< 0.005	1730	< 0.002		12	650	12	< 0.0005	45	1.6	< 0.1	< 0.01	7.7	7.8	110	103	1170	4
Lined Cells	19-Nov-08	9390	1580	0.3	13	< 0.001	68	2600	3500	0.13	26000	< 0.002		770	1700	36	0.009	380	0.12	< 1	< 0.1	8	1200	2800	< 20	16000	1400
	30-Apr-09	8670	1510	0.79	13	< 0.001	74	2600	3200	0.12	24100	< 0.02		835	1300	6.7	< 0.005	310	0.23	< 1	0.2	7.9	1100	2600	< 50	15000	1600
	28-Oct-09	6110	1080	0.43	12	< 0.001	120	2300	2200	0.1	16800	0.005		691	730	21	0.012	110	0.53	< 1	< 0.1	7.7	640	1700	< 100	8010	1000

TABLE 6: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (VOCs)
Waste Management Ottawa Landfill

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Location	Sample Date	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L	1,2-Dichloropropane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene (m) mg/L	1,4-Dichlorobenzene (p) mg/L	Benzene mg/L	Bromodichloromethane mg/L	Bromoform mg/L	Bromomethane mg/L	Carbon Tetrachloride mg/L	Chlorobenzene mg/L	Chlorodibromomethane mg/L
W44-3	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W44-3	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W48-2	26-May-03	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	0.0002	< 0.0023
W48-2	5-May-04	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W48-2	28-Apr-05	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W48-2	28-Apr-06	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	0.0002	< 0.0003
W48-2	25-Apr-07	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
W48-2	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0001	< 0.0002
W48-2	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0003	< 0.0002

TABLE 6: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (VOCs)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L	1,2-Dichloropropane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene (m) mg/L	1,4-Dichlorobenzene (p) mg/L	Benzene mg/L	Bromodichloromethane mg/L	Bromoform mg/L	Bromomethane mg/L	Carbon Tetrachloride mg/L	Chlorobenzene mg/L	Chlorodibromomethane mg/L
W56-2	6-Dec-01	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2	17-Jan-02	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2	26-May-03	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2	3-May-04	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2 FD	3-May-04	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2	28-Apr-05	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
W56-2	27-Apr-06	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
W56-2	26-Apr-07	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
W56-2 FD	26-Apr-07	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
W56-2	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W56-2	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W72	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W72	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W79	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W79 FD	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W79	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W79 FD	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W80	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0013	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.0003	0.0007	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0009	< 0.0002
W80	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0012	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.0003	0.0007	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0011	< 0.0002
W81	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
W81	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0004	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0001	< 0.0002
PW8	23-May-08	< 0.0002	< 0.0002	< 0.0004	< 0.0004	0.0005	< 0.0002	0.0007	< 0.0004	< 0.0002	< 0.0004	< 0.0004	0.0057	0.0017	< 0.0002	< 0.0004	< 0.001	< 0.0002	0.017	< 0.0004
PW8	19-Nov-08	< 0.0002	< 0.0002	< 0.0004	< 0.0004	0.0005	< 0.0002	< 0.0004	< 0.0004	< 0.0002	< 0.0004	< 0.0004	0.0033	0.001	< 0.0002	< 0.0004	< 0.001	< 0.0002	0.0082	< 0.0004
PW8	30-Apr-09	< 0.0002	< 0.0002	< 0.0004	< 0.0004	0.0004	< 0.0002	0.0007	< 0.0004	< 0.0002	< 0.0004	< 0.0004	0.0048	0.0011	< 0.0002	< 0.0004	< 0.001	< 0.0002	0.016	< 0.0004
PW8	28-Oct-09	< 0.0003	< 0.0003	< 0.0005	< 0.0005	0.0005	< 0.0003	0.0006	< 0.0005	< 0.0003	< 0.0005	< 0.0005	0.0047	0.0016	< 0.0003	< 0.0005	< 0.001	< 0.0003	0.015	< 0.0005
Leachate from	30-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	0.0008	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	0.0005	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0008	< 0.0002
Lined Cells	19-Nov-08	< 0.01	< 0.01	< 0.02	< 0.02	< 0.01	< 0.01	< 0.02	< 0.02	< 0.01	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.02	< 0.05	< 0.01	< 0.01	< 0.02
	30-Apr-09	< 0.003	< 0.003	< 0.005	< 0.005	< 0.003	< 0.003	< 0.005	< 0.005	< 0.003	< 0.005	< 0.005	0.008	0.003	< 0.003	< 0.005	< 0.01	< 0.003	< 0.003	< 0.005
	28-Oct-09	< 0.002	< 0.002	< 0.004	< 0.004	< 0.002	< 0.002	< 0.004	< 0.004	< 0.002	0.008	< 0.004	0.036	0.004	< 0.002	< 0.004	< 0.01	< 0.002	0.019	< 0.004

TABLE 6: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (VOCs)
Waste Management Ottawa Landfill

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Location	Sample Date	Chloroethane mg/L	Chloroform mg/L	Chloromethane mg/L	Cis-1.2-Dichloroethene mg/L	Cis-1.3-Dichloropropene mg/L	Ethylbenzene mg/L	Ethylene Dibromide mg/L	m+p-Xylene mg/L	Methylene Chloride mg/L	o-Xylene mg/L	Styrene mg/L	Tetrachloroethylene mg/L	Toluene mg/L	Trans-1.2-dichloroethene mg/L	Trans-1.3-dichloropropene mg/L	Trichloroethene mg/L	Trichlorofluoromethane mg/L	Vinyl Chloride mg/L
W44-3	23-May-08	< 0.0002	< 0.0001	< 0.0005	0.0007	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
W44-3	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	0.0007	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
W48-2	26-May-03	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W48-2	5-May-04	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W48-2	28-Apr-05	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W48-2	28-Apr-06	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
W48-2	25-Apr-07	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
W48-2	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
W48-2	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002

TABLE 6: OVERBURDEN/SHALLOW BEDROCK GROUNDWATER QUALITY (VOCs)
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Chloroethane mg/L	Chloroform mg/L	Chloromethane mg/L	Cis-1.2-Dichloroethene mg/L	Cis-1.3-Dichloropropene mg/L	Ethylbenzene mg/L	Ethylene Dibromide mg/L	m+p-Xylene mg/L	Methylene Chloride mg/L	o-Xylene mg/L	Styrene mg/L	Tetrachloroethylene mg/L	Toluene mg/L	Trans-1.2-dichloroethene mg/L	Trans-1.3-dichloropropene mg/L	Trichloroethene mg/L	Trichlorofluoromethane mg/L	Vinyl Chloride mg/L
W56-2	6-Dec-01	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2	17-Jan-02	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2	26-May-03	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2	3-May-04	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2 FD	3-May-04	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2	28-Apr-05	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
W56-2	27-Apr-06	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
W56-2	26-Apr-07	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
W56-2 FD	26-Apr-07	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
W56-2	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
W56-2	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	0.0007	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
W72	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	0.0002	< 0.0002	< 0.0001	< 0.0002	0.0003	< 0.0002	< 0.0002
W72	29-Apr-09	0.0003	< 0.0001	< 0.0005	0.0009	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	0.0005	< 0.0002	< 0.0001	< 0.0002	0.0014	< 0.0002	< 0.0002
W79	23-May-08	< 0.0002	< 0.0001	< 0.0005	0.0008	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0002
W79 FD	23-May-08	< 0.0002	< 0.0001	< 0.0005	0.0008	< 0.0002	< 0.0001	< 0.0002	< 0.0001	0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0002
W79	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	0.0007	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0002
W79 FD	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	0.0007	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0001	< 0.0002	< 0.0002
W80	23-May-08	0.0013	0.0002	< 0.0005	0.0013	< 0.0002	0.0001	< 0.0002	0.0005	< 0.0005	0.0001	< 0.0002	< 0.0001	0.0007	< 0.0001	< 0.0002	0.0017	< 0.0002	0.0004
W80	29-Apr-09	0.0013	< 0.0001	< 0.0005	0.0014	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0017	< 0.0002	0.0003
W81	23-May-08	< 0.0002	< 0.0001	< 0.0005	0.0095	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	0.015	< 0.0002	< 0.0001	< 0.0002	0.0093	< 0.0002	< 0.0002
W81	29-Apr-09	0.0003	< 0.0001	< 0.0005	0.0052	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	0.0091	< 0.0002	< 0.0001	< 0.0002	0.0047	< 0.0002	0.0004
PW8	23-May-08	0.0009	< 0.0002	< 0.001	0.0002	< 0.0004	< 0.0002	< 0.0004	0.0004	< 0.001	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0004
PW8	19-Nov-08	0.0008	< 0.0002	< 0.001	0.0003	< 0.0004	< 0.001	< 0.0002	< 0.0004	0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0004
PW8	30-Apr-09	0.0005	< 0.0002	0.002	< 0.0002	< 0.0004	< 0.001	< 0.0002	< 0.0004	< 0.0002	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0002	< 0.0004	< 0.0004
PW8	28-Oct-09	0.0008	< 0.0003	< 0.001	< 0.0003	< 0.0005	< 0.001	< 0.0003	< 0.0005	< 0.0003	< 0.0003	< 0.0005	< 0.0003	< 0.0005	< 0.0003	< 0.0005	< 0.0003	< 0.0005	< 0.0005
Leachate from	30-May-08	0.0009	< 0.0001	< 0.0005	0.0012	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	0.0003	< 0.0002	0.0003
Lined Cells	19-Nov-08	< 0.02	< 0.01	< 0.05	< 0.01	< 0.02	< 0.05	< 0.01	< 0.02	< 0.01	< 0.01	< 0.02	< 0.01	0.027	< 0.01	< 0.02	< 0.01	< 0.02	< 0.02
	30-Apr-09	< 0.005	< 0.003	< 0.01	< 0.003	< 0.005	< 0.01	0.013	< 0.005	0.027	0.009	< 0.005	< 0.003	0.083	< 0.003	< 0.005	< 0.003	< 0.005	< 0.005
	28-Oct-09	< 0.004	< 0.002	< 0.01	0.004	< 0.004	< 0.01	0.047	< 0.004	0.11	0.045	< 0.005	< 0.002	0.091	< 0.002	< 0.004	< 0.002	< 0.004	0.024

TABLE 7: SURFACE WATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

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Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Un-ionized ammonia (mg/L)	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
S1	1-Jun-00	417	14.4	0.037	0.62	0.36	< 0.00015	182	112	421	< 0.01	2300		< 0.02			74	< 0.002	33	0.95	0.87	< 0.1		26	264	173		14.4
S1	22-Nov-00	524	15.4	0.024	0.43	0.39	< 0.005	205	92	464	< 0.01	2530		0.03			15.2	< 0.001	41	1.22	< 0.1	< 0.1		28	243	150		16.6
S1	11-May-01	500	15.8	0.023	0.35	0.44	0.0002	177	41	464	0.002	2320		< 0.005			3.94	< 0.001	35	0.61	0.83	< 0.1		29	233	118		16.5
S1 FD	11-May-01	499	15.8	0.023	0.35	0.44	0.0002	179	44	462	0.002	2270		< 0.005			3.92	< 0.001	36	0.63	0.83	< 0.1		30	229	118		16
S1	13-Nov-01	531	16.7	0.015	0.36	0.51	< 0.0001	193	54	509	0.002	2690		0.008			10.4	< 0.001	48	0.95	< 0.1	< 0.1		35	268	206		18.8
S1	15-May-02	291	4.51	0.008	0.16	0.24	< 0.0001	145	22	399	< 0.001	2100		< 0.005			0.88	< 0.001	22	0.21	3.42	< 0.1		21	252	161		5.27
S1	12-Nov-02	328	9.3	0.006	0.28	0.3	< 0.0001	172	20	552	< 0.005	2760		< 0.005			11.1	< 0.001	31	0.73	0.7	< 0.1		42	333	235		12.3
S1	22-May-03	308	1.49	0.005	0.18	0.32	< 0.0001	183	21	794	< 0.005	2440		< 0.005			2.24	< 0.001	34	0.21	2.88	< 0.1		21	346	233		2.5
S1	15-Aug-03		5.6	0.005																								
S1	5-Nov-03	419	5.45	0.028	0.32	0.29	< 0.0001	189	33	583	0.001	2910		< 0.005			15.7	< 0.001	33	0.82	0.25	< 0.1		28	367	177		8.15
S1	22-Dec-03		6.01	0.012																								
S1	11-Feb-04		4.63	0.023																								
S1	30-Apr-04	373	5.1	0.018	0.35	0.29	< 0.0001	171	33	336	0.001	2090		< 0.005			15.8	< 0.001	33	0.95	0.18	< 0.1		18	230	205		6.56
S1	8-Sep-04		3.75	0.007																								
S1	5-Nov-04	261	2.58	0.017	0.32	0.39	< 0.0001	104	19	372	0.015	2090		< 0.005			10.7	0.005	33	1.3	1.29	< 0.1		17	233	201		3.87
S1	27-Apr-05	297	2.16	0.002	0.2	0.24	< 0.0001	134	19	345	< 0.001	1960		< 0.005			4.05	< 0.001	35	0.45	1.39	< 0.1		12	266	147		4.2
S1	24-Aug-05		1.91	0.028																								
S1	28-Nov-05	372	3.39	0.005	0.26	0.31	< 0.0001	186	29	547	0.004	2680		< 0.005			10.9	< 0.001	36	1.17	1.42	< 0.1		16	296	129		4.49
S1 FD	28-Nov-05	373	3.27	0.005	0.25	0.26	< 0.0001	188	30	550	0.005	2710		< 0.005			10.9	< 0.001	37	1.16	1.5	< 0.1		16	299	131		4.75
S1	26-Apr-06	379	2.56	0.004	0.24	0.33	< 0.0001	180	25	514	< 0.005	2610		< 0.005			2.54	< 0.001	34	0.45	1.26	< 0.1		13	282	174		3.95
S1	29-Aug-06		1.34	0.008																								
S1	7-Nov-06	321	2.02	0.008	0.19	0.43	< 0.0001	161	28	536	0.006	2580		< 0.005			3.98	< 0.001	34	0.64	1	< 0.1		15	386	202		2.62
S1	24-Apr-07	396	1.89	0.005	0.18	0.45	< 0.0001	158	23	389	0.008	2250		< 0.005			2.41	< 0.001	33	0.54	1	< 0.1		13	262	153		2.98
S1	16-Aug-07		1.39	0.009																								
S1	27-Nov-07	286	1.71	0.001	0.16	0.32	< 0.0001	140	16	363	< 0.001	2140		< 0.005			6.04	< 0.001	30	0.61	0.68	< 0.1		13	247	216		2.1
S1	23-May-08	338	1.35	0.006	0.2	0.43	< 0.0001	150	33	490	< 0.005	2520	< 0.002		7.7	520	1	< 0.0005	33	0.37	1.6	0.01	8	12	290	190	1510	2.6
S1 FD	23-May-08	339	1.34	0.006	0.2	0.42	< 0.0001	160	30	490	< 0.005	2530	< 0.002		7.9	520	2.8	< 0.0005	33	0.38	1.4	0.01	7.9	12	290	204	1520	3
S1	19-Nov-08	331	2.91	0.003	0.25	0.52	< 0.0001	230	25	500	< 0.005	2810	< 0.002		7.1	660	11	0.0007	46	0.98	0.4	0.01	8	17	340	381	1840	3
S1	29-Apr-09	311	1.19	0.005	0.23	0.49	< 0.0001	240	23	520	< 0.005	2670	0.002		8.1	510	5.2	0.0012	44	0.52	2.6	0.14	7.8	16	350	230	1760	2
S1	29-Oct-09	344	2.82	0.009	0.24	0.49	< 0.0001	190	22	580	< 0.005	2970	< 0.002		8.9	590	5.8	< 0.0005	39	1	0.3	< 0.01	7.6	15	370	250	2000	3.5
S1 FD	29-Oct-09	342	2.71	0.009	0.24	0.46	< 0.0001	180	25	580	< 0.005	2970	< 0.002		8.1	570	5.6	< 0.0005	39	0.96	0.3	< 0.01	7.7	15	370	240	1900	3.2
S3	1-Jun-00	263	0.42	0.013	0.11	0.05	< 0.00015	112	44	172	< 0.01	1090		< 0.02			0.64	< 0.002	13	0.11	2.39	0.14		3	116	412		1.16
S3	22-Nov-00	392	4.41	0.011	0.33	0.17	< 0.005	177	54	608	< 0.01	2550		< 0.005			1.8	< 0.001	31	1.07	0.62	< 0.1		15	335	79		4.89
S3	11-May-01	445	2.48	0.011	0.4	0.19	0.0002	211	38	720	0.001	2760		< 0.005			1.81	< 0.001	38	1.1	1.59	< 0.1		15	330	124		2.31
S3	13-Nov-01	247	5.75	0.017	0.15	0.33	< 0.0001	197	31	503	< 0.001	2420		< 0.005			0.4	< 0.001	42	0.25	4.5	< 0.1		26	253	298		5.89
S3	15-May-02	225	0.89	0.004	0.1	0.07	< 0.0001	107	34	397	< 0.001	1890		< 0.005			0.27	< 0.001	13	0.06	0.8	< 0.1		4	279	94		1.5
S3	12-Nov-02	404	1.84	0.001	0.29	0.13	< 0.0001	225	31	719	< 0.005	3260		< 0.005			2.58	< 0.001	31	0.7	0.56	< 0.1		27	409	176		2.64
S3	22-May-03	358	1.25	0.010	0.27	0.18	< 0.0001	237	27	830	< 0.005	2970		< 0.005			1.56	< 0.001	39	0.77	2.03	< 0.1		15	410	200		1.7
S3	15-Aug-03		1.07	0.002																								
S3	5-Nov-03	295	2.21	0.016	0.2	0.24	< 0.0001	169	28	498	0.002	2530		< 0.005			1.02	< 0.001	34	0.45	1.44	< 0.1		26	319	253		3.16
S3	22-Dec-03		4.2	0.019																								
S3	30-Apr-04	264	0.45	0.002	0.17	0.12	< 0.0001	135	19	437	0.004	2100		< 0.005			0.33	< 0.001	20	0.22	0.93	< 0.1		8	272	117		1.06
S3	8-Sep-04		0.25	0.002																								
S3	5-Nov-04	257	0.81	0.002	0.15	0.22	< 0.0001	131	28	533	0.002	2480		< 0.005			0.55	< 0.001	26	0.22	1.2	< 0.1		11	311	196		1.51

TABLE 7: SURFACE WATER QUALITY (PIL, SIL)
Waste Management Ottawa Landfill

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Location	Sample Date	Alkalinity mg/L	Ammonia mg/L	Un-ionized ammonia (mg/L)	Barium mg/L	Boron mg/L	Cadmium mg/L	Calcium mg/L	Chemical Oxygen Demand mg/L	Chloride mg/L	Chromium (total) mg/L	Conductivity uS/cm	Cyanide (free) mg/L	Cyanide mg/L	Dissolved Organic Carbon mg/L	Hardness mg/L	Iron mg/L	Lead mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	pH unitless	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	Total Kjeldahl Nitrogen mg/L
S3	27-Apr-05	221	0.36	0.002	0.11	0.15	< 0.0001	226	21	440	< 0.001	2080		< 0.005			0.23	< 0.001	25	0.08	1.04	< 0.1		6	253	137		0.94
S3	24-Aug-05		0.72	0.023																								
S3	28-Nov-05	339	1.83	0.002	0.18	0.23	< 0.001	189	26	698	< 0.005	3040		< 0.005			1.68	< 0.01	35	0.62	2.69	< 0.1		14	366	204		2.65
S3	26-Apr-06	258	0.68	0.002	0.16	0.51	< 0.0001	141	15	592	< 0.005	2690		< 0.005			0.24	< 0.001	29	0.16	2.45	< 0.1		10	333	186		1.01
S3	29-Aug-06		0.31	0.003																								
S3	7-Nov-06	388	0.44	0.002	0.23	0.23	< 0.0001	194	23	656	0.007	3040		< 0.005			1.84	< 0.001	32	0.7	1.43	< 0.1		12	473	175		1.15
S3 FD	7-Nov-06	387	0.46	0.002	0.25	0.24	< 0.0001	193	26	686	0.006	3010		< 0.005			2.02	< 0.001	32	0.7	1.34	< 0.1		12	510	165		0.99
S3	24-Apr-07	309	0.58	0.002	0.19	0.3	< 0.0001	155	24	550	0.009	2570		< 0.005			0.76	< 0.001	30	0.47	0.94	< 0.1		10	334	163		1.05
S3	16-Aug-07		0.73	0.006																								
S3	27-Nov-07	378	0.72	<0.001	0.27	0.12	< 0.0001	170	23	837	0.001	3660		0.007			1.24	< 0.001	27	0.62	0.56	< 0.1		8	527	124		1.21
S3	23-May-08	352	0.49	0.002	0.29	0.16	< 0.0001	160	31	690	< 0.005	3040	< 0.002		9.3	500	1.1	< 0.0005	25	0.59	0.6	0.02	8.1	6.9	400	131	1810	1.2
S3	19-Nov-08	386	1.38	0.001	0.73	0.38	< 0.0001	180	67	590	< 0.005	2910	< 0.002		17.3	510	80	0.0008	31	1.7	0.8	0.02	8	10	370	207	1820	< 7
S3	29-Apr-09	271	< 0.15	< 0.002	0.2	0.3	< 0.0001	160	29	660	< 0.005	2790	0.002		11.1	440	0.46	< 0.0005	24	0.16	0.3	0.01	8	4.9	420	100	1780	< 0.7
S3	29-Oct-09	404	0.64	0.003	0.34	0.21	< 0.0001	200	30	750	< 0.005	3460	< 0.002		10.8	590	1.1	< 0.0005	33	0.69	0.7	0.02	7.9	11	500	170	2200	1.3
S10	11-May-01	428	1.03	0.017	0.37	0.18	0.0002	201	41	670	0.001	2880		< 0.005			0.51	< 0.001	36	0.83	2.53	< 0.1		14	349	136		1.78
S10	13-Nov-01	268	5.05	0.023	0.16	0.3	< 0.0001	203	35	571	< 0.001	2580		< 0.005			0.08	< 0.001	45	0.2	4.2	< 0.1		24	279	279		5.28
S10	15-May-02	224	0.7	0.003	0.11	0.07	< 0.0001	108	34	391	< 0.001	1880		< 0.005			0.3	< 0.001	14	0.07	0.84	< 0.1		5	260	105		1.68
S10	12-Nov-02	402	1.34	0.002	0.26	0.12	< 0.0001	223	29	766	< 0.005	3390		< 0.005			0.36	< 0.001	30	0.54	0.64	< 0.1		26	456	166		2.3
S10	22-May-03	348	0.12	0.002	0.24	0.16	< 0.0001	233	32	722	< 0.005	3060		< 0.005			0.34	< 0.001	37	0.36	2.17	< 0.1		16	439	188		0.87
S10	15-Aug-03		0.07	<0.001																								
S10	5-Nov-03	268	1.02	0.015	0.21	0.21	< 0.0001	173	36	545	0.005	2640		< 0.005			1.06	< 0.001	31	0.49	1.38	< 0.1		22	369	247		1.74
S10	22-Dec-03		2.87	0.021																								
S10	30-Apr-04	269	0.21	0.002	0.16	0.12	< 0.0001	138	17	440	0.004	2170		< 0.005			0.2	< 0.001	21	0.16	1.06	< 0.1		8	292	115		0.82
S10	8-Sep-04		0.06	0.001																								
S10	5-Nov-04	263	0.61	0.002	0.15	0.21	< 0.0001	137	27	552	0.002	2520		< 0.005			0.32	< 0.001	29	0.2	1.28	< 0.1		12	327	198		1.24
S10	27-Apr-05	224	0.26	0.003	0.11	0.15	< 0.0001	223	18	432	< 0.001	2070		< 0.005			0.2	< 0.001	24	0.08	0.97	< 0.1		6	251	132		0.94
S10	24-Aug-05		0.08	0.002																								
S10	28-Nov-05	331	1.44	0.004	0.17	0.21	< 0.001	187	31	704	< 0.005	3050		< 0.005			1.14	< 0.01	34	0.46	2.98	< 0.1		13	388	208		2.42
S10	26-Apr-06	265	0.35	0.001	0.17	0.47	< 0.0001	149	19	609	0.007	2750		< 0.005			0.17	< 0.001	30	0.14	2.48	< 0.1		10	349	181		0.63
S10	29-Aug-06		0.2	0.003																								
S10	7-Nov-06	362	0.04	<0.001	0.18	0.27	< 0.0001	189	27	638	0.005	3070		< 0.005			0.6	< 0.001	34	0.35	1.65	< 0.1		13	484	188		0.73
S10	24-Apr-07	292	0.23	0.001	0.17	0.29	0.0018	144	20	500	0.009	2440		< 0.005			0.17	0.002	30	0.21	1.36	< 0.1		10	292	169		0.77
S10	16-Aug-07		0.08	0.001																								
S10	27-Nov-07	368	0.35	<0.001	0.26	0.12	< 0.0001	170	23	778	< 0.001	3320		0.005			0.61	< 0.001	25	0.51	0.62	< 0.1		7	438	123		1.12
S10	23-May-08	345	0.2	0.002	0.26	0.14	< 0.0001	150	42	670	< 0.005	2990	< 0.002		9.7	490	0.41	< 0.0005	22	0.33	0.4	0.02	8.2	5.9	390	117	1810	1.1
S10	19-Nov-08	413	0.53	<0.001	0.3	0.16	< 0.0001	200	34	830	< 0.005	3620	< 0.002		10.3	630	0.46	< 0.0005	34	0.58	0.7	0.04	8.2	9.2	480	179	2300	1
S10 FD	19-Nov-08	411	0.53	<0.001	0.31	0.22	< 0.0001	200	37	840	< 0.005	3650	< 0.002		10.2	630	0.59	< 0.0005	34	0.6	0.7	0.04	8.1	9.3	530	179	2400	1
S10	29-Apr-09	279	< 0.15	<0.002	0.21	0.28	< 0.0001	170	26	680	< 0.005	2850	0.002		10.8	440	0.39	< 0.0005	25	0.18	0.3	0.01	8	5.1	460	100	1830	< 0.7
S10	29-Oct-09	393	< 0.15	<0.002	0.34	0.15	0.0001	190	34	870	< 0.005	3750	< 0.002		11.2	590	0.82	< 0.0005	30	0.6	0.6	0.01	8	8.3	570	140	2390	< 0.7

TABLE 8: SURFACE WATER QUALITY (VOCs)
Waste Management Ottawa Landfill

Location	Sample Date	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L	1,2-Dichloropropane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene (m) mg/L	1,4-Dichlorobenzene (p) mg/L	Benzene mg/L	Bromodichloromethane mg/L	Bromoform mg/L	Bromomethane mg/L	Carbon Tetrachloride mg/L	Chlorobenzene mg/L	Chlorodibromomethane mg/L
S1	22-May-03	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S1	23-May-03	< 0.0006	< 0.0004	< 0.0006	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0007	< 0.0007	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0009	0.0002	< 0.0003
S1	30-Apr-04	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S1	27-Apr-05	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S1	26-Apr-06	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
S1	24-Apr-07	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
S1	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	0.0001	< 0.0002
S1 FD	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
S1	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
S3	22-May-03	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S3	30-Apr-04	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S3	27-Apr-05	< 0.0006	< 0.0021	< 0.0034	< 0.0019	< 0.0035	< 0.0016	< 0.0019	< 0.0029	< 0.0024	< 0.0016	< 0.0024	< 0.0024	< 0.0013	< 0.002	< 0.0019	< 0.0005	< 0.0013	< 0.002	< 0.0023
S3	26-Apr-06	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
S3	24-Apr-07	< 0.0005	< 0.0004	< 0.0005	< 0.0004	< 0.0004	< 0.0005	< 0.0004	< 0.0005	< 0.0005	< 0.0003	< 0.0004	< 0.0004	< 0.0005	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0002	< 0.0003
S3	23-May-08	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002
S3	29-Apr-09	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0001	< 0.0002

TABLE 8: SURFACE WATER QUALITY (VOCs)
Waste Management Ottawa Landfill

CB2533 Tables 2008.xls

Location	Sample Date	Chloroethane mg/L	Chloroform mg/L	Chloromethane mg/L	Cis-1,2-Dichloroethene mg/L	Cis-1,3-Dichloropropene mg/L	Ethylbenzene mg/L	Ethylene Dibromide mg/L	m+p-Xylene mg/L	Methylene Chloride mg/L	o-Xylene mg/L	Styrene mg/L	Tetrachloroethylene mg/L	Toluene mg/L	Trans-1,2-dichloroethene mg/L	Trans-1,3-dichloropropene mg/L	Trichloroethene mg/L	Trichlorofluoromethane mg/L	Vinyl Chloride mg/L
S1	22-May-03	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027		< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S1	23-May-03	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0005
S1	30-Apr-04	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S1	27-Apr-05	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S1	26-Apr-06	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
S1	24-Apr-07	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
S1	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
S1 FD	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	0.0007	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
S1	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
S3	22-May-03	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027		< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S3	30-Apr-04	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S3	27-Apr-05	< 0.001	< 0.0014	< 0.001	< 0.0012	< 0.0026	< 0.0016	< 0.0038	< 0.0034	< 0.0048	< 0.0027	< 0.0042	< 0.0022	< 0.0015	< 0.0011	< 0.0021	< 0.0019	< 0.002	< 0.0049
S3	26-Apr-06	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
S3	24-Apr-07	< 0.001	< 0.0005	< 0.001	< 0.0004	< 0.0002	< 0.0005	< 0.001	< 0.001	< 0.004	< 0.0005	< 0.0005	< 0.0003	< 0.0005	< 0.0004	< 0.0002	< 0.0003	< 0.0005	< 0.0002
S3	23-May-08	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002
S3	29-Apr-09	< 0.0002	< 0.0001	< 0.0005	< 0.0001	< 0.0002	< 0.0005	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0001	< 0.0002	< 0.0002

TABLE 9: ASSESSMENT PARAMETER LIMIT EXCEEDANCES IN DESIGNATED GROUNDWATER MONITORS
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Location	Sample Date	Nitrate mg/L	Trichloroethylene mg/L	Vinyl chloride mg/L	Ammonia mg/L	Total Kjeldahl Nitrogen mg/L	Chemical Oxygen Demand mg/L	Potassium mg/L	Chloroethane mg/L	1,1-Dichloroethane mg/L	cis-1,2-Dichloroethene mg/L
	RUL	**2.58**	**0.0013**	**0.0007**	---	---	---	---	---	---	---
	Prediction Limit	---	---	---	1.09	0.76	52	3	0.0002	0.0001	0.0001
East Boundary											
On-site											
W72	29-Apr-09		0.0014			0.9			0.0003	0.0002	0.0009
	28-Oct-09	no exceedances									
W80	29-Apr-09	24	0.0017		15.2	18	68	28	0.0013	0.0012	0.0014
	28-Oct-09	12			1.85	2.6		17			
W81	29-Apr-09	2.8	0.0047		4.63	6.0		7.8	0.0003	0.0004	0.0052
	28-Oct-09	4.5			1.50	2.0		5.0			
[redacted]											
MTO Highway 417 Ramp											
W48-2	29-Apr-09				7.93	9.0		15		0.0002	0.0001
	29-Oct-09				14.1	12	82	21			
CAZ Wells											
W44-3	29-Apr-09					2.0				0.0001	0.0007
	28-Oct-09					1.1		3.7			
W56-2	29-Apr-09				3.03	4.0		4.3			
	28-Oct-09				3.11		84	4.6			
W79	29-Apr-09				1.19	1.9		4.2		0.0001	0.0007
	28-Oct-09				1.68	3.3		6.2			
North Boundary											
W62-2	29-Apr-09						76	4.1			
W64	29-Apr-09				3.71	6.0		8.2			
West Boundary											
W60-2	29-Apr-09							3.6			

Note: VOCs are sampled once annually as per the approved EMP (i.e., samples were not collected for VOCs in October 2009, with the exception of WS2).

TABLE 10: LANDFILL GAS MONITORING
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

Gas Monitor ID	GM1	GM2	GM3	GM4	GM5	GM6	GM7	GM8
Depth of Monitor (m)	1.85	2.75	12.25	11.3	13.9	11.5	4.2	4.3
Depth Top of Screen (m)	0.25	1.8	11.0	9.5	11.67	10.5	6.2	6.1
Date								
22-Jan-2003	5	40	12	40	>100% LEL	>100% LEL	---	---
26-Feb-2003	0	40	5	buried	0	5	---	---
28-Mar-2003	0	5	35	35	>100%	>100% LEL	---	---
10-Apr-2003	5	5	10	55	85% LEL	90% LEL	---	---
23-May-2003	25	10	0	60	90% LEL	85% LEL	---	---
23-Jun-2003	60	20	5	50	90% LEL	100% LEL	---	---
23-Jul-2003	25	30	0	50	90% LEL	95% LEL	---	---
25-Aug-2003	0	0	0	0	25	0	---	---
24-Oct-2003	0	0	0	80	2.5% LEL	2.5% LEL	---	---
2-Dec-2003	0	0	50	60	40% LEL	50% LEL	---	---
18-Dec-2003	0	0	0	inaccessible	4% LEL	70% LEL	---	---
29-Jan-2004	0	0	40	inaccessible	50% LEL	>100% LEL	---	---
19-Feb-2004	0	15	100	10	nm	nm	---	---
18-Mar-2004	25	20	10	140	85% LEL	90 % lel	---	---
22-Apr-2004	0	0	0	0	0	0	---	---
25-May-2004	<25	0	46% LEL	120	4% LEL	4% LEL	---	---
22-Jun-2004	10	45	0	60	70% LEL	75% LEL	---	---
29-Jul-2004	<25	<25	0	50	60% LEL	15% LEL	---	---
18-Aug-2004	0	0	0	35	70% LEL	>100% LEL	---	---
30-Sep-2004	10	10% LEL	50	<25	>100% LEL	80% LEL	---	---
29-Oct-2004	0	0	30	20	15% LEL	18% LEL	---	---
25-Nov-2004	50	50	110	30	17% LEL	13% LEL	---	---
11-Jan-2005	40	<25	50	40	19% LEL	23% LEL	---	---
31-Jan-2005	<25	<25	150	30	200	>100% LEL	---	---
22-Feb-2005	<25	<25	120	<25	42% LEL	<25	---	---
31-Mar-2005	<25	<25	<25	<25	4% LEL	7% LEL	---	---
29-Apr-2005	<25	<25	70	25	500	4% LEL	---	---
31-May-2005	30	<25	<25	<25	90% LEL	50% LEL	---	---
29-Jun-2005	20	<25	<25	<25	50% LEL	>100% LEL	---	---
27-Jul-2005	<25	25	<25	<25	75	40	---	---
29-Aug-2005	<25	<25	<25	<25	55% LEL	55% LEL	---	---
28-Sep-2005	25	25	<25	<25	>100% LEL	>100% LEL	---	---
25-Oct-2005	30	60	35	<25	70% LEL	70% LEL	---	---
24-Nov-2005	25	60	<25	<25	<25	<25	---	---
19-Dec-2005	20	10	130	75	120	100% LEL	---	---
31-Jan-2006	<25	<25	300	<25	500 ppm	500 ppm	---	---
22-Feb-2006	<25	<25	90% LEL	40 ppm	50% LEL	60% LEL	---	---
24-Mar-2006	<25	<25	4% LEL	275 ppm	95% LEL	500 ppm	---	---
2-May-2006	<25	<25	10% LEL	75 ppm	80% LEL	85% LEL	---	---
31-May-2006	<25	<25	<25	<25	4% LEL	4% LEL	---	---
27-Jun-2006	<25	<25	<25	<25	95% LEL	100% LEL	---	---
31-Jul-2006	25	<25	30	30	75	70% LEL	---	---
30-Aug-2006	75	25	40	50	90% LEL	80% LEL	---	---
26-Sep-2006	30	50	90	30	90% LEL	90% LEL	---	---
31-Oct-2006	25	<25	100	<25	80% LEL	50% LEL	---	---
24-Nov-2006	<25	<25	50	50	>100% LEL	>100% LEL	---	---
21-Dec-2006	<25	<25	<25	80	>100% LEL	>100% LEL	---	---

TABLE 10: LANDFILL GAS MONITORING
Waste Management Ottawa Landfill

CB2533 Tables 2009.xls

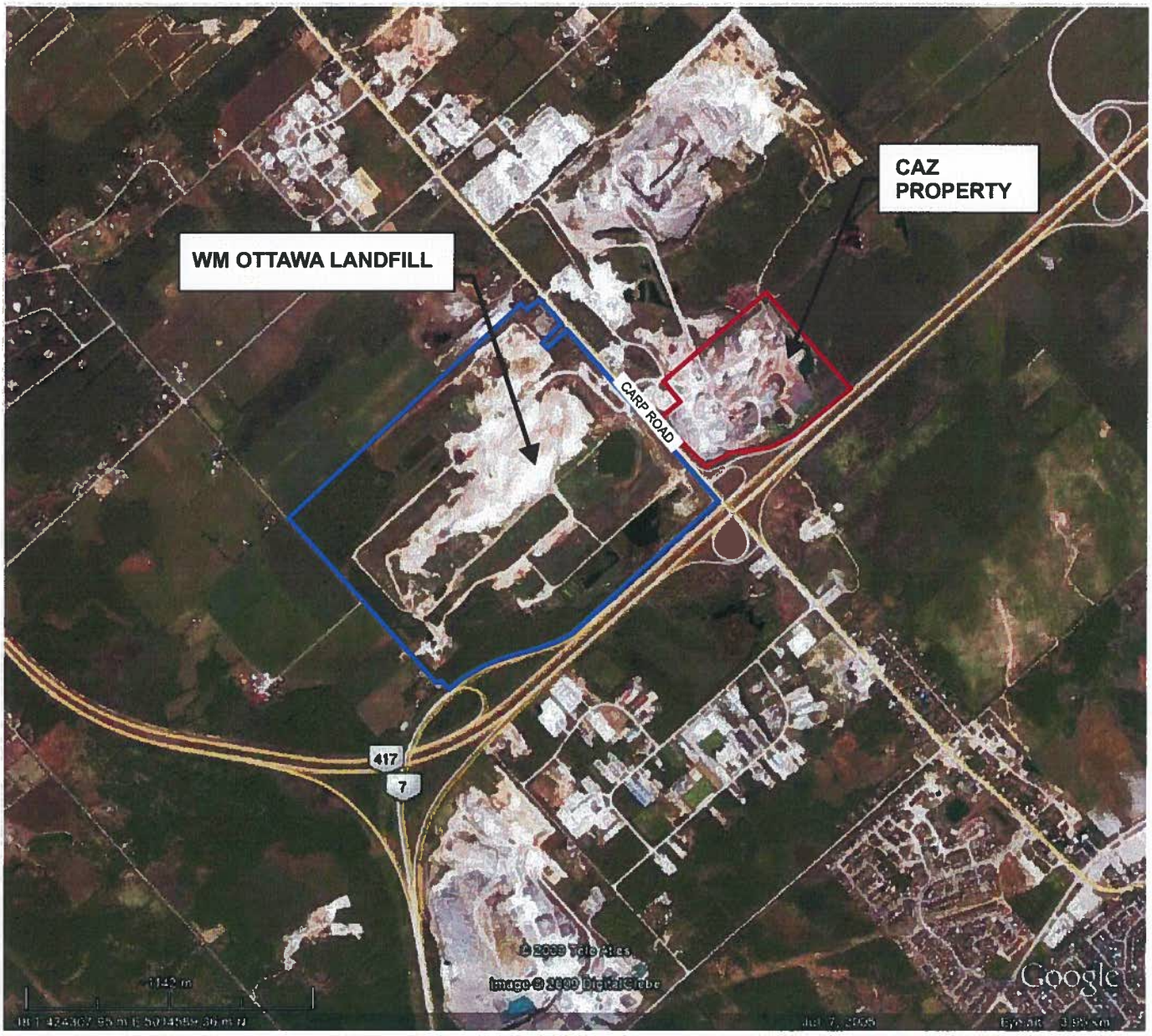
Gas Monitor ID	GM1	GM2	GM3	GM4	GM5	GM6	GM7	GM8
Depth of Monitor (m)	1.85	2.75	12.25	11.3	13.9	11.5	4.2	4.3
Depth Top of Screen (m)	0.25	1.8	11.0	9.5	11.67	10.5	6.2	6.1
Date								
31-Jan-2007	<25	<25	55	165	>100% LEL	>100% LEL	---	---
27-Feb-2007	65	<25	190	75	>100% LEL	<25	---	---
29-Mar-2007	0	0	20	30	3% LEL	2% LEL	---	---
30-Apr-2007	0	0	15	265	>100% LEL	>100% LEL	---	---
30-May-2007	110	25	<25	150	>100% LEL	>100% LEL	---	---
26-Jun-2007	<25	25	<25	<25	100% LEL	>100% LEL	---	---
31-Jul-2007	25	<25	<25	<25	100% LEL	100% LEL	---	---
31-Aug-2007	30	25	35	35	100% LEL	100% LEL	---	---
1-Oct-2007	<25	<25	<25	<25	100% LEL	40% LEL	---	---
31-Oct-2007	75	50	25	25	80% LEL	70% LEL	---	---
29-Nov-2007	15	70	65	15	100% LEL	100% LEL	---	---
21-Dec-2007	80	25	105	25	>100% LEL	>100% LEL	---	---
31-Jan-2008	< 1% LEL	< 1% LEL	< 1% LEL	< 1% LEL	< 1% LEL	< 1% LEL	---	---
29-Feb-2008	< 25	<25	50	25	<25	85% LEL	---	---
27-Mar-2008	0	inaccessible	25	inaccessible	175	5	---	---
28-Apr-2008	<25	<25	90	<25	150	> 500	---	---
22-May-2008	27	<25	28	25	< 25	<25	< 25	< 25
27-Jun-2008	50	20	40	10	105	0	0	15
30-Jul-2008	<20	20	<10	0	105	10% LEL	20	0
26-Aug-2008	40	25	45	20	205	20% LEL	25	10
23-Sep-2008	<20	<20	20	0	175	6% LEL	20	0
23-Oct-2008	<25	<25	25	45	135	190	50	<25
28-Nov-2008	<20	30	60	<20	185	20	30	<20
29-Dec-2008	<20	20	60	20	200	225	<20	25
29-Jan-2009	520	65	85	<20	255	25	<20	<20
17-Feb-2009	<20	<20	55	<20	175	<20	<20	30
30-Mar-2009	<25	<25	30	25	25	<25	50	75
28-Apr-2009	<20	<20	50	20	<20	<20	260	10%LEL
25-May-2009	75	25	180	50	<20	<20	275	230
29-Jun-2009	20	40	170	135	55	<20	470	25
22-Jul-2009	20	60	<20	<20	20	<20	450	20
24-Aug-2009	70	40	<20	<20	<20	<20	120	<20
9-Sep-2009	45	45	<20	<20	<20	<20	90	20
23-Oct-2009	5	<20	<20	<20	175	215	20	<20
27-Nov-2009	10	125	<20	<20	225	250	<20	<20
23-Dec-2009	50	55	<20	<20	275	235	<20	<20

Concentrations are reported in ppm unless otherwise noted
GM7 and GM8 installed in May 2008

TABLE 11: SUMMARY OF WASTE AND OTHER MATERIALS RECEIVED
January to December 2009
Waste Management, Ottawa Landfill

CB2533 Tables 2009.xls

Year	Month	Sewage Grits from ROPEC (tonnes)	Recycled Product (tonnes)	Solid Waste (tonnes)		Special Waste (tonnes)		Total Landfilled Tonnage	Total Tonnage
				Within GNZ	Outside GNZ	Used & Stored as Cover	Disposed as Waste		
2009	January	44.24	0.00	1,382.97	92.71	337.33	271.87	1,791.79	2,129.12
	February	108.89	0.00	1,318.63	72.83	396.87	224.34	1,724.69	2,121.56
	March	132.72	0.00	1,603.59	50.47	707.21	204.60	1,991.38	2,698.59
	April	115.41	0.00	1,310.39	65.61	6,255.00	410.28	1,901.69	8,156.69
	May	81.97	19.31	1,404.20	60.01	1,147.61	544.39	2,090.57	3,257.49
	June	83.86	0.00	887.00	0.00	12,978.49	475.15	1,446.01	14,424.50
	July	128.64	0.00	1,016.72	19.01	30,380.04	561.88	1,726.25	32,106.29
	August	0.00	0.00	980.35	8.26	1,737.25	9.79	998.40	2,735.65
	September	0.00	0.00	992.58	9.02	4,926.32	0.00	1,001.60	5,927.92
	October	0.00	0.00	1,653.64	10.09	5,482.53	9.60	1,673.33	7,155.86
	November	0.00	0.00	2,028.66	0.00	5,418.42	0.00	2,028.66	7,447.08
	December	0.00	0.00	854.13	0.00	1,016.97	0.00	854.13	1,871.10
	ANNUAL TOTALS	695.73	19.31	15,432.86	388.01	70,784.04	2,711.90	19,228.50	90,031.85



MAP REFERENCE: GOOGLE MAPS - JULY 2005

FIGURE: 1

SITE LOCATION MAP

WM - OTTAWA LANDFILL SITE

B2533-SLM-09

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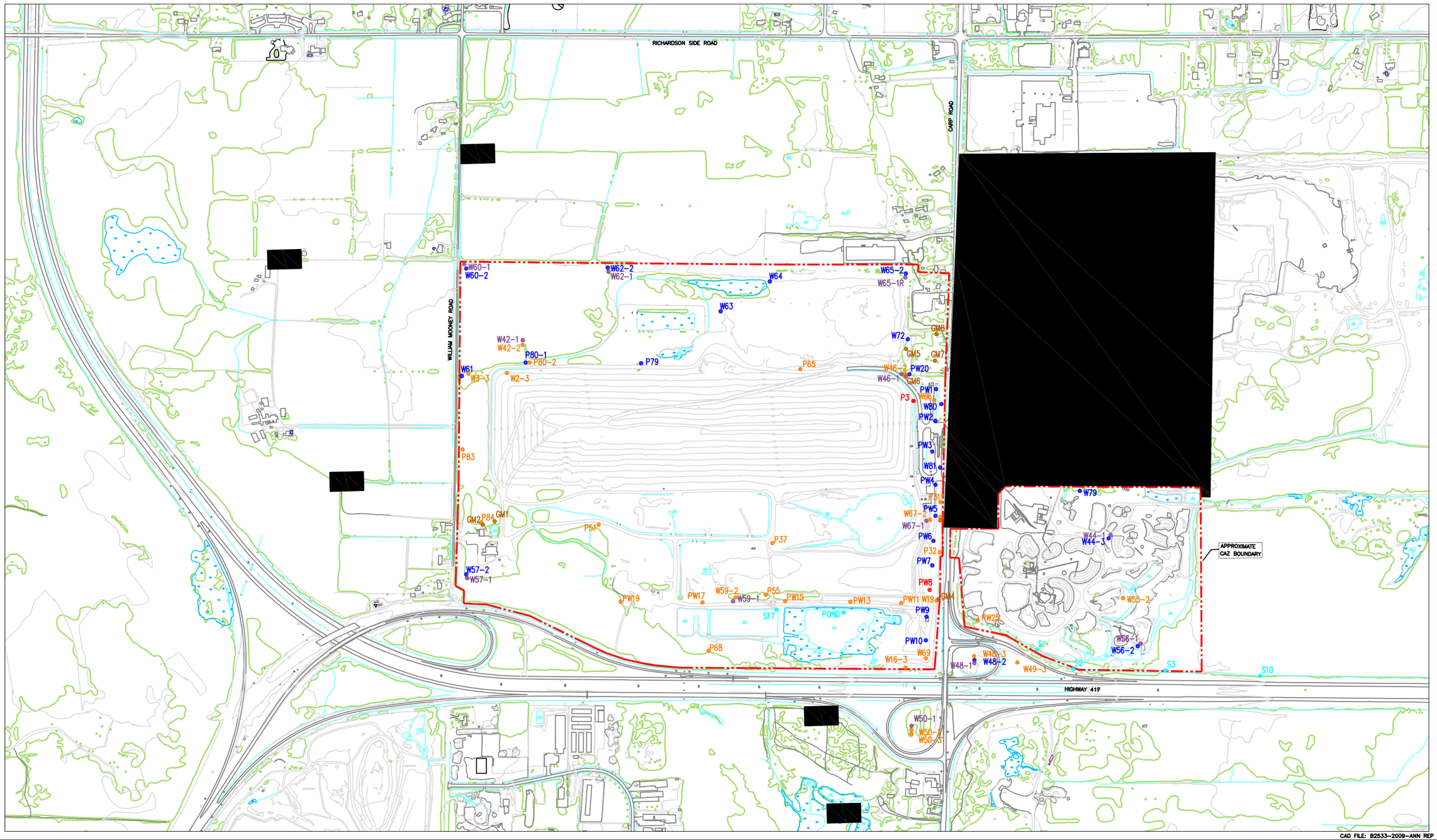

CAD FILE: B2533-2009-ANN REP

LEGEND :

- LEGAL FABRIC
- EXISTING DITCH, SWALE
- EXISTING FENCE LINE
- EXISTING ASPHALT ROADS
- EXISTING GRAVEL ROADS
- EXISTING TREE LINE
- EXISTING GUIDE RAIL
- EXISTING HYDRO POLES
- WETLAND
- EXISTING BUILDINGS

LEGEND

- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (SAMPLED)
- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (NOT SAMPLED)
- SURFACE WATER MONITORING LOCATIONS
- DEEP BEDROCK MONITORING WELLS
- GAS MONITOR LOCATIONS
- LEACHATE MONITOR LOCATION

- SHORELINE / WATER ELEVATION
- DITCH / STREAM / CULVERT
- MARSH
- BUILDING
- PIEZOMETRE
- POST
- ROAD SIGN
- MANHOLE
- CATCH BASIN
- HYDRO POLE
- LIGHT STANDARD
- FIRE HYDRANT
- MISC. AREA OUTLINE
- PAVED / CURBED / LOOSE ROAD
- PAVED / LOOSE PARKING

WASTE MANAGEMENT
2301 CARP ROAD, R.R. 3
CARP, ONTARIO
K0A 1L0
TEL: (613) 836-2481

MAP SCALE	CONTOUR INT.	HORIZ. DATUM	VERTICAL DATUM
1:2000	1 METRE	NAD 27	GEODETIC
PHOTO SCALE	PHOTO DATE	CONTRACT NO.	
1:4000	JUNE 29, 2007	2124-07	

PROJECT LOCATION
TWP. OF W. CARLETON

BASE MAPPING
37-81 AURIGA DRIVE, OTTAWA, ONTARIO K2E 7Y3
TEL: 613 723-9100 FAX: 613 723-9369
WWW.BASEMAP.CA

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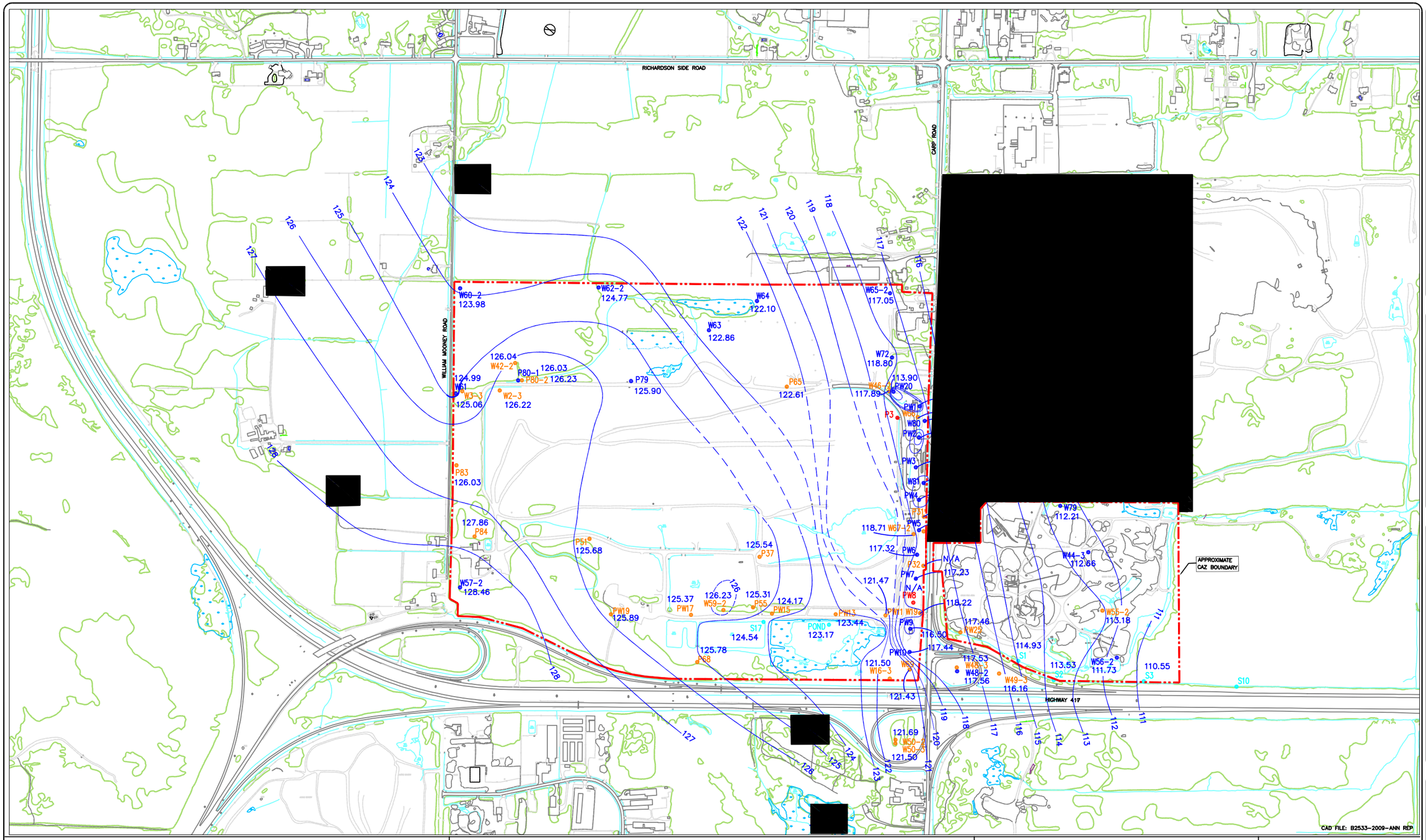
WM WASTE MANAGEMENT

SITE PLAN AND MONITORING LOCATIONS
OTTAWA LANDFILL SITE,
OTTAWA, ONTARIO

DWN BY: C.M.R.
CHK BY: D.H.
DATE: 02/02/10
SCALE: AS SHOWN

WM - OTTAWA LANDFILL SITE

FIGURE: 2



LEGEND :

- WM PROPERTY BOUNDARY (APPROX.)
- EXISTING DITCH, SWALE
- EXISTING FENCE LINE
- EXISTING ASPHALT ROADS
- EXISTING GRAVEL ROADS
- EXISTING TREE LINE
- EXISTING GUIDE RAIL
- EXISTING HYDRO POLES
- WETLAND
- EXISTING BUILDINGS

MONITOR SYMBOLS

- P59 DENOTES OVERBURDEN WELL
- W37 DENOTES BEDROCK WELL
- S1 DENOTES SURFACE WATER SAMPLING LOCATION
- GM3 DENOTES GAS MONITOR / WELL
- PW1 DENOTES PURGE WELL

- OVERBURDEN–SHALLOW BEDROCK MONITORING WELLS (SAMPLED)
- OVERBURDEN–SHALLOW BEDROCK MONITORING WELLS (NOT SAMPLED)
- SURFACE WATER MONITORING LOCATIONS
- 124.90 GROUNDWATER ELEVATION – APRIL 28, 2009 (masl)
- GROUNDWATER CONTOUR – APRIL 28, 2009 (masl)

LEGEND

- SHORELINE / WATER ELEVATION
- DITCH / STREAM / CULVERT
- MARSH
- BUILDING
- ROAD SIGN
- MANHOLE
- CATCH BASIN
- HYDRO POLE
- LIGHT STANDARD
- FIRE HYDRANT
- MISC. AREA OUTLINE
- PAVED / CURBED / LOOSE ROAD
- PAVED / LOOSE PARKING

WASTE MANAGEMENT
2301 CARP ROAD, R.R. 3
CARP, ONTARIO
K0A 1L0
TEL: (613) 836-2481

MAP SCALE	CONTOUR INT.	HORIZ. DATUM	VERTICAL DATUM
1:2000	1 METRE	NAD 27	GEODETIC
PHOTO SCALE	PHOTO DATE	CONTRACT NO.	
1:4000	JUNE 29, 2007	2124-07	
PROJECT LOCATION	BASE MAPPING		
TWP. OF W. CARLETON	37-81 AURIGA DRIVE, OTTAWA, ONTARIO K2E 7Y9 TEL: 613 723-9500 FAX: 613 723-9599 WWW.BASEMAP.CA		

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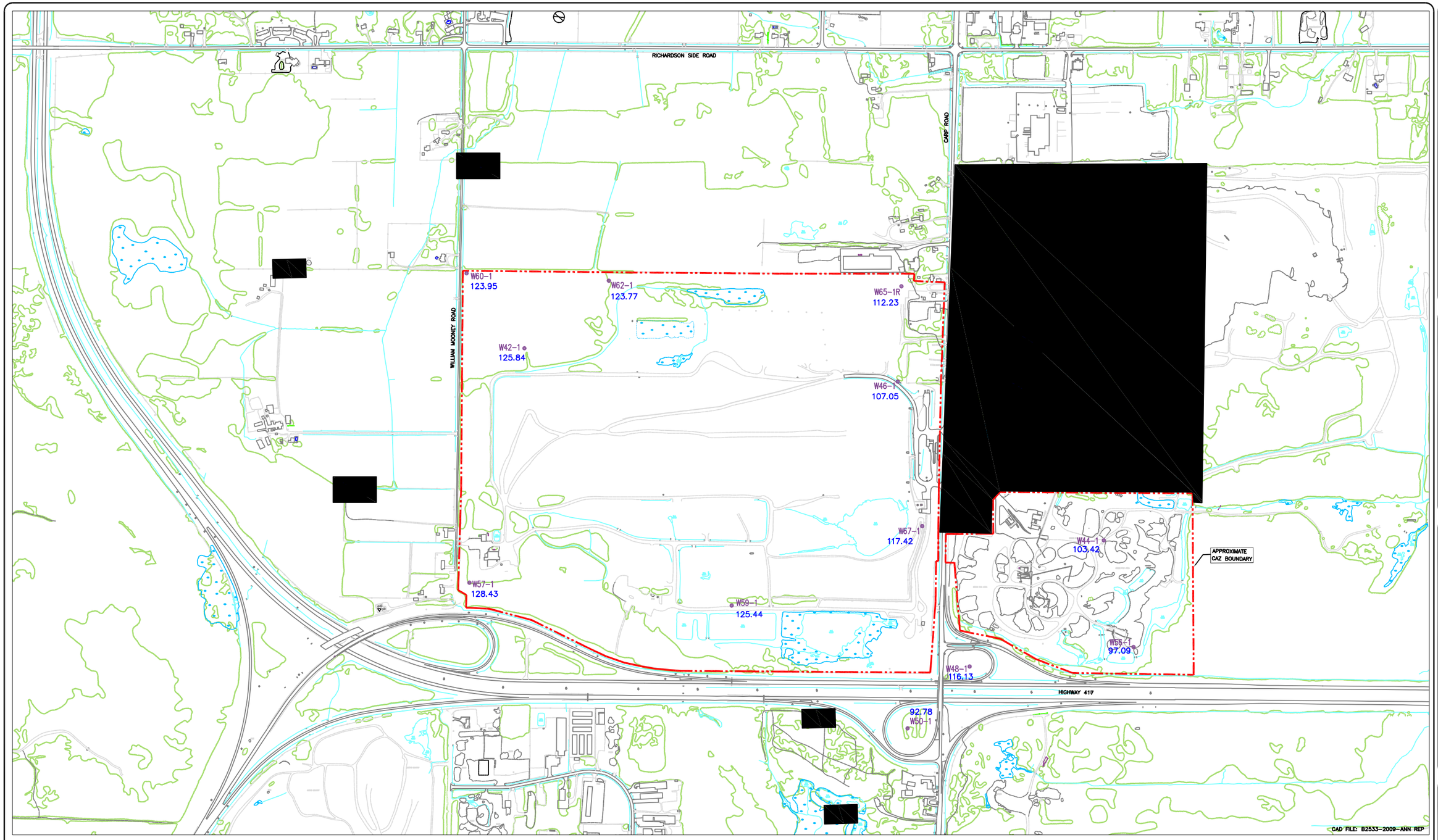
WASTE MANAGEMENT

GROUNDWATER ELEVATION MONITORING (OVERBURDEN-SHALLOW BEDROCK)
OTTAWA LANDFILL SITE, OTTAWA, ONTARIO

DWN BY: C.M.R.
CHK BY: D.H.
DATE: 17/02/10
SCALE: AS SHOWN

WM - OTTAWA LANDFILL SITE

FIGURE: 3



LEGEND :

- LEGAL FABRIC
- EXISTING DITCH, SWALE
- EXISTING FENCE LINE
- EXISTING ASPHALT ROADS
- EXISTING GRAVEL ROADS
- EXISTING GUIDE RAIL
- EXISTING HYDRO POLES
- WETLAND
- EXISTING BUILDINGS

MONITOR SYMBOLS

- P59 DENOTES OVERBURDEN WELL
- W37 DENOTES BEDROCK WELL
- DENOTES BUILDINGS WITH GAS MONITORS
- S1 DENOTES SURFACE WATER SAMPLING LOCATION
- GM3 DENOTES GAS MONITOR / WELL
- PW1 DENOTES PURGE WELL
- BH12 DENOTES BOREHOLE

- DEEP BEDROCK MONITORING WELLS
- 125.44 GROUNDWATER ELEVATION – APRIL 28, 2009 (masl)

LEGEND

- SHORELINE / WATER ELEVATION
- DITCH / STREAM / CULVERT
- MARSH
- BUILDING
- PEIZOMETRE
- POST
- ROAD SIGN
- MANHOLE
- CATCH BASIN
- HYDRO POLE
- LIGHT STANDARD
- FIRE HYDRANT
- MISC. AREA OUTLINE
- PAVED / CURBED / LOOSE ROAD
- PAVED / LOOSE PARKING

WASTE MANAGEMENT
2301 CARP ROAD, R.R. 3
CARP, ONTARIO
K0A 1L0
TEL: (613) 836-2461

MAP SCALE	CONTOUR INT.	HORIZ. DATUM	VERTICAL DATUM
1:2000	1 METRE	NAD 27	GEODETIC
PHOTO SCALE	PHOTO DATE	CONTRACT NO.	
1:4000	JUNE 29, 2007	2124-07	

PROJECT LOCATION: TWP. OF W. CARLETON

BASE MAPPING
37-81 AURIGA DRIVE, OTTAWA, ONTARIO K2E 7Y3
TEL: 613 725-8100 FAX: 613 723-9099
WWW.BASEMAP.CA

GEODETIC NORTH

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WM WASTE MANAGEMENT

GROUNDWATER ELEVATION MONITORING (DEEP BEDROCK)

OTTAWA LANDFILL SITE, OTTAWA, ONTARIO

DWN BY: C.M.R.
CHK BY: D.H.

DATE: 02/02/10
SCALE: AS SHOWN

WM - OTTAWA LANDFILL SITE

FIGURE: 4

RICHARDSON SIDE ROAD

TWELFTH CONCESSION ROAD

PARAMETER	W60-2
DATE	29-Apr-09
N-NH3	0.28
B	0.45
COD	12
NO3	< 0.1
NO2	< 0.01
K	3.6
TKN	< 0.7

PARAMETER	W62-2
DATE	29-Apr-09
N-NH3	< 0.15
B	0.021
COD	76
NO3	< 0.1
NO2	< 0.01
K	4.1
TKN	< 4

PARAMETER	W63
DATE	29-Apr-09
N-NH3	23.7
B	0.29
COD	100
NO3	< 0.1
NO2	< 0.01
K	12
TKN	23

PARAMETER	W64
DATE	29-Apr-09
N-NH3	3.71
B	0.17
COD	35
NO3	< 0.1
NO2	< 0.01
K	8.2
TKN	6

PARAMETER	W65-2
DATE	29-Apr-09
N-NH3	< 0.15
B	0.031
COD	9
NO3	1.1
NO2	< 0.01
K	2.2
TKN	< 1

PARAMETER	W72
DATE	29-Apr-09
N-NH3	< 0.15
B	0.079
COD	13
NO3	1
NO2	< 0.01
K	2.3
TKN	0.9
1,1-DCA	0.0002
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	0.0003
cis-1,2-DCE	0.0009
TCE	0.0014
VC	< 0.0002

PARAMETER	W80
DATE	29-Apr-09
N-NH3	15.2
B	0.49
COD	68
NO3	24
NO2	0.1
K	28
TKN	18
1,1-DCA	0.0012
1,4-DCB	0.0003
Benz	0.0007
CB	0.0011
CA	0.0013
cis-1,2-DCE	0.0014
TCE	0.0017
VC	0.0003

PARAMETER	W81
DATE	29-Apr-09
N-NH3	4.63
B	0.086
COD	43
NO3	2.8
NO2	< 0.01
K	7.8
TKN	6
1,1-DCA	0.0004
1,4-DCB	< 0.0002
Benz	0.0003
CB	0.0001
CA	0.0003
cis-1,2-DCE	0.0052
TCE	0.0047
VC	0.0004

PARAMETER	W79
DATE	29-Apr-09
N-NH3	1.19
B	0.092
COD	18
NO3	< 0.1
NO2	< 0.01
K	4.2
TKN	1.9
1,1-DCA	0.0001
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	< 0.0002
cis-1,2-DCE	0.0007
TCE	0.0001
VC	< 0.0002

PARAMETER	W56-2
DATE	29-Apr-09
N-NH3	3.03
B	0.024
COD	40
NO3	< 0.1
NO2	0.01
K	4.3
TKN	4
1,1-DCA	< 0.0001
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	< 0.0002
cis-1,2-DCE	< 0.0001
TCE	< 0.0001
VC	< 0.0002

PARAMETER	W61
DATE	29-Apr-09
N-NH3	< 0.15
B	< 0.02
COD	< 4
NO3	< 0.1
NO2	< 0.01
K	1.6
TKN	< 0.7

PARAMETER	P80-1
DATE	29-Apr-09
N-NH3	0.23
B	0.036
COD	110
NO3	< 0.1
NO2	< 0.01
K	2.7
TKN	< 7

PARAMETER	P79
DATE	29-Apr-09
N-NH3	1.92
B	0.31
COD	150
NO3	< 0.1
NO2	< 0.01
K	14
TKN	6

PARAMETER	PW1
DATE	30-Apr-09
N-NH3	17.8
B	0.55
COD	73
NO3	< 0.1
NO2	< 0.01
K	25
TKN	18

PARAMETER	PW2
DATE	30-Apr-09
N-NH3	27.4
B	0.6
COD	87
NO3	0.2
NO2	0.01
K	38
TKN	27

PARAMETER	PW3
DATE	30-Apr-09
N-NH3	27.7
B	0.35
COD	55
NO3	< 0.1
NO2	< 0.01
K	39
TKN	24

PARAMETER	PW4
DATE	30-Apr-09
N-NH3	25.3
B	0.37
COD	56
NO3	< 0.1
NO2	< 0.01
K	45
TKN	23

PARAMETER	PW5
DATE	30-Apr-09
N-NH3	28.8
B	0.48
COD	64
NO3	< 0.1
NO2	< 0.01
K	43
TKN	27

PARAMETER	PW6
DATE	30-Apr-09
N-NH3	36
B	0.53
COD	74
NO3	< 0.1
NO2	< 0.01
K	60
TKN	32

PARAMETER	PW7
DATE	30-Apr-09
N-NH3	73.3
B	1.1
COD	140
NO3	< 0.1
NO2	< 0.01
K	94
TKN	77

PARAMETER	PW8
DATE	30-Apr-09
N-NH3	112
B	1.6
COD	190
NO3	< 0.1
NO2	< 0.01
K	120
TKN	95
1,1-DCA	0.0004
1,4-DCB	0.0048
Benz	0.0011
CB	0.016
CA	0.0005
cis-1,2-DCE	< 0.0002
TCE	< 0.0002
VC	< 0.0004

PARAMETER	PW9
DATE	30-Apr-09
N-NH3	12.6
B	0.42
COD	38
NO3	4.2
NO2	0.01
K	20
TKN	11

PARAMETER	PW10
DATE	30-Apr-09
N-NH3	3.56
B	0.26
COD	30
NO3	0.1
NO2	< 0.01
K	13
TKN	4

PARAMETER	PW20
DATE	30-Apr-09
N-NH3	1.65
B	0.19
COD	44
NO3	< 0.1
NO2	< 0.01
K	6.1
TKN	2.5

PARAMETER	W57-2
DATE	29-Apr-09
N-NH3	< 0.15
B	< 0.02
COD	76
NO3	0.1
NO2	< 0.01
K	1.3
TKN	< 7

PARAMETER	W44-3
DATE	29-Apr-09
N-NH3	0.62
B	0.086
COD	19
NO3	< 0.1
NO2	< 0.01
K	3.3
TKN	2
1,1-DCA	0.0001
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	< 0.0002
cis-1,2-DCE	0.0007
TCE	< 0.0001
VC	< 0.0002

PARAMETER	W48-2
DATE	29-Apr-09
N-NH3	7.93
B	0.72
COD	45
NO3	0.2
NO2	0.03
K	15
TKN	9
1,1-DCA	0.0002
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	0.0003
CA	< 0.0002
cis-1,2-DCE	0.0001
TCE	< 0.0001
VC	< 0.0002

PARAMETER	S1
DATE	29-Apr-09
N-NH3	1.19
B	0.49
COD	23
NO3	2.6
NO2	0.14
K	16
TKN	2
1,1-DCA	< 0.0001
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	< 0.0002
cis-1,2-DCE	< 0.0001
TCE	< 0.0001
VC	< 0.0002

PARAMETER	S3
DATE	29-Apr-09
N-NH3	< 0.15
B	0.3
COD	29
NO3	0.3
NO2	0.01
K	4.9
TKN	< 0.7
1,1-DCA	< 0.0001
1,4-DCB	< 0.0002
Benz	< 0.0001
CB	< 0.0001
CA	< 0.0002
cis-1,2-DCE	< 0.0001
TCE	< 0.0001
VC	< 0.0002

PARAMETER	S10
DATE	29-Apr-09
N-NH3	< 0.15
B	0.28
COD	26
NO3	0.3
NO2	0.01
K	5.1
TKN	< 0.7

APPROXIMATE CAZ BOUNDARY

CAD FILE: B2533-2009-ANN REP

LEGEND :

- LEGAL FABRIC
- EXISTING DITCH, SWALE
- EXISTING FENCE LINE
- EXISTING ASPHALT ROADS
- EXISTING GRAVEL ROADS
- EXISTING TREE LINE
- EXISTING GUIDE RAIL
- EXISTING HYDRO POLES
- WETLAND
- EXISTING BUILDINGS

Parameter	Limit (mg/L)
Ammonia mg/L	1.09
Boron mg/L	1.29
Chemical Oxygen Demand mg/L	52
Nitrate mg/L	2.58
Nitrite mg/L	0.33
Potassium mg/L	3
Total Kjeldahl Nitrogen mg/L	0.76
1,1-Dichloroethane mg/L	0.0001
1,4-Dichlorobenzene (p) mg/L	0.0014
Benzene mg/L	0.0013
Chlorobenzene mg/L	0.0201
Chloroethane mg/L	0.0002
Cis-1,2-Dichloroethene mg/L	0.0001
Trichloroethene mg/L	0.0013
Vinyl Chloride mg/L	0.0007

WASTE MANAGEMENT
2301 CARP ROAD, R.R. 3
CARP, ONTARIO
K0A 1L0
TEL: (613) 836-2481

MAP SCALE	CONTOUR INT.	HORIZ. DATUM	VERTICAL DATUM
1:2000	1 METRE	NAD 27	GEODETIC
PHOTO SCALE	PHOTO DATE	CONTRACT NO.	
1:4000	JUNE 29, 2007	2124-07	

PROJECT LOCATION: TWP. OF W. CARLETON

BASE MAPPING
37-81 AURIGA DRIVE, OTTAWA, ONTARIO K2E 7V3
TEL: 613 723-8500 FAX: 613 723-8559
WWW.BASEMAP.CA

LEGEND

- SHORELINE / WATER ELEVATION
- DITCH / STREAM / CULVERT
- MARSH
- BUILDING
- PEIZOMETRE
- POST
- ROAD SIGN
- MANHOLE
- CATCH BASIN
- HYDRO POLE
- LIGHT STANDARD
- FIRE HYDRANT
- MISC. AREA OUTLINE
- PAVED / CURBED / LOOSE ROAD
- PAVED / LOOSE PARKING

- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (SAMPLED)
- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (NOT SAMPLED)
- SURFACE WATER MONITORING LOCATIONS
- LEACHATE MONITORING LOCATIONS

GEODETIC NORTH

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WM WASTE MANAGEMENT

ASSESSMENT PARAMETER CONCENTRATIONS
SPRING 2009

OTTAWA LANDFILL SITE,
OTTAWA, ONTARIO

DWN BY: C.M.R.
CHK BY: D.H.
DATE: 02/02/10
SCALE: AS SHOWN

WM - OTTAWA LANDFILL SITE

FIGURE:
5

CAD FILE: B2533-2009-AP-09 BASE

LEGEND :

- LEGAL FABRIC
- EXISTING DITCH, SWALE
- EXISTING FENCE LINE
- EXISTING ASPHALT ROADS
- EXISTING GRAVEL ROADS
- EXISTING TREE LINE
- EXISTING GUIDE RAIL
- EXISTING HYDRO POLES
- WETLAND
- EXISTING BUILDINGS
- ACTIVE DISPOSAL AREA - 2009

LEGEND

- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (SAMPLED)
- OVERBURDEN-SHALLOW BEDROCK MONITORING WELLS (NOT SAMPLED)
- SURFACE WATER MONITORING LOCATIONS
- DEEP BEDROCK MONITORING WELLS
- GAS MONITOR LOCATIONS
- LEACHATE MONITOR LOCATIONS

- SHORELINE / WATER ELEVATION
- DITCH / STREAM / CULVERT
- MARSH
- BUILDING
- PEIZOMETRE
- POST
- ROAD SIGN
- MANHOLE
- CATCH BASIN
- HYDRO POLE
- LIGHT STANDARD
- FIRE HYDRANT
- MISC. AREA OUTLINE
- PAVED / CURBED / LOOSE ROAD
- PAVED / LOOSE PARKING

WASTE MANAGEMENT
2301 CARP ROAD, R.R. 3
CARP, ONTARIO
K0A 1L0
TEL: (613) 836-2481

MAP SCALE	CONTOUR INT.	HORIZ. DATUM	VERTICAL DATUM
1:2000	1 METRE	MTM ZONE 9 NAD 27	GEODETIC
PHOTO SCALE	PHOTO DATE	CONTRACT NO.	
1:4000	APR. 27, 2009	2287-09	

PROJECT LOCATION
TWP. OF N. GARLETON

THE BASE MAPPING CO. LTD.
Unit 37 - 61 Aviga Drive, Ottawa, Ontario, K2E 7V3, Web www.basemap.on
Tel: (613) 723-8100, Fax: (613) 723-8999

GEODETIC NORTH

1 : 2000 MAP SCALE
1 CM = 20 METRES

WESA
A Better Environment For Business

WM WASTE MANAGEMENT

2009 SITE PLAN AND TOPOGRAPHY

OTTAWA LANDFILL SITE,
OTTAWA, ONTARIO

DWN BY: C.M.R.
CHK BY: D.H.

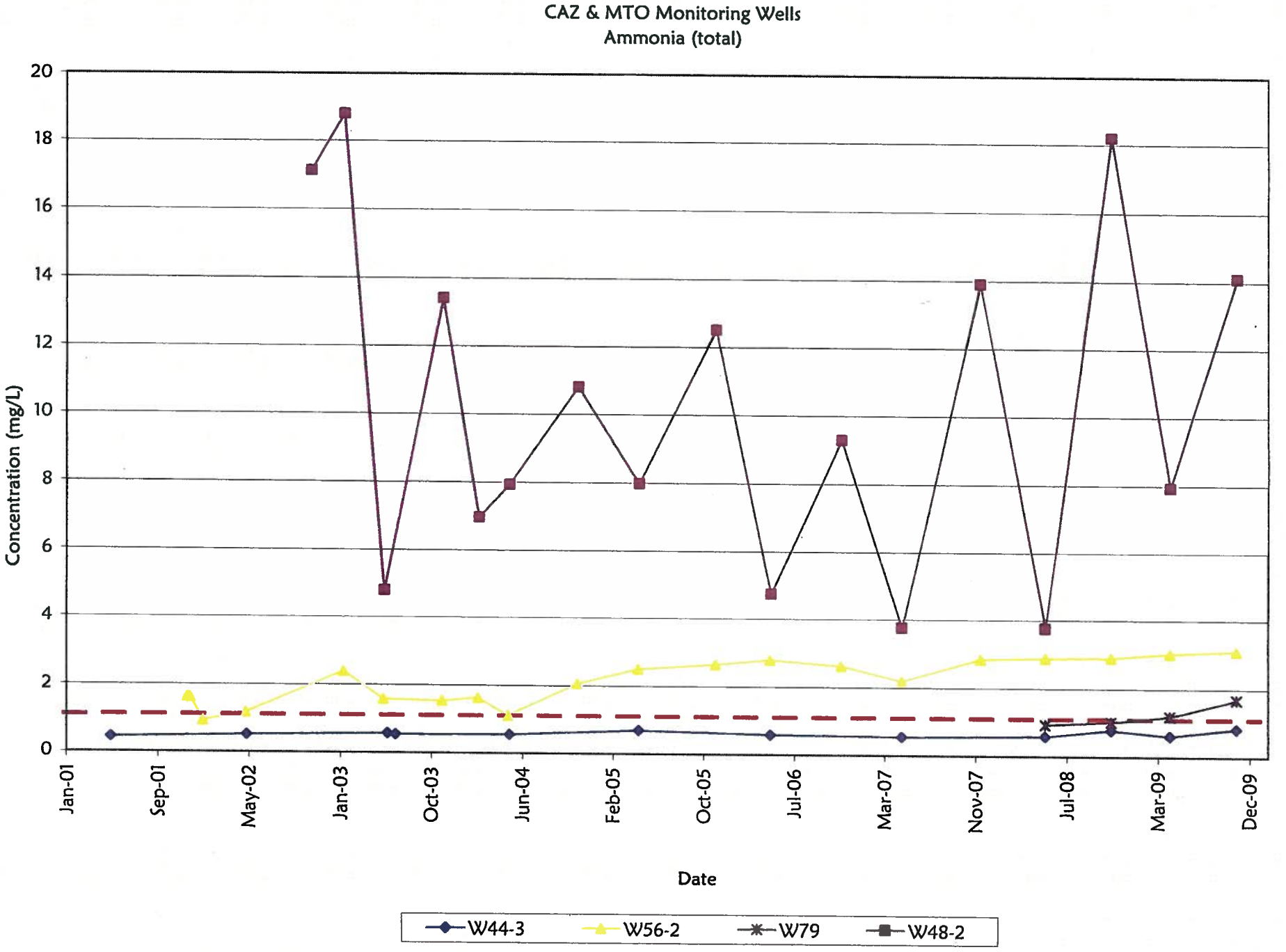
DATE: 05/03/10
SCALE: AS SHOWN

WM - OTTAWA LANDFILL SITE

FIGURE:
6

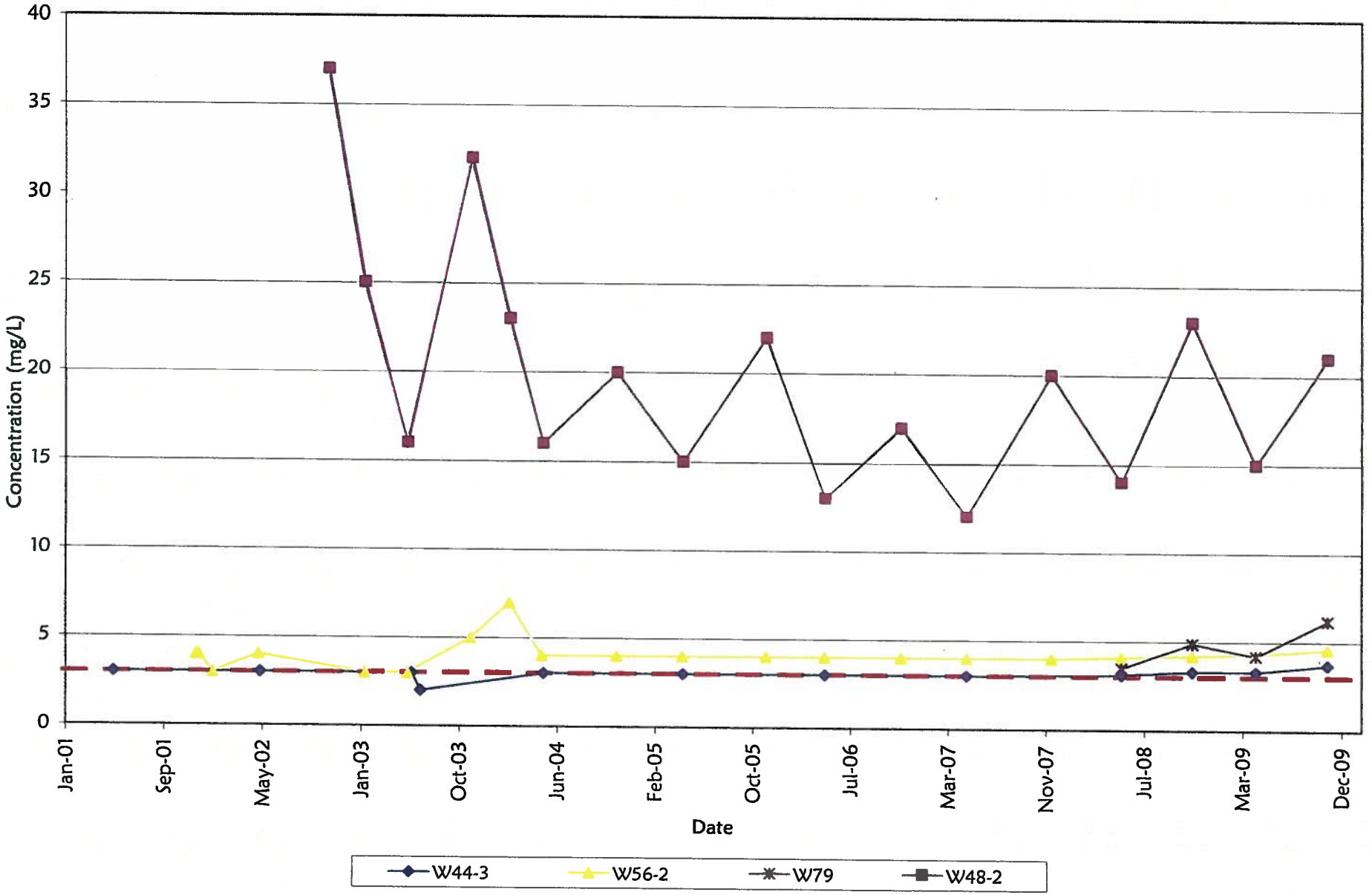
APPENDIX A

Concentration - Time Trends at Selected CAZ Monitoring Wells

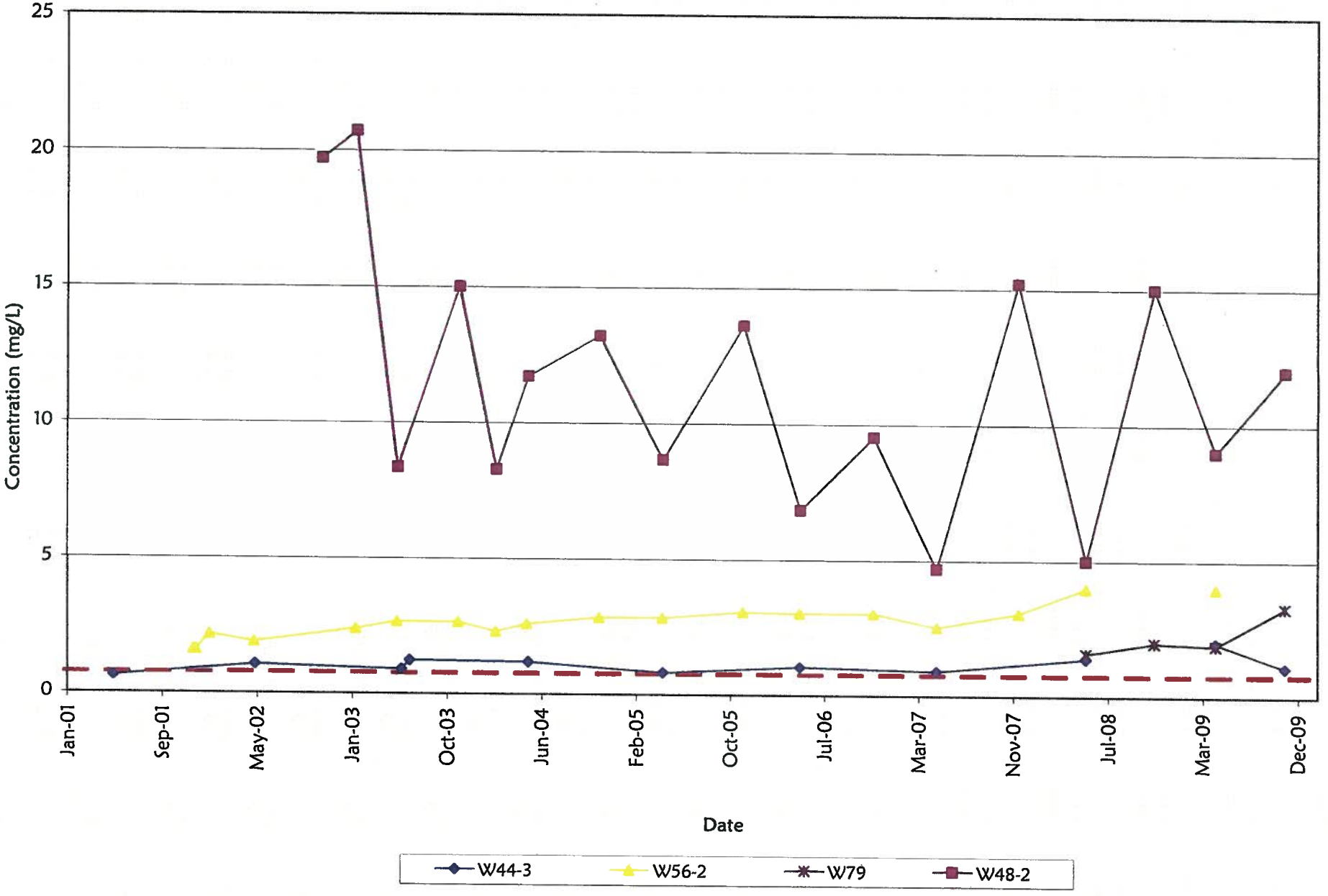


CB2533 GW Plots-2009 Report.xlsx

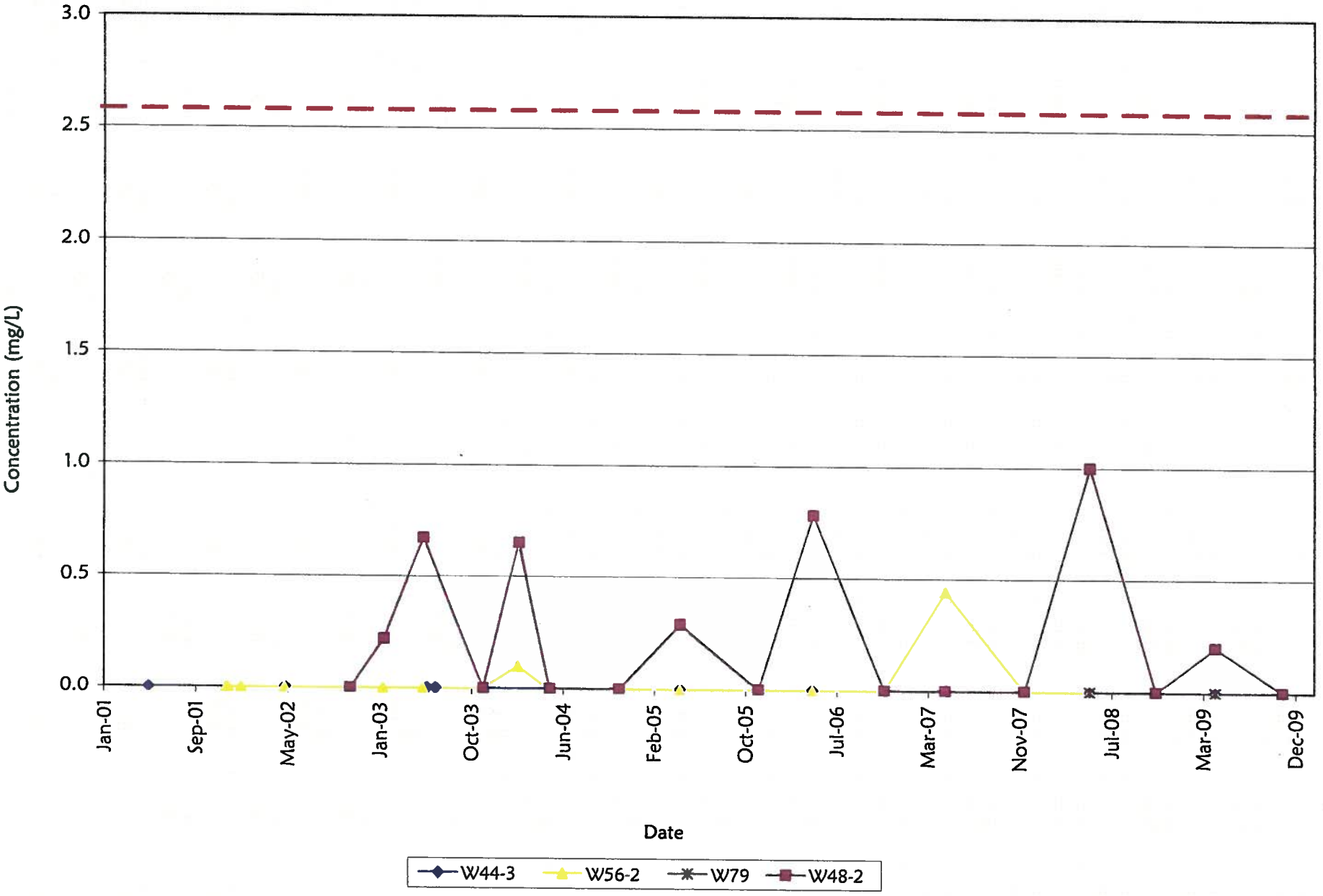
CAZ & MTO MonitoringWells
Potassium (K)



CAZ & MTO Monitoring Wells
Total Kjeldahl Nitrogen (TKN)

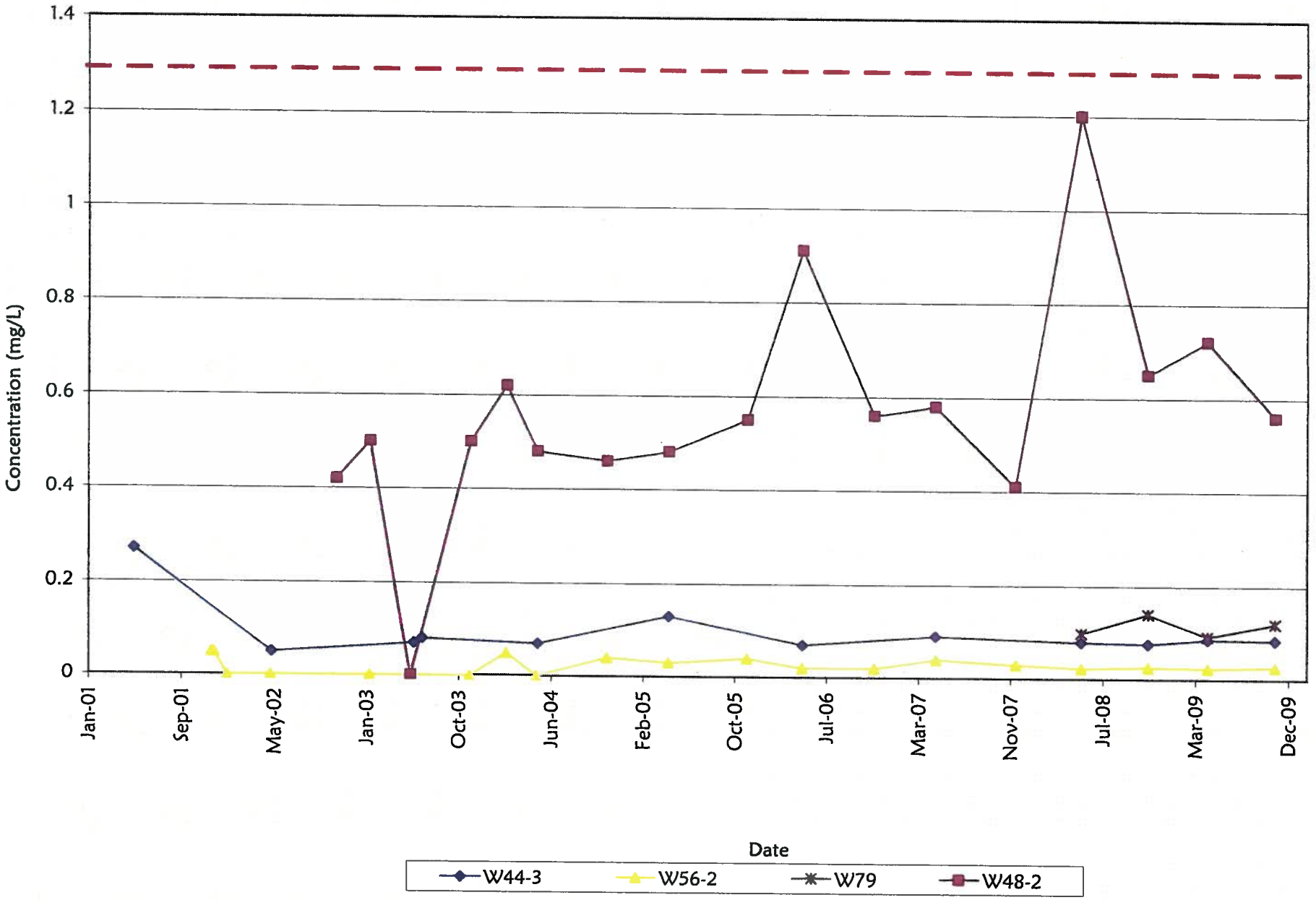


CAZ & MTO MonitoringWells
Nitrate (NO3)

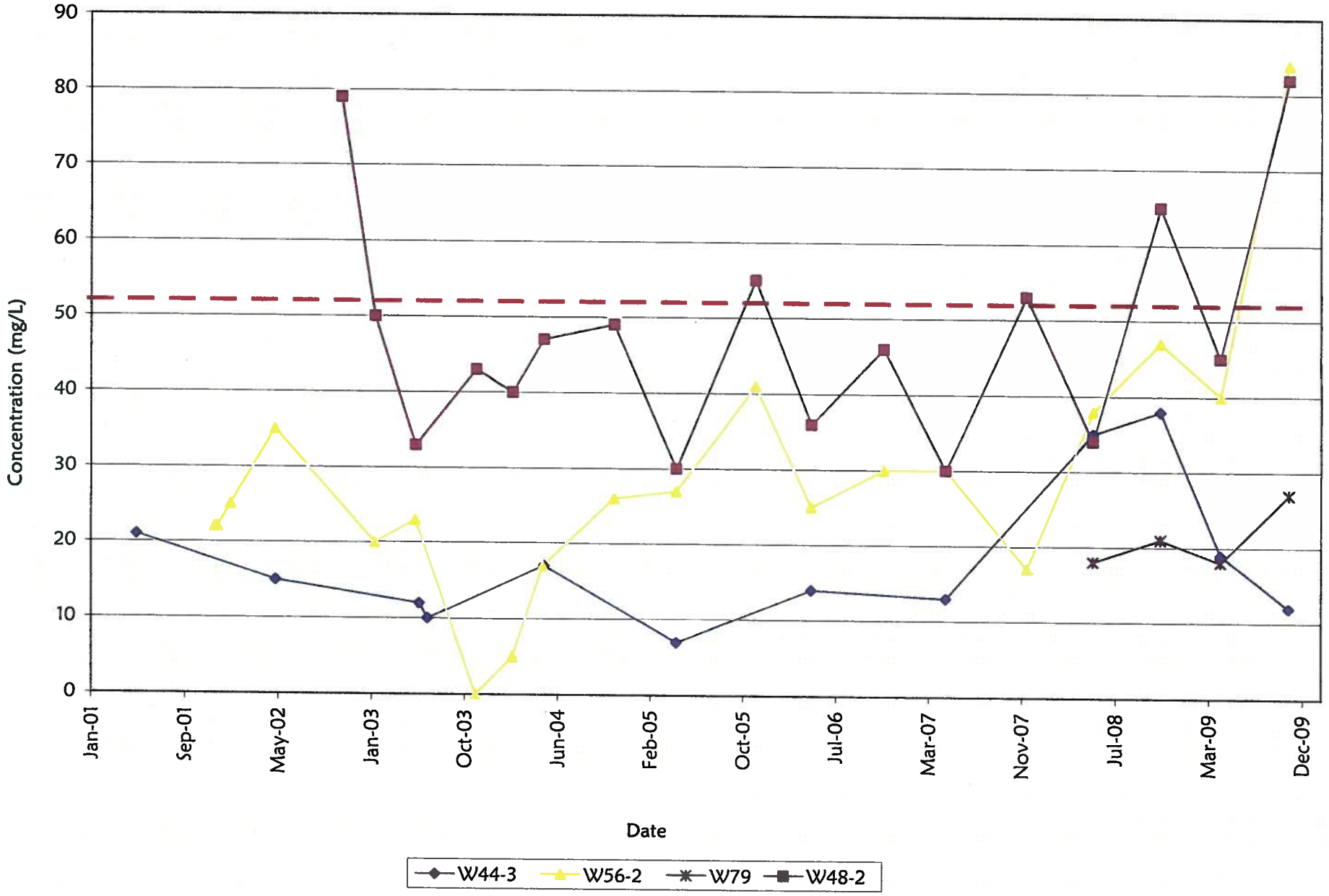


CB2533 GW Plots-2009 Report.xlsx

CAZ & MTO Monitoring Wells
Boron (B)



CAZ & MTO Monitoring Wells
Chemical Oxygen Demand (COD)



APPENDIX B

[redacted]

Appendix B Removed

APPENDIX C

Purge Well Water Level Monitoring, January to December 2009

Waste Management of Canada, Ottawa Landfill
Leachate Forcemain System
Water Level Information

Monitoring Well Name	TOC/SG May 07 (m.a.s.l.)	TOC July 2008 (m.a.s.l.)	29-Jan-09 Water Level (mbtoc)	29-Jan-09 Elev. Water Level (m.a.s.l.)	17-Feb-09 Water Level (mbtoc)	17-Feb-09 Elev. Water Level (m.a.s.l.)	25-Mar-09 Water Level (mbtoc)	25-Mar-09 Elev. Water Level (m.a.s.l.)	28-Apr-09 Water Level (mbtoc)	28-Apr-09 Elev. Water Level (m.a.s.l.)	27-May-09 Water Level (mbtoc)	27-May-09 Elev. Water Level (m.a.s.l.)
SG-S1	115.61		0.76	114.85	0.74	114.87	0.69	114.92	0.68	114.93	0.67	114.94
SG-S2	114.38		frozen	---	frozen	---	0.85	113.53	0.85	113.53	0.86	113.52
SG-S3	111.35		frozen	---	0.77	110.58	0.65	110.70	0.80	110.55	0.83	110.52
W48-3	120.77		3.92	116.85	3.71	117.06	3.44	117.33	3.24	117.53	3.28	117.49
W49-3	118.64		cap frozen	---	2.67	115.97	2.48	116.16	2.48	116.16	2.51	116.13
W19	130.12		12.98	117.14	12.70	117.42	12.41	117.71	11.90	118.22	11.97	118.15
PW25	119.02		2.14	116.88	1.98	117.04	1.77	117.25	1.56	117.46	1.53	117.49
W55-2	115.59		cap frozen	---	2.78	112.81	2.47	113.12	2.41	113.18	2.51	113.08
W56-2	115.26		3.68	111.58	3.57	111.69	3.42	111.84	3.53	111.73	3.61	111.65
POND	N/A		frozen	---	frozen	---		123.45		123.82		123.54
PW11	126.04		6.03	120.01	5.87	120.17	4.96	121.08	4.57	121.47	4.78	121.26
PW13	124.49		2.72	121.77	2.46	122.03	1.46	123.03	1.05	123.44	1.29	123.20
PW1	127.76		14.29	113.47	13.95	113.81	12.71	115.05	12.29	115.47	12.52	115.24
PW2	128.01		cap frozen	---	13.90	114.11	13.55	114.46	12.70	115.31	13.30	114.71
PW3	128.54		11.94	116.60	11.91	116.63	11.80	116.74	11.41	117.13	11.34	117.20
PW4	129.06	128.99	12.62	116.37	12.54	116.45	12.38	116.61	12.11	116.88	12.07	116.92
PW5	128.62		11.78	116.84	11.67	116.95	11.42	117.20	11.14	117.48	11.04	117.58
PW6	131.07		14.46	116.61	14.35	116.72	14.04	117.03	13.75	117.32	13.67	117.40
PW7	133.34		17.09	116.25	16.80	116.54	16.35	116.99	16.11	117.23	16.10	117.24
PW8	132.98		21.66	111.32	off	---	19.34	113.64	off	---	21.51	111.47
PW9	127.35	127.28	11.46	115.82	10.95	116.33	11.04	116.24	10.78	116.50	10.90	116.38
PW10	127.49		9.38	118.11	9.17	118.32	9.00	118.49	8.94	118.55	9.14	118.35
PW20	131.50		17.60	113.90	17.54	113.96	17.71	113.79	17.60	113.90	19.62	111.88
W16-3	125.47		6.35	119.12	5.14	120.33	4.12	121.35	3.97	121.50	4.21	121.26
W69	126.61	130.74	10.80	119.94	10.65	120.09	9.55	121.19	9.31	121.43	9.52	121.22
P32	129.84		blocked	---	12.96	116.88	dry	---	dry	---	12.02	117.82
P31	129.29		blocked	---	blocked	---	blocked	---	blocked	---	blocked	---
P85	129.64		12.62	117.02	12.67	116.97	12.49	117.15	12.25	117.39	12.13	117.51
W46-2	131.37		14.85	116.52	14.32	117.05	14.09	117.28	13.48	117.89	13.83	117.54
W67-2	128.28		9.88	118.40	9.98	118.30	9.93	118.35	9.57	118.71	9.44	118.84
W66	128.57	128.51	11.66	116.85	11.52	116.99	11.20	117.31	10.61	117.90	10.83	117.68
W80		127.71	cap frozen	---	10.95	116.76	10.73	116.98	10.11	117.60	10.24	117.47
W81		129.223	12.82	116.40	12.72	116.50	12.53	116.69	12.26	116.96	12.23	116.99

Monitoring Well Name	29-Jun-09 Water Level (mbtoc)	29-Jun-09 Elev. Water Level (m.a.s.l.)	22-Jul-09 Water Level (mbtoc)	22-Jul-09 Elev. Water Level (m.a.s.l.)	24-Aug-09 Water Level (mbtoc)	24-Aug-09 Elev. Water Level (m.a.s.l.)	30-Sep-09 Water Level (mbtoc)	30-Sep-09 Elev. Water Level (m.a.s.l.)	23-Oct-09 Water Level (mbtoc)	23-Oct-09 Elev. Water Level (m.a.s.l.)
SG-S1	0.70	114.91	0.69	114.92	0.71	114.90	0.71	114.90	0.86	114.75
SG-S2	0.81	113.57	0.86	113.52	0.86	113.52	0.86	113.52	0.85	113.53
SG-S3	dry	---	0.80	110.55	0.85	110.50	0.86	110.49	0.83	110.52
W48-3	3.37	117.40	3.31	117.46	3.39	117.38	3.89	116.88	4.06	116.71
W49-3	2.58	116.06	2.49	116.15	2.59	116.05	2.77	115.87	2.84	115.80
W19	12.09	118.03	12.18	117.94	12.20	117.92	12.72	117.40	12.94	117.18
PW25	1.57	117.45	1.57	117.45	1.57	117.45	2.00	117.02	2.16	116.86
W55-2	2.52	113.07	2.42	113.17	2.43	113.16	2.41	113.18	2.40	113.19
W56-2	3.67	111.59	3.47	111.79	3.63	111.63	3.57	111.69	3.56	111.70
POND		122.99		122.68		122.52		122.10		122.10
PW11	5.10	120.94	5.37	120.67	5.53	120.51	6.17	119.87	6.38	119.66
PW13	1.78	122.71	2.08	122.41	2.30	122.19	2.87	121.62	3.00	121.49
PW1	12.51	115.25	11.46	116.30	12.13	115.63	12.10	115.66	14.60	113.16
PW2	13.13	114.88	12.54	115.47	10.35	117.66	10.45	117.56	10.54	117.47
PW3	11.45	117.09	11.53	117.01	11.47	117.07	11.60	116.94	11.65	116.89
PW4	12.16	116.83	12.18	116.81	12.16	116.83	12.27	116.72	12.62	116.37
PW5	11.13	117.49	11.12	117.50	11.06	117.56	11.19	117.43	11.14	117.48
PW6	13.76	117.31	13.82	117.25	13.74	117.33	13.90	117.17	13.82	117.25
PW7	16.17	117.17	16.25	117.09	16.49	116.85	16.53	116.81	16.46	116.88
PW8	21.38	111.60	17.55	115.43	20.19	112.79	21.60	111.38	21.62	111.36
PW9	10.91	116.37	11.00	116.28	10.99	116.29	11.05	116.23	10.97	116.31
PW10	8.90	118.59	8.91	118.58	8.95	118.54	10.40	117.09	10.56	116.93
PW20	17.59	113.91	17.19	114.31	17.52	113.98	17.69	113.81	15.47	116.03
W16-3	4.59	120.88	4.65	120.82	4.97	120.50	5.77	119.70	5.78	119.69
W69	9.96	120.78	10.15	120.59	10.48	120.26	11.51	119.23	11.69	119.05
P32	12.47	117.37	12.53	117.31	12.33	117.51	12.22	117.62	dry	---
P31	blocked	---	blocked	---	blocked	---	blocked	---	blocked	---
P85	12.13	117.51	12.22	117.42	12.15	117.49	12.87	116.77	12.30	117.34
W46-2	14.09	117.28	14.15	117.22	14.15	117.22	14.32	117.05	14.40	116.97
W67-2	9.49	118.79	9.67	118.61	9.67	118.61	9.76	118.52	9.76	118.52
W66	11.06	117.45	11.14	117.37	11.07	117.44	11.25	117.26	11.35	117.16
W80	10.41	117.30	10.47	117.24	10.38	117.33	10.56	117.15	10.67	117.04
W81	12.31	116.91	12.36	116.86	12.29	116.93	12.41	116.81	12.42	116.80

Monitoring Well Name	27-Nov-09 Water Level (mbtoc)	27-Nov-09 Elev. Water Level (m.a.s.l.)	23-Dec-09 Water Level (mbtoc)	23-Dec-09 Elev. Water Level (m.a.s.l.)	re-measured 4-Jan-10 Water Level (mbtoc)	re-measured 4-Jan-10 Elev. Water Level (m.a.s.l.)
SG-S1	0.72	114.89	0.71	114.90		
SG-S2	0.86	113.52	0.85	113.53		
SG-S3	0.74	110.61	frozen	---		
W48-3	4.13	116.64	3.85	116.92		
W49-3	2.82	115.82	2.80	115.84		
W19	13.25	116.87	13.02	117.10		
PW25	2.38	116.64	2.12	116.90		
W55-2	2.31	113.28	2.59	113.00		
W56-2	3.42	111.84	3.63	111.63		
POND		122.31	frozen	---		
PW11	6.48	119.56	6.16	119.88		
PW13	2.94	121.55	2.69	121.80		
PW1	14.40	113.36	14.51	113.25		
PW2	10.62	117.39	off	---	10.62	117.39
PW3	11.74	116.80	11.78	116.76	11.80	116.74
PW4	12.36	116.63	12.38	116.61		
PW5	11.30	117.32	11.32	117.30	11.40	117.22
PW6	14.06	117.01	14.13	116.94		
PW7	16.61	116.73	16.63	116.71		
PW8	17.45	115.53	15.62	117.36	17.60	115.38
PW9	11.41	115.87	10.91	116.37		
PW10	11.06	116.43	9.80	117.69		
PW20	16.39	115.11	16.32	115.18		
W16-3	5.92	119.55	5.38	120.09		
W69	11.71	119.03	10.99	119.75		
P32	13.37	116.47	dry	---		
P31	blocked	---	blocked	---		
P85	12.36	117.28	12.42	117.22		
W46-2	14.47	116.90	14.46	116.91		
W67-2	9.80	118.48	9.75	118.53		
W66	11.46	117.05	11.45	117.06		
W80	10.77	116.94	10.76	116.95		
W81	12.42	116.80	12.57	116.65		