

**Richmond Sanitary Landfill Site  
081-12459-00  
Monitoring Report No. 25  
Part of Lots 1, 2, and 3, Concession IV  
Township of Richmond  
County of Lennox and Addington**

**Prepared for:  
Waste Management of Canada Corporation  
1271 Beechwood Road  
NAPANEE, ON K7R 3L1**

**Prepared by:  
GENIVAR Inc.  
1450 First Avenue West, Suite 101  
Owen Sound, Ontario N4K 6W2**

**Project No. 081-12459-00 (8570)**



081-12459-00 (8570)

March 22, 2012

Mr. Randy Harris, Landfill Manager,  
Waste Management of Canada Corporation  
1271 Beechwood Road  
RR#6  
Napanee, ON K7R 3L1

Re: Waste Management of Canada Corporation - Richmond Landfill Site  
Annual Monitoring Report #25

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Dear Randy:

We are pleased to provide Monitoring Report #25 in accordance with the conditions of Environmental Compliance Approval No A371203, and Environmental Compliance Approval No. 1688-8HZNJG. It should be noted that reporting for the site was completed in compliance with Certificate of Approval (Waste) No. A371203 with amendments, and Certificate of Approval (Industrial Sewage Works) No. 5268-7E8LJW, as these approvals were in place for the 2011 calendar year.

Please find enclosed **nineteen (19) copies** for your distribution as you see fit. **Two (2) copies** should be provided to the Ministry of the Environment, retain **one (1) copy** for your records, and the remainder can be distributed as needed at the landfill. If you require additional copies, please let us know. Please note that an electronic version of this document has been provided to Reid Cleland and Wayne Jenken.

Please note that the Ministry of Environment's Monitoring and Screening Checklist form has been included in reports submitted by Water and Earth Science Associates (WESA) under separate cover.

We trust the enclosed is satisfactory. However, if you have any additional questions, please do not hesitate to contact the writer.

Very truly yours,

**GENIVAR Inc.**

Jeff E. Armstrong, P.Eng.  
Designated Consulting Engineer  
Director, Solid Waste Management  
JEA/bdl  
Encl.

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## 1.0 Introduction

Waste Management of Canada Corporation's (WM) Richmond Landfill site is located within Part of Lots 1, 2, and 3, Concession IV, Former Township of Richmond, now the Town of Greater Napanee. The landfill site consists of a 16.2 hectare waste disposal landfill site within a total site area of 138 hectares, and operates under Environmental Compliance Approval (formerly Certificate of Approval No. A371203, including amendments).

This monitoring report for the Richmond Landfill site is prepared to comply with conditions listed in Environmental Compliance Approval No. A371203, and Environmental Compliance Approval (Sewage Works) No. 1688-8HZNJG. This report was prepared following a field survey on November 16, 2011, site inspections, and discussions with management.

In 2011, the Richmond Landfill operated under Certificate of Approval (Waste) No. A371203, dated March 30, 1988, and Certificate of Approval (Industrial Sewage Works) No. 5268-7E8LJW dated August 19, 2008. On January 9 and 10, 2012, the Ministry of Environment (MOE) issued Environmental Compliance Approvals (ECAs) for the site, which revoked and replaced the previous Certificate of Approvals (C of As) for waste and sewage works. While annual reporting requirements under both ECAs remain predominantly the same as the previous C of As, aside from condition reference numbers, several changes are present under the sewage works ECA, namely, the approval to allow the valves at the stormwater ponds to be operated in a normally open position, and the removal of sampling requirements prior to each discharge event. As a result of the new approvals in place, this annual monitoring report has been written to comply with the following conditions:

- Conditions 14.2 and 14.3 (i through xxiii) of ECA No. A371203; and
- Conditions 10(4) (a), (b), (c), (d), (e), (f), (g) and (h) of C of A (Sewage Works) No. 5268-7E8LJW; **and** ECA No. 1688-8HZNJG

A copy of ECA No. A371203 is included in **Appendix A.1** of this report, with the previous C of A No. A371203 and amendments provided in **Appendix A.2**. The amendments issued during the reporting year, dated May 2, 2011 and August 19, 2011, contained the following updates:

### **May 2, 2011 Amendment (Appendix A.2.14)**

Imposed Conditions 140, 141, and 142. This amendment approved the construction and operation of the phytoremediation system located in the northwest corner of the landfill site, and imposed new monitoring and reporting conditions pertaining to the phytoremediation system.

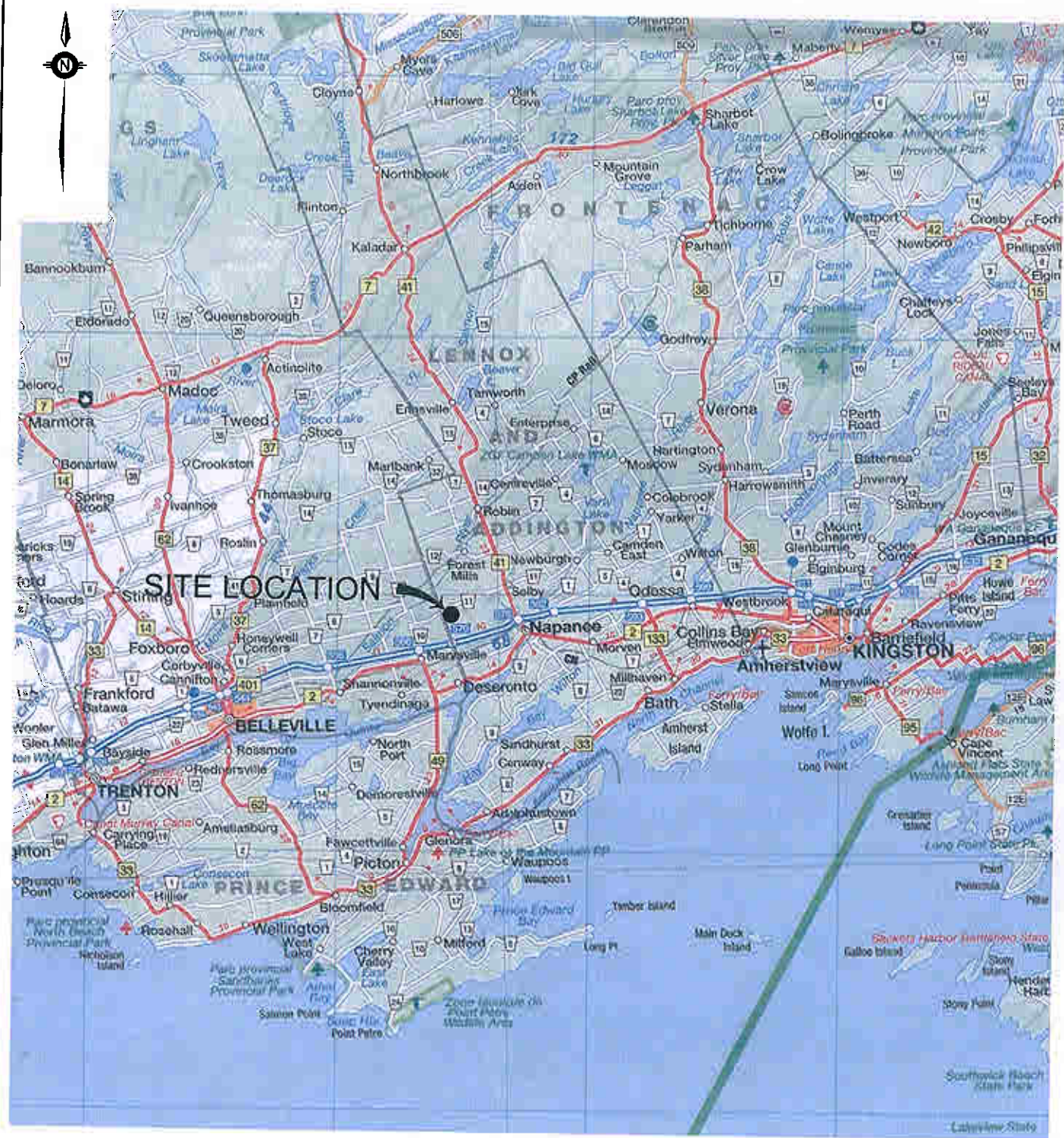
### **August 19, 2011 Amendment (Appendix A.2.15)**

Amended Condition 35 (ii). This amendment extended the completion timeline for installation of the final cover system on Phases II, III, IV, and V from August 31, 2011 to September 30, 2011.

The following other Certificates of Approval and Environmental Compliance Approvals concerning the site are included in **Appendix A**:

- Certificate of Approval (Sewage) No. 3-1720-90-916 (Leachate Treatment and Disposal by Spray Irrigation) dated September 4, 1991 (**Appendix A.3**). In March 2011, WM submitted an application to revoke this C of A, since the leachate spray irrigation system is no longer permitted under C of A No. A371203. The Ministry of Environment (MOE) granted approval to revoke this C of A in April 2011 (**Appendix A.3.2**).
- Certificate of Approval (Air) No. 8-4028-92-006 (Spray Irrigation System) dated March 11, 1992 (**Appendix A.4**). In February 2011, WM submitted a letter requesting the MOE to revoke this C of A, since the leachate spray irrigation system is no longer permitted under C of A No. A371203. The MOE granted approval to revoke the C of A in March 2011 (**Appendix A.4.2**).
- Environmental Compliance Approval No. 1688-8HZNJG dated January 10, 2012, can be found in **Appendix A.5**. This document outlines the new requirements for the operation, maintenance, monitoring, and reporting of the leachate and stormwater management systems. The previous Certificate of Approval No. 5268-7E8LJW dated August 19, 2008, is located in **Appendix A.6**.
- Certificate of Approval (Industrial Sewage Works) No. 4-0129-64-956 dated January 24, 1995 is located in **Appendix A.7**. This approval governs the operation of the oil/sediment interceptor at the contaminated soil pad.
- Certificate of Approval for a Waste Disposal Site No. A710003 (Soil Recycling) dated December 20, 1993 (**Appendix A.8**), and
- Certificate of Approval (Air) No. 1355-5LRN9N (Landfill Gas Collection and Flaring System) dated May 8, 2003 (**Appendix A.9**).

The site location can be seen in the following **Figure 1.1**.



Q:\1957\B570\DRAWINGS\2011\B570-F1-GENVAR.dwg PLOTTED Wednesday, March 30, 2011 11:24:40 AM

SHEET 1.1

DNW BY: TCG DATE: MAR 2004  
CHK BY: JCA SCALE: SEE BAK SCALE  
**WASTE MANAGEMENT OF CANADA CORP.**  
DRAWING NO. 0857013 - F1.1

**SITE LOCATION PLAN**  
**RICHMOND LANDFILL**



**GENIVAR**  
845 Third Ave E, Suite 212, Owen Sound, ON, N4K 2K8  
Telephone: (519) 376-7612 / Fax: (519) 376-8008  
Tel Free: 1-888-376-7612



## **2.0 Previously Submitted Reports**

Several reports have been completed and filed with the MOE in compliance with requirements of the conditions of the Provisional C of A. Those prepared by GENIVAR Inc. (formerly Henderson Paddon and Associates Limited.) are as follows:

### **Monitoring Report No. 1, March 1988**

1987 Annual Monitoring - Complying with Conditions 10(b), 10(c), and 10(e) of the C of A dated August 11, 1987.

### **Final Design Report, September 1988**

Complying with Conditions 2(a) and 11(a) of the C of A dated August 11, 1987, (Condition 2(a) and 10(a) of the C of A dated March 30, 1988).

### **Application for the Approval of Sewage Works for the Leachate Collection and Treatment Facilities, October 1988**

### **Monitoring Report No. 2 to 23**

1988 to 2009 Annual Monitoring Reports - Complying with Conditions 9(b), 9(c), 9(e), and 9(f) of C of A No. A371203 dated March 30, 1988, Condition 12 (3) of C of A No. 3-0975-90-916 dated October 21, 1991 (Monitoring Reports No. 5 through 22), and Conditions 10 (4) (a), (b), (c), (d), (e), (f), (g), and (h) of C of A No. 5268-7E8LJW, dated August 19, 2008 (Monitoring Reports 22 and 23).

### **Clay Liner – Design Construction and Testing, October 1989**

Complying with Condition 2(b) of the C of A dated March 30, 1988.

### **Condition No. 7 Report, December 1991**

This report was prepared and filed on December 31, 1991 by Laidlaw in connection with requirements of Certificate of Approval (Sewage) No. 31720-90-916.

### **Condition No. 29 Report, December 1991**

This report was prepared and filed on December 31, 1991 by Laidlaw in connection with requirements of Certificate of Approval No. 19-371203 dated September 4, 1991.

### **Development & Operations Report**

Report dated March 1996, to comply with Condition 2(a) of the C of A and as requested in the Amendment to the C of A on August 1, 1995.

### **Final Closure Plan**

Final Closure Plan dated June 2007, was submitted to satisfy Condition 34 of the C of A that required a detailed closure plan pertaining to the termination of the landfill site, post closure inspection, maintenance and monitoring, and end use.

### **Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan for the Final Cover System**

CQA/CQC Plan dated June 25, 2010, to comply with Condition 6(b) of the amended C of A issued March 31, 2010.

### **Odour Monitoring Plan**

Submitted June 25, 2010 as part of the Environmental Monitoring Plan (EMP) prepared by WESA, to satisfy Condition 8(d) of the amended C of A issued March 31, 2010.

### **Financial Assurance Update**

Revised Financial Assurance Plan dated June 25, 2010, to satisfy Condition 19 of the amended C of A issued March 31, 2010.

### **Operations and Procedures Manual**

Updated Operations and Procedures Manual, dated June 25, 2010, to satisfy Condition 66 of the amended C of A issued March 31, 2010.

### **Leachate Collection System Contingency Plan**

Dated June 25, 2010, to satisfy Condition 84 of the amended C of A issued March 31, 2010.

### **Landfill Gas Collection System Contingency Plan**

Dated June 25, 2010, to satisfy Condition 88 of the amended C of A issued March 31, 2010.

### **Design of Low Permeability Surface and Low Permeability Liner for Compost Pad and Pond**

Dated June 25, 2010, to satisfy Conditions 138 and 139 of the amended C of A issued March 31, 2010.

### **Monitoring Report No. 24**

2010 Annual Monitoring Report - Complying with Conditions 9(b), 9(c), 9(e), and 9(f) of C of A No. A371203 dated March 30, 1988 (as amended), Conditions 9a and 9b (i through xxv) of Notice 5 to amend C of A No. A371203 dated March 31, 2010, and Conditions 10(4) (a through h) of C of A No. 5268-7E8LJW dated August 19, 2008.

### **3.0 Reporting Requirements – Environmental Compliance Approval A371203**

#### **3.1 Assessment of Engineered Facilities, Design and Operation of the Site, and Adequacy of, and Need to, Implement Contingency Plans**

Condition 14.3 i of the ECA requires an assessment of the operation and performance of all engineered facilities. The following describes the facilities reviewed and the assessment completed.

##### **3.1.1 Landfill Mass**

The existing landfill mass was reviewed for slope stability, areas of settlement, integrity of the final cover, vegetation, leachate and gas seeps, and areas requiring remediation. The landfill slopes are regularly reviewed by WM, and were inspected in the past year by GENIVAR. No areas were discovered with slope instability, and settlement is still occurring mainly in the higher elevations of the landfill. The landfill final cover was inspected, and leachate seeps were repaired as found, and a surface emission survey was used to locate weak areas on the final cap. On June 30, 2011, the Richmond Landfill ceased to accept waste for final disposal. By late September 2011, final cover material was placed on the remaining uncapped portions of Phases II, III, IV, and V. Vegetation of the final cap was reviewed and is becoming established. We conclude that no remedial work is required on the landfill mass.

##### **3.1.2 Leachate Collection System**

The existing leachate collection system and pump stations were reviewed to determine if they are operating as designed, and if any remedial work is required. WM staff regularly reviews the operation of the leachate system, and completes repairs as required. It is understood that leachate is being collected from the system, and no blockages are present. High-level alarms were installed in the north chamber, and replaced in the south pump station, in 2010. No remedial work is required on this system.

##### **3.1.3 Gas Collection System**

The existing gas collection system is regularly monitored by WM, to ensure that landfill gas is being collected and destroyed in the flare system. Three (3) new gas extraction wells were installed during 2011. The gas system is operating as required, and no additional remedial work is recommended at this time.

##### **3.1.4 Stormwater Management System**

Three stormwater sedimentation ponds collect stormwater runoff from the landfill site, and remove sediment prior to discharge. Ponds are regularly inspected by WM staff, to monitor water levels, and to determine when discharge is required. The ponds in the northwest and northeast corners of the site had no issues this year, and require no remedial work. The pond in the south was recently reconstructed, and

no issues this year, and require no remedial work. The south pond required remedial work on the discharge outlet structure pertaining to the Provincial Officer's Order issued in January 2011 (see **Section 3.9**), but otherwise no further remedial work is required on this pond.

### **3.1.5 Site Access and Roads**

The site entrance and roads were inspected by GENIVAR during the annual site inspection, and no problems were identified.

### **3.1.6 Leachate Holding Lagoon**

The leachate holding lagoon was inspected, and was found to be in acceptable condition. The lagoon was decommissioned by WM in 2010, and will remain dry. The lagoon remains in place as a contingency for leachate storage.

### **3.1.7 Conclusions**

After a review of the engineered facilities at the site, it was concluded that there is currently no need to amend the design, or adjust the operation of the Richmond Landfill site.

Since all engineering works are performing as designed, and no monitoring indicates that contingency plans should be implemented, it is our conclusion that at this time, there is no need to implement the contingency plans.

## **3.2 Leachate Collection System Efficiency**

Condition 14.3 ii of the ECA requires an assessment of the efficiency of the leachate collection system.

A review of the leachate volume removed from the landfill site was determined to be of a reasonable volume to conclude that the leachate collection system is continuing to operate effectively. WM regularly inspects the infrastructure, and has determined that there are no blockages in the system.

## **3.3 Existing Site Conditions**

Condition 14.3 iii of the ECA requires WM to provide plans showing the existing contours of the site.

GENIVAR completed a GPS survey on November 16, 2011 for as built purposes. The information was then incorporated into an existing conditions drawing labelled **0857013-2011**, which is contained in **Appendix B** of this report.

### **3.4 2011 Landfill Operations Area**

Condition 14.3 iv of the ECA requires information regarding the areas of landfilling operations during the reporting period.

In 2011, landfilling operations concluded in the upper portions of the landfill site, with waste being placed in the upper east end of the landfill mass, and in the location of the former haul road located on the south central slope. Prior to landfilling in the area of the old access road, the gravel subgrade was removed to prevent any leachate flow paths in the granular material. On June 30, 2011, the Richmond Landfill ceased to accept waste in accordance with Condition 35 of the previous C of A (Condition 4.4 of the ECA), and landfilling operations ended at this time.

During the time of landfill operations in 2011, waste was hauled to the active area by an off road haul truck, since access to the active landfill face was restricted by the removal of the old access road. Waste brought to the site by garbage trucks was dumped in a receiving area at the toe of the landfill, within the footprint, and then loaded into WM's off road truck to be deposited at the active face. In late June 2011, the receiving area was removed, and the landfill slope was regraded and capped.

Landfilling tonnage was less than the approved annual limit again in 2011 due to the decreasing air space remaining at the landfill site, the need for WM to service the local customers, and because the site only accepted waste for the first six months of the year. Hydrocarbon-impacted soil received at the landfill site was temporarily stockpiled on the contaminated soil pad to the south of the landfill site. The material was used as daily cover in landfilling operations as required, and to fill the upper portions of the landfill site to final contours. Prior to June 30, 2011, all contaminated soil was removed from the soil pad and landfilled.

#### **3.4.1 Equipment**

During the first half of 2011, a D7R Caterpillar dozer was used to spread and compact waste material, and to spread daily cover. Other equipment on the site included:

- a Cat 235 excavator;
- a 1989 Pelican sweeper;
- a Case International farm tractor with a compost windrow turner and rotary mower;
- two (2) pick up trucks;
- a roll off truck
- two (2) Volvo rock trucks (one 25 tonne, one 40 tonne);
- a CAT 966 rubber-tire loader; and
- a Holder mower.

Upon completion of landfilling activities, several pieces of equipment were removed from the site however some equipment remains onsite to assist in performing regular maintenance activities. The list includes the following:

- a Caterpillar 966 front end loader;
- a Case International farm tractor with a rotary mower; and
- a 1989 Pelican sweeper.

If additional equipment was required for construction or other auxiliary uses, they were acquired from local contractors.

### **3.5 2012 Landfill Operations Area**

Condition 14.3 v of the ECA requires information regarding the intended area of landfilling operations during the next reporting period.

Per Condition 4.4 of the ECA, the Richmond Landfill ceased to accept waste for landfilling after June 30, 2011. As a result, no further landfilling operations will occur at the site.

### **3.6 2011 Excavation Areas**

Condition 14.3 vi of the ECA requires information regarding areas of excavation during the reporting period.

No borrow pit operations for cover material were undertaken in 2011, as a sufficient quantity of hydrocarbon-impacted soil or other soil material for daily cover requirements was stockpiled at the landfill site and/or received at the landfill gate.

A small quantity of material was removed from the southwest borrow area and used to fill the former compost pond located on the southwest corner of the site.

### **3.7 Cover Placement Progress**

Condition 14.3 vii of the ECA requires information regarding the progress of final cover, vegetative cover, and any intermediate cover application.

In 2011, WM completed the placement of the final cover system on Phases II, III, IV, and V of the Richmond Landfill. The final cover, comprised of a minimum 900mm thick low permeability soil layer, and a minimum 150mm thick topsoil layer, and hydroseeding, was placed on an approximate 3.1 hectare area on the upper east central section of the landfill. The placement of the final cover was supervised by

GENIVAR to ensure compliance with the MOE approved Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan for the Final Cover System.

Due to inclement weather, the Phases II, III, IV, and V capping project was not completed by the August 31, 2011 deadline as listed under Condition 35 (ii) of the amended C of A. WM requested and received from the MOE a one month extension, to September 30, 2011. Work was completed on the final cover on September 23, 2011, and hydroseeding was applied at this time. The area will be inspected in 2012 to ensure vegetative cover has been well established, and will be re-seeded as needed.

With the completion of the Phases II through V cap project, the entire landfill mound has final cover in place.

### **3.8 Previously Existing Site Facilities**

Condition 14.3 viii of the ECA requires information regarding previously existing site facilities.

#### **3.8.1 Buildings and Signage**

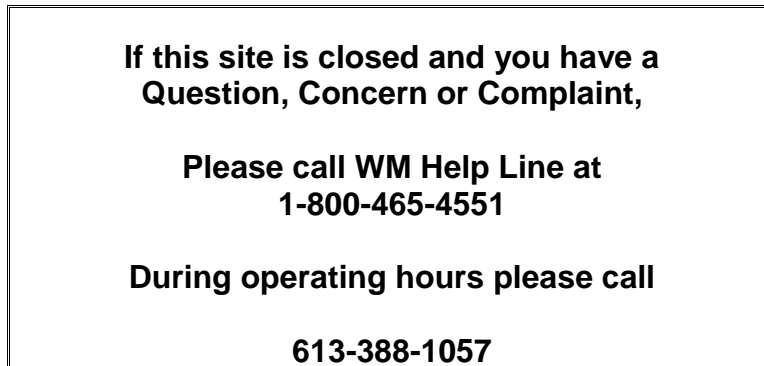
The landfill site office is located to the south of the landfill site on the main access road. The building houses management staff, secretarial and record services, communications equipment, weigh scale recording devices and operating staff facilities.

Landfill equipment is serviced in the existing maintenance building. Fuel storage is located in this area and a staff room for the landfill equipment operators is attached.

Signs are erected along the access road near Beechwood Road identify the landfill site. Prior to site closure, the main sign supplied the following information:



Additional signs on the site directed traffic to working faces and vehicles to the public drop off facility. The signs were considered satisfactory and informative to the landfill users. In compliance with the previous C of A, information directing residents with questions, concerns, or complaints to contact the Landfill Manager or WM Help Line, was added to the signage at the main gate, as shown below:



Site hours for the public were changed as of December 1, 2006 to Monday to Friday from 9am to 3pm, and closed Saturdays. The site was open the regular hours for commercial haulers. After June 30, 2011, regular hours of operation ended as the landfill is no longer permitted to receive waste for landfilling. The main sign was modified at this time to read as follows:



### 3.8.2 Staff

WM staff manages and operates the site. Mr. Randy Harris is the Landfill Manager. The site is managed by the Eastern Canada Market Area office with Mr. Reid Cleland being the Director of Disposal Operations - Ontario.



From January through June 2011, other landfill staff consisted of two (2) full-time equipment operators, a mechanic/operator, office clerk/bookkeepers, a weigh scale gate attendant to oversee incoming waste traffic and volumes, and part-time staff, as required. Upon site closure on June 30, 2011, the staff was reduced to the following:

- One (1) full time landfill manager;
- One (1) full time operator who is responsible for site maintenance, gas field monitoring and repairs; and
- One (1) full time public relations and office person.

Other equipment operators are brought on the site for contract work as required for ongoing maintenance activities.

### **3.8.3 Tonnage Control**

A truck weigh scale records net tonnages received at the site on a day-by-day basis.

In 1998, an 80' Active Mod-U-Dec pitless truck scale with a Toledo digital weight display and printer was connected to a computer for data management. Truck traffic is controlled from the office by traffic light signals and by an air phone intercom system as trucks approach the scale.

In 2004, electrical work was completed to allow the scale facility to be run by a generator in the event of power failure to the site. Standby power can be easily connected to the scale house facility to operate the necessities for the acceptance of waste vehicles.

Quarterly verification procedures are performed on the scale to ensure that weights are recorded correctly. Load cells have also been repaired as required.

### **3.8.4 Soil Recycling Pad**

A soil recycling pad is located to the east of the existing maintenance building and was used for temporary storage of hydrocarbon-impacted soil. Upon site closure on June 30, 2011, the Richmond Landfill ceased to accept waste, including contaminated soil, for final disposal. The pad was flushed and cleaned after soil use ended. Surface runoff from this pad is collected at an oil/sediment separator located at the south end of the pad. The oil and sediment captured by the separator is pumped out as required and trucked offsite by a licensed hauler.

### **3.8.5 Small Vehicle Transfer Area**

The mini-transfer area continued to be used successfully in the first half of 2011. This area was used for small vehicles off loading waste, recyclables and compostable materials. This practice keeps small vehicles away from the working face and facilitates the transfer of material from the smaller vehicles into the roll-off bins.

In 2009, WM constructed a reuse centre where residents could donate and exchange reusable goods. This building is located in the public drop off area. WM also entered the Ontario Electronic Stewardship program and the Ontario Tire Stewardship program, and collected electronics, paint, single use batteries and tires for recycling offsite.

White goods, including scrap metal, were separated from the waste stream and temporarily stored on the site. WM removed these materials regularly for recycling.

In May 2011, WM applied to the MOE to amend the final closure plan, in order to continue the operation of the mini-transfer area. On June 30, 2011, the mini-transfer area ceased operation along with landfilling operations. It is anticipated that the mini-transfer area will resume operation in 2012, pending MOE approval.

### **3.8.6 Landfill Gas Collection and Flaring System**

The landfill gas collection and flaring system was implemented for odour control at the Richmond Landfill in 2000. The construction of Phase I of the system was carried out in the years 2000/2001 with the installation of a 2.1 metre OD x 12.2 metre high enclosed flaring system, according to Certificate of Approval (C of A) (Air) No. 8-4076-99-006, issued by the MOE on December 21, 1999. In 2003, C of A (Air) No. 1355-6LRN9N was issued by the MOE, which revoked and replaced the previous C of A. Subsequent expansions and upgrades to the gas collection system have been made since the installation of the initial system in order to burn the landfill gas produced by the decomposing waste. WM reports that the present system collects gas from five (5) leachate clean-outs, two (2) leachate collection manholes and 43 vertical gas wells, of the 58 wells installed. The C of A permits 54 gas wells, 12 leachate manholes and 9 cleanouts.

Regular operation and maintenance of the landfill gas collection and flare system was completed in 2011. The landfill gas flare has been effective at reducing odour around the landfill site. In the rare occurrence of flare shutdown, operators, who are automatically notified by a paging system, attend the site to restart the flare or correct any alarm situations. The flare has operated successfully to date.

In late 2011, WM applied to the MOE to modify the C of A (Air) to permit the operation of a candlestick flare at the Richmond Landfill. The candlestick flare installation would address a contingency plan for the

landfill gas collection system, in that it would be operational only when the enclosed flare is shut down for maintenance or repair. A review of WM's application is currently being undertaken by the MOE.

### 3.8.7 Organic Waste Compost Facility Operation

WM operated the organic waste compost facility as part of its waste diversion initiative. Leaf and yard waste, wood, paper sludge from local paper mills, manure and biosolids were previously composted at this facility, although other wastes were accepted under the organic waste composting approval. No paper sludge or biosolids was used in 2011.

**Table 3.1** shows the amount of organic waste received during 2011.

**TABLE 3.1**  
**2011 Compost Quantities**

<b>Incoming Materials by Type</b>	
<b>Type</b>	<b>Quantity (tonnes)</b>
Leaf and yard waste	120.52
Sludge	0
<b>TOTAL</b>	<b>120.52</b>

This material was not processed, and was used as daily cover during landfilling operations. Upon site closure on June 30, 2011, organic waste is no longer accepted at the Richmond Landfill. As per a condition of the previous C of A and the new ECA, the compost pad and pond were decommissioned before September 30, 2011.

### 3.8.8 Sedimentation Ponds

The three sedimentation ponds remained in place in 2011. Pond discharge was controlled and not permitted without prior testing and approval from MOE District staff. On January 9, 2012, the MOE issued ECA No. 1688-8HZNJG, which revoked and replaced the previous C of A for sewage works. The ECA allows WM to operate the discharge outlet valves on the sedimentation ponds in the open position, thereby permitting the ponds to operate in a free flowing state. Revised maintenance, monitoring, and reporting programs are also listed in the ECA.

## 3.9 Facilities Installed in 2011

Condition 14.3 ix of the ECA requires information about the installation of any facilities at the site during the reporting period.

In 2010, the control valve at the southwest sedimentation pond was inadvertently left in the open position by WM personnel, after completing a MOE approved discharge event. This resulted in approximately 4,134 cubic metres of untested water being discharged from the site. The MOE became aware of the incident, and on January 11, 2011, a Provincial Officer's Order (POO) was issued to the Richmond Landfill, requiring WM to complete several items in regards to improving the frequency of the inspection program on the discharge control system. In January and February 2011, the following alterations and modifications were undertaken by WM:

- Installation of a mechanical cap on the downgradient end of the discharge pipe from the discharge structure;
- Installation of a moisture sensor in the discharge structure discharge pipe between the downgradient end and the discharge control valve;
- Installation of a locking cap on the operating mechanism of the discharge control valve;
- Installation of a solar powered warning light and cell phone notification system activated by the moisture sensor system, and;
- Removal, cleaning, reinstallation, and testing of discharge control valve.

In March 2011, the POO was rescinded. Please refer to **Appendix C** for a copy of the POO, along with all correspondence between WM and the MOE in relation to the POO.

Also in 2011, the remaining portion of the final cover system was installed on the uncapped areas of Phases II, III, IV, and V, and a phytoremediation system was constructed on the northwest corner of the property. The purpose of the system is to make use of the natural ability of selected trees and shrubs to take up large amounts of shallow groundwater, effectively controlling the migration of low concentrations of dissolved constituents downgradient from the landfill.

### **3.10 Site Preparations and Facilities Installed in 2012**

Condition 14.3 x of the ECA requires information regarding any site preparation or installation of facilities planned for the next reporting period.

It is anticipated that the mini-transfer area will resume operations at the Richmond Landfill in 2012, pending MOE approval.

### 3.11 Calculations

Condition 14.3 xi of the ECA requires calculations regarding the volume of waste, daily and intermediate cover, and final cover deposited or placed at the site during the reporting period, and a calculation of the total volume of site capacity used during the reporting period.

On June 30, 2011, the Richmond Landfill ceased landfilling operations. The installation of the final cover system on the remaining uncapped portion of the landfill was completed in September 2011. The following quantities placed at the site during the reporting period are as follows:

**TABLE 3.2**  
**2011 Landfill Quantities**

Description	Quantity
Volume of waste placed – January 1, 2011 through June 30, 2011	38,492.31 tonnes
Estimated daily cover volume placed assuming 4:1 waste/cover ratio	9,623.08 tonnes
Volume of final cap placed – Phases II, III, IV, and V <sup>(1)</sup>	32,550 m <sup>3</sup>
Remaining air space	0

NOTES:

(1) Final landfill cap is constructed of 0.90 m of clayey material, and 0.15 m of topsoil.

Based on the November 2010 survey, a total of 44,100 m<sup>3</sup> of airspace was remaining at the site for waste and daily cover. By June 30, 2011, this airspace had been filled, and no additional waste was permitted to be landfilled.

### 3.12 Leachate Quantities

Condition 14.3 xii of the ECA requires a summary of the quantity of any leachate or pre-treated leachate removed from the site during each operating week.

In 2011, leachate continued to be hauled to Napanee for treatment. Loads are collected from the site, manifested and then discharged at the dumping facility located at Enviro Park Lane and West Street on the edge of the Town of Napanee. Leachate continues to be extracted at the landfill site at the lowest portions on Phases 2 and 4 and hauled as required for treatment off-site.

In the event that leachate cannot be hauled from the site due to conditions at the receiving plant, etc., leachate or leachate-impacted water will be stored in the leachate-holding lagoon located to the north of the site to contain leachate and to prevent spills. Once leachate treatment resumes at the receiving plant, this liquid is then hauled to the sewage treatment plant for treatment and disposal. This is a temporary measure and is outlined in the leachate management plan submitted to the MOE. In 2010, this pond was

dewatered, and allowed to drain freely in future rainfall events. In the event that this contingency is required in the future, the pond could be used again.

WM inspects the site each day for leachate seeps and problem areas in the final cap. If leachate seeps are encountered, they are promptly repaired to avoid any surface water contamination. Generally, leachate seeps are excavated and granular material and dry clay are replaced and packed. When cracks develop in other areas of the final cap and the potential for gas migration is present, the final cap is scarified or re-compacted and additional clay may be placed in the area to prevent gas migration. Through the continuous removal of leachate to the leachate treatment facilities and the extraction of landfill gas through the landfill gas collection and disposal system, the potential for leachate seeps and gas outbreaks are minimized and the potential for any off-site impact is reduced.

**Table 3.3**, located on the following page, details the weekly quantity of leachate removed from the Richmond Landfill. The volumes presented in the table were converted from the tonnage determined in the truck at the site scale, and converted using 1 tonne = 1m<sup>3</sup>.

**TABLE 3.3**  
**2011 Weekly Leachate Quantities**

<b>WEEK ENDING</b>	<b>TOTAL LEACHATE REMOVED - NAPANEE (m<sup>3</sup>)</b>	<b>WEEK ENDING</b>	<b>TOTAL LEACHATE REMOVED - NAPANEE (m<sup>3</sup>)</b>
1/8/2011	289.72	7/16/2011	152.10
1/15/2011	271.49	7/23/2011	243.49
1/22/2011	232.61	7/30/2011	245.28
1/29/2011	236.83	8/6/2011	259.73
2/5/2011	175.70	8/13/2011	187.57
2/12/2011	211.94	8/20/2011	244.73
2/19/2011	298.08	8/27/2011	228.94
2/26/2011	288.53	9/3/2011	199.77
3/5/2011	304.58	9/10/2011	206.50
3/12/2011	499.47	9/17/2011	216.98
3/19/2011	569.15	9/24/2011	266.11
3/26/2011	564.77	10/1/2011	245.30
4/2/2011	802.65	10/8/2011	229.79
4/9/2011	731.24	10/15/2011	259.80
4/16/2011	786.50	10/22/2011	354.25
4/23/2011	289.34	10/29/2011	404.12
4/30/2011	737.16	11/5/2011	318.02
5/7/2011	786.64	11/12/2011	251.31
5/14/2011	497.96	11/19/2011	329.35
5/21/2011	508.18	11/26/2011	370.67
5/28/2011	470.12	12/3/2011	448.91
6/4/2011	474.23	12/10/2011	635.49
6/11/2011	401.33	12/17/2011	578.74
6/18/2011	311.90	12/24/2011	579.03
6/25/2011	223.50	12/31/2011	347.12
6/30/2011	149.84		
7/9/2011	169.72	<b>TOTAL</b>	<b>19,086.28</b>

### 3.13 Waste Tonnage Summaries

Condition 14.3 xiii of the ECA requires the weekly, maximum daily, and total annual quantity (tonnes) of waste received at the site.

**Tables 3.4** and **3.5** summarize weekly, monthly and total annual quantity of volumes in metric tonnes for the calendar year 2011. Weigh scale operators recorded the tonnages, as noted below and on the following page:

**TABLE 3.4**  
**2011 Weekly Tonnage Totals**

WEEK ENDING	TOTAL WASTE TONNAGE LANDFILLED (TONNES)	TOTAL CONTAMINATED SOIL RECEIVED (TONNES)	WEEK ENDING	TOTAL WASTE TONNAGE LANDFILLED (TONNES)	TOTAL CONTAMINATED SOIL RECEIVED (TONNES)
1/8/2011	297.81	544.65	4/9/2011	439.52	674.24
1/15/2011	414.68	3.51	4/16/2011	456.73	3,608.14
1/22/2011	296.24	0	4/23/2011	334.84	2,670.70
1/29/2011	277.60	176.66	4/30/2011	482.17	764.99
2/5/2011	162.04	174.14	5/7/2011	532.79	709.74
2/12/2011	285.12	36.58	5/14/2011	483.97	658.02
2/19/2011	346.52	352.67	5/21/2011	432.93	0
2/26/2011	284.94	0	5/28/2011	572.12	0
3/5/2011	305.30	0	6/4/2011	499.65	0
3/12/2011	308.91	585.70	6/11/2011	118.34	0
3/19/2011	327.12	152.87	6/18/2011	63.79	3,421.95
3/26/2011	479.70	54.78	6/25/2011	76.15	9,959.88
4/2/2011	420.05	775.64	6/30/2011	60.18	4,408.24
<b>TOTAL</b>	<b>4,206.03</b>	<b>2,857.20</b>	<b>TOTAL</b>	<b>4,553.18</b>	<b>26,875.90</b>

**Total of Waste Received = 4,206.73 t + 4,555.18 t = 8,759.21 tonnes**

**Total of Contaminated Soil Received = 2,857.20 t + 26,875.90 t = 29,733.10 tonnes**

**TABLE 3.5**  
**2011 Monthly Tonnage Totals**

MONTH	COMPOST DIVERTED FROM LANDFILL SITE (TONNES)	TOTAL WASTE TONNAGE LANDFILLED (TONNES)	TOTAL CONTAMINATED SOIL RECEIVED (TONNES)
January	4.09	1,319.31	724.82
February	4.29	1,080.06	563.39
March	6.45	1,709.59	1,535.46
April	103.36	1,810.33	7,751.60
May	1.76	2,281.00	1,367.76
June	0.57	558.92	17,790.07
<b>TOTAL</b>	<b>120.52</b>	<b>8,759.21</b>	<b>29,733.10</b>

NOTE: The site is licensed for 125,000 tonnes/year.  
Total tonnage shown does not include recyclable material.  
No waste or contaminated soil was disposed at the Richmond Landfill after June 30, 2011.



The 2011 waste tonnage landfilled outlined in **Table 3.5** was 8,759.21 tonnes of waste and 29,733.10 tonnes of soil, which was compiled from the monthly summary of wastes received. The licensed tonnage is 125,000 tonnes/year. Tonnages listed include non-hazardous impacted soil that was received at the site for disposal.

The maximum daily tonnage received was on June 21, 2011 and was 2,760.80 tonnes.

In addition, this year, WM diverted compostable material to the on-site composting program, and electronic waste (e-waste) to off-site recycling centers. Approximately 120.52 tonnes of compostable material was diverted from the landfill site, and 19.20 tonnes of e-waste was diverted. This is not included in the total tonnage received at the landfill site. Additional material was directed through on-site recycling programs at the mini transfer area but the tonnages are not available for plastics, glass and fibres. As well, 25.24 tonnes of recycled tires were diverted from the landfill, along with 16.91 tonnes of recyclable metal.

### **3.14 Summary of Complaints**

Condition 14.3 xiv of the ECA requires a summary of any complaints received and the responses made.

Over the years, a few immediate neighbours have occasionally contacted WM regarding odours from the landfill site. The normal decomposition of waste causes odours from the site. WM implemented the operation of a landfill gas recovery system in 2001 to eliminate the odour source. Perimeter gas wells were drilled in the waste mound, and collection piping withdraws landfill gas from the wells and all leachate manholes to reduce the odour emitted from the landfill site. Landfill gas is flared off in a totally enclosed flare to the south of the landfill footprint. The landfill flare was commissioned in April 2001 and successfully reduces landfill gas odours.

The weather station is located south of the office area. The station monitors wind speed, wind direction, temperature, rainfall, solar radiation and relative humidity. Recorded local weather patterns help in addressing odour complaints.

In 2009, the MOE conducted a 3-week odour survey in June and July, and found no negative impacts on the local air quality. In addition, the MOE used their TAGA (Trace Atmospheric Gas Analyzer) unit to evaluate the local air quality, and concluded that the air quality was similar to any rural air quality in Ontario.

WM also continued with the surface emission survey study in 2011, where a consultant measured surface emissions to identify areas of weak cap. This year, a surface emission survey was performed on October 6, 2011. Five (5) areas were identified above 500ppmv. The final cover system in the exceedance areas were inspected and repaired as needed.

WM staff also tour the surrounding area and concession roads regularly to monitor for odour, litter and illegally dumped waste. Observations are recorded and corrective measures taken as required. In addition, when odour complaints are received at the landfill site, WM staff are dispatched to investigate the source of the odour and record the conditions that may have influenced the odour. WM is able to complete this response plan if complaints are received directly by WM. If complaints are delayed or not directed towards WM, the potential odour source cannot be investigated nor can corrective action be taken if the odour was potentially landfill related.

In 2010, in compliance with Condition 109 of the previous C of A, WM posted a sign near the front entrance, directing residents with questions, concerns and complaints to contact the Landfill Manager or WM Help Line. Phone numbers for both contacts are provided on the sign.

In 2011, there were three (3) odour complaints received by WM, for which the above procedure was used to address the complaints. Please refer to **Appendix D** for the complaint forms. One complaint, relayed from the MOE District Office in Kingston, was not substantiated at the site since all systems were operational at the time of the complaint, and the wind was not blowing in the direction of the complainant. Two additional odour complaints were relayed from neighbours, but were again not substantiated.

### **3.15 Operational Problems**

Condition 14.3 xv of the ECA requires a discussion of any operational problems encountered at the site, and corrective action taken.

In 2010, the control valve at the southwest sedimentation pond was inadvertently left in the open position by WM personnel, after completing a MOE approved discharge event. This resulted in an unapproved discharge of water from the site. The MOE became aware of the incident, and on January 11, 2011, a Provincial Officer's Order (POO) was issued to the Richmond Landfill, requiring WM to complete several items in regards to operational controls at the discharge outlet and improving the frequency of the inspection program on the discharge control system. WM complied with the items in the POO, and in March 2011, the POO was rescinded.

Aside from this incident, no other operational problems were encountered at the site in 2011.

### **3.16 Refusal of Waste**

Condition 14.3 xvi of the ECA requires a summary of any waste that was refused for disposal at the site, the reasons for refusal, and the carrier who brought the waste to the site.

During the approved period of landfilling operations in 2011, no waste was refused for disposal at the site.

### **3.17 Leachate Collection System Cleaning and Inspection**

Condition 14.3 xvii of the ECA requires a summary of the leachate collection system cleaning and inspection activities.

In 2011, WM regularly inspected the leachate pumps and system each day that hauling of leachate occurred. On September 7 and 8, 2011, the leachate lines were flushed and cleaned. No blockages or issues were reported from this activity.

### **3.18 Financial Assurance Summary**

Condition 14.3 xviii of the ECA, requires an update summary of the amount of financial assurance which has been provided to the Director.

In 2011, the financial assurance amount of \$11,557,385 was provided to the Director for the Richmond Landfill, as per Condition 20 of the previous C of A, dated March 31, 2010. With the issuance of the new ECA for the site, which accepted the revised financial assurance plan submitted by WM in June 2010, WM will provide the Director with an updated financial assurance amount.

### **3.19 Statement of Compliance**

Condition 14.3 xx of the ECA requires a statement of compliance with all conditions of the ECA and other relevant Ministry groundwater and surface water requirements.

As a result of the inspections completed in 2011, to the best of our knowledge, GENIVAR certifies that WM has complied with the conditions outlined in the various Environmental Compliance Approvals and Certificates of Approval for the site, with respect to site operations. WESA will certify the monitoring portion of this requirement.

### **3.20 Confirmation of Site Inspection Program**

Condition 14.3 xxi of the ECA requires confirmation that the site inspection program as required by this ECA has been complied with by the Owner.

WM has confirmed to GENIVAR that the site inspection program that is required by the Environmental Compliance Approvals, the Certificates of Approval, and by the various reports that address the site operations and monitoring, have been complied with.

### **3.21 Operations, Equipment, or Procedures Changes**

Condition 14.3 xxii of the ECA requires documentation of any changes in operations, equipment, or procedures employed at the site.

Prior to site closure, all contaminated soil was removed from the soil pad and landfilled. The soil pad was washed to remove all traces of contaminants, and runoff from the pad was collected in the oil/water separator. Also, all remaining compost from the compost pad was removed and landfilled at this time.

On June 30, 2011, the Richmond Landfill ceased to accept waste for landfilling, and the site was closed. The mini-transfer area also ceased operations after this date. Access to the landfill was restricted to the general public, and the sign at the main entrance was modified to notify residents that the site was no longer accepting waste (see **Section 3.8.1.**).

After site closure, several pieces of equipment were removed from the site, and the number of staff at the site was reduced. Please refer to Sections **3.4.1** and **3.8.2**, respectively, for additional information. The compost pad and pond were also decommissioned prior to September 30, 2011, and placement of the final cover system on the uncapped portions of Phases II, III, IV, and V were completed by September 26, 2011.

On January 10, 2012, the MOE issued an Environmental Compliance Approval for the stormwater and leachate management systems at the Richmond Landfill, which revoked and replaced the previous Certificate of Approval. The ECA permitted WM to operate the sedimentation ponds in a free flowing manner, instead of operating the discharge outlet valves in a closed position and requiring testing and MOE approval prior to discharge.

### **3.22 Recommendations**

Condition 14.3 xxiii of the ECA requires recommendations regarding any proposed changes in operations of the site.

GENIVAR does not have any recommendations for changes in the site operations.

## **4.0 REPORTING REQUIREMENTS – ENVIRONMENTAL COMPLIANCE OF APPROVAL 1688-8HZNJG AND CERTIFICATE OF APPROVAL 5268-7E8LJW**

In 2011, WM operated the leachate and stormwater management systems at the Richmond Landfill in accordance with Certificate of Approval No. 5268-7E8LJW. During this time, the sedimentation ponds were operated with the discharge outlet valves in the closed position, and toxicity testing was required, along with MOE approval, prior to a discharge event. In January 2012, the MOE issued Environmental Compliance Approval No. 1688-8HZNJG, which revoked and replaced the previous Certificate of Approval. The ECA removed the requirement to operate the ponds in a closed manner, thereby allowing the ponds to operate in a free flowing state, subject to quarterly toxicity testing to confirm no adverse effects to species listed in the ECA.

Since the ECA is the most recent version of the approval regarding the operation and management of the stormwater and leachate management systems at the Richmond Landfill, the annual monitoring report is submitted in accordance with Conditions 10 (4) (b), (c), (d), (e), (f), (g), and (h) of this document. An overview of the leachate management system present at the Richmond Landfill is provided below.

### **4.1 Leachate Management**

Leachate haulage from the site to the Napanee (now part of the Town of Greater Napanee) sewage system began in 1996. Leachate is regularly hauled from the landfill by Sutcliffe Sanitation Services Ltd. and discharged directly to the sewage system. Close communication between the town, WM and Sutcliffe Sanitation is maintained to determine if leachate may be accepted for treatment. Sutcliffe Sanitation is the common hauler of sludge from the sewage treatment plant and leachate from the landfill site. Before picking up a load of leachate, Sutcliffe Sanitation confirms with the town that leachate can be hauled on that particular day.

During the winter of 2003/2004, WM constructed a leachate/septage dumping facility within the Town of Napanee. The dumping facility is located at Enviro Park Lane and West Street within the Town of Napanee on municipally owned property. The dumping facility was commissioned in April 2004, after which time all leachate was deposited at the dumping station. Station users are recorded by PIN numbers that uniquely identify each station user and log the quantity of material discharged to the dumping facility. Users are then billed on a user pay basis by the Napanee Utilities. Ownership, operation and maintenance of the facility are the responsibility of the Greater Napanee Utilities. WM has a usage contract, which allows WM to use the facility for a specified period of time as long as Napanee Utilities does not have a restriction on dumping due to treatment characteristics at the sewage treatment plant. The dumping facility contains dumped loads and slowly discharges wastewater into the Napanee sewage system. Napanee Utilities has a C of A for this site.

It is a requirement of the landfill site's ECA that alternative leachate treatment options are available should Napanee be unable to treat leachate. Approval has been given to discharge leachate at Cobourg, however, leachate was not hauled to Cobourg for treatment in 2011. Letters of approval for alternate leachate treatment sites can be found in **Appendix E** of this report.

#### 4.1.1 Leachate Quantities

Condition 10(4) (b) of the ECA requires a summary of the monthly quantity of leachate disposed off site and corresponding leachate average quality.

**Table 4.1** indicates the leachate quantities trucked from the site to the Napanee sewage treatment plant in 2011. The average rate of removal for treatment was 52.29 m<sup>3</sup>/day.

**TABLE 4.1**  
**2011 Monthly Leachate Quantities**

<b>Month</b>	<b>Napanee (m<sup>3</sup>)</b>
January	1,086.15
February	975.31
March	2,573.34
April	2,654.96
May	2,490.35
June	1,335.35
July	810.59
August	1,064.84
September	990.79
October	1,363.59
November	1,371.06
December	2,371.95
<b>Total</b>	<b>19,086.28</b>

#### 4.1.2 Operational Problems and Corrective Actions

Condition 10 (4) (c) of the ECA requires a description of any operating problems encountered and corrective actions taken.

In 2011, there were no operating problems encountered or corrective actions taken for the leachate management system. No issues from the treatment of the leachate at the sewage treatment plants have arisen.

#### **4.1.3 Maintenance Performed On Structures**

Condition 10 (4) (d) of the ECA requires a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.

In 2011, regular inspection of the leachate pumps and system took place each day that leachate was hauled from the site. On September 7 and 8, 2011, the leachate lines were flushed and cleaned. No blockages or issues were reported.

#### **4.1.4 Calibration and Maintenance of Leachate Monitoring Equipment**

Condition 10 (4) (e) of the ECA requires a summary of the calibration and maintenance carried out on all leachate monitoring equipment.

In 2011, the leachate monitoring system in the south pump chamber was removed and reinstalled, while the float trip level in the north chamber was verified. The onsite computer was also updated.

#### **4.1.5 Summary of Complaints Received**

Condition 10 (4) (f) of the ECA requires a summary of any complaints received during the reporting period, and any steps taken to address the complaints.

Three complaints were received in 2011. All complaints were for odour, which were immediately addressed by WM (following the complaints procedures previously described in **Section 3.14**) at the time the complaints were received. Please refer to **Appendix D** for the complaint logs completed by WM.

#### **4.1.6 Summary of By-Pass, Spill or Abnormal Discharge Events**

Condition 10 (4) (g) of the ECA requires a summary of all By-pass, spill, or abnormal discharge events.

In 2011, there were no leachate events that were a by-pass, spill, or abnormal discharge event.

### **4.2 Surface Water Management**

Surface water quality management is also operated under ECA No. 1688-8HZNJG. In 2011, the Richmond Landfill operated the surface water quality system based on the conditions outlined in C of A No. 5268-7E8LJW, which detailed the operation of three (3) sedimentation ponds located on the landfill site property. In January 2012, the MOE revoked the C of A and replaced it with ECA No. 1688-8HZNJG. The new approval permits the ponds to be free flowing, subject to toxicity testing to verify no adverse effects are caused to species listed in the ECA. This section is intended to satisfy the requirements outlined in Condition 10(4) (a), (c), (d), (f) and (g) of the ECA.

#### **4.2.1 Summary of Stormwater Monitoring Data**

Condition 10 (4) (a) of the ECA requires a summary and interpretation of all stormwater monitoring data and a comparison to the Provincial Water Quality Objectives (PWQO), including an overview of the success and adequacy of the Works.

WESA has prepared an annual report to satisfy this section of the ECA, under separate cover. The reader is directed to this document for this information.

#### **4.2.2 Operating Problems and Corrective Actions**

Condition 10 (4) (c) of the ECA requires a description of any operating problems encountered and corrective actions taken.

In January 2011, WM was issued a Provincial Officer's Order by the MOE relating to an unauthorized discharge from the south sedimentation pond. The discharge, which was observed in December 2010, occurred as a result of the control valve being inadvertently left in the open position after an MOE approved discharge in November 2010. The POO listed several items which WM was required to complete, as listed previously in **Section 3.9**, and in March 2011, the POO was closed.

#### **4.2.3 Summary of Maintenance Activities**

Condition 10 (4) (d) of the ECA requires a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism, or thing forming part of the Works.

The two (2) northerly sedimentation ponds operated in 2010 without any maintenance required on the ponds. The ponds are regularly inspected to ensure their operation meets the ECA, and no remedial work was required in 2011.

On the south sedimentation pond, the discharge monitoring system that was required to be installed to satisfy the POO was temporarily disabled after the POO was rescinded. The pond is regularly inspected to ensure its operation meets the ECA, and no further remedial work was required in 2011.

#### **4.2.4 Summary of Complaints Received**

In 2011, there were no complaints received regarding the ponds.

#### **4.2.5 Summary of By-pass, Spill or Abnormal Discharge Events**

The previous stormwater Certificate of Approval required toxicity, chemical testing and MOE approval prior to any discharge event. Listed below and on the following page are the MOE approved discharge



events that occurred in 2011. Volumes were calculated based on water level drop in the ponds. Prior to all discharge events, toxicity testing was completed to ensure the water was safe to discharge.

**TABLE 4.2**  
**2011 Pond Discharge Volumes**

<b>Date of Discharge</b>	<b>Pond Identification</b>	<b>Volume Discharged (m<sup>3</sup>)</b>
January 7 through 26, 2011	Southwest Pond	10,582 m <sup>3</sup>
February 28 through March 2, 2011	Southwest Pond	2,847 m <sup>3</sup>
March 4 through 7, 2011, March 23 through 28	Northwest Pond	3,500 m <sup>3</sup>
March 11 through 23, 2011	Southwest Pond	29,450 m <sup>3</sup>
March 17 through 25, 2011	Northeast Pond	2,600 m <sup>3</sup>
April 18 through 25, 2011	Northwest Pond	2,800 m <sup>3</sup>
April 18 through 25, 2011	Northeast Pond	2,600 m <sup>3</sup>
April 18 through 21, 2011	Southwest Pond	5,700 m <sup>3</sup>
May 3 through 12, 2011	Compost Pond	5,951 m <sup>3</sup>
May 4 through 6, 2011	Southwest Pond	6,475 m <sup>3</sup>
May 4 through 16, 2011	Northwest Pond	2,800 m <sup>3</sup>
May 4 through 16, 2011	Northeast Pond	2,600 m <sup>3</sup>
May 26 through 30, 2011	Southwest Pond	8,350 m <sup>3</sup>
May 26 through 30, 2011	Northeast Pond	0 m <sup>3</sup> (valve opened May 26, but no discharge due to high creek levels. Valve closed on May 30)
May 26 through 30, 2011	Northwest Pond	1,400 m <sup>3</sup>
November 17 through 25, 2011	Northwest Pond	5,724 m <sup>3</sup>
November 17 through 25, 2011	Northeast Pond	1,500 m <sup>3</sup>
November 21 through 23, 2011	Southwest Pond	5,724 m <sup>3</sup>

December 7 through 16, 2011	Northeast Pond	1,400 m <sup>3</sup>
December 8 through 16, 2011	Southwest Pond	7,400 m <sup>3</sup>
December 16, 2011	Northwest Pond	2,200 m <sup>3</sup>

## 5.0 General

In 2011, WM completed ongoing maintenance and operation of the landfill site. Landfill operations concluded on June 30, 2011, but progressed smoothly during the first half of 2011 and there were no operational impacts on the surrounding area. Active litter control, gas management, leachate treatment and active monitoring of the landfill site resulted in no operational impacts on the surrounding area. The continued use of the landfill gas collection and flaring system, and system maintenance and upgrades, has reduced any potential landfill gas odours. WM has been very active in monitoring all aspects of the site, both on and off site, ensuring that no impacts were caused on the surrounding areas.

The tonnage of waste received at the landfill site over the past year was reduced from the annual approved tonnage to allow WM to continue to service their local customers and commitments. Landfill operations were contained to the upper extents and the south face of the landfill site, within the final contours approved for the landfill site. Upon cessation of landfilling activities, the remaining final cover system was placed on the uncapped portion of the landfill. The entire landfill mound now has final cover in place.

Leachate extraction and treatment continues at the landfill site, and 19,086.28 m<sup>3</sup> of leachate has been removed during the past year, or approximately 52.29 m<sup>3</sup>/day. It is recommended that leachate removal off site continue.

The landfill gas extraction and flaring system successfully collected and flared the landfill gas generated from the site. Continued operation and expansion of this system will be completed in the coming years to ensure that odours are minimized around the landfill site. Additional wells may be installed to replace non-functioning wells.

Neighbours with concerns are always invited to visit the landfill with their concerns, which are addressed by the site manager.

Although landfilling operations have ended, we conclude the landfill is operating in an environmentally sound and orderly manner in the post-closure period.

Respectfully submitted:

**GENIVAR Inc.**

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Jeff E. Armstrong, P.Eng.  
Director, Solid Waste Management  
JEA/bdl