

**Detailed Chronology of Significant Landfill Design & Operation,
and Land Use Changes
Richmond Landfill Site**

8570

Date	Description
1954	<ul style="list-style-type: none"> ▪ Landfill operations began at the site under Sutcliffe Sanitation Services Limited.
1971	<ul style="list-style-type: none"> ▪ Service area expanded to include the Town of Napanee and Desoronto.
1971	<ul style="list-style-type: none"> ▪ Ministry of the Environment issued Provisional Certificate of Approval No. A 371203 for a 10.1 hectare landfill footprint.
1974	<ul style="list-style-type: none"> ▪ Burning operations ceased at the site.
1979	<ul style="list-style-type: none"> ▪ Service area increased to include the Town of Picton, Richmond Township, Township of Tyendinaga, North Fredericksburg, Adolphustown and Sophiasburgh. Waste tonnage was also increased.
August 11, 1987	<ul style="list-style-type: none"> ▪ Landfill site expansion approved to 16.2 hectares and to include the site service area with the Counties of Lennox and Addington, Prince Edward, Hastings and Frontenac.
January 1988	<ul style="list-style-type: none"> ▪ Tricil Limited purchased the landfill site from Sutcliffe Sanitation Services Limited.
September 1989	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling in Phase 1. Sewage lagoon is present and located in Phase 4. All farm buildings exist.
1990	<ul style="list-style-type: none"> ▪ The site came under ownership of Laidlaw as a result of the acquisition of Tricil Limited.
December 1990	<ul style="list-style-type: none"> ▪ Landfill operations began in the Phase 2 cell area on prepared clay base.
1991	<ul style="list-style-type: none"> ▪ Leachate holding lagoon was constructed north of the hydro corridor.
Summer 1993	<ul style="list-style-type: none"> ▪ Contaminated soil pad constructed to the east of the maintenance building.
1993	<ul style="list-style-type: none"> ▪ Phase 3 landfill base was constructed during the summer with waste placed in the fall.
September 2, 1994	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment approved the construction and operation of a composting facility.</p>
December 1994	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling is being completed in Phase 3. Compost pad is being constructed. Sedimentation pond in the northeast (Pond 1) and south (Pond 3) is being constructed; northwest is not constructed and soil stockpile exists on top of Phase 1
January 24, 1995	<p>Certificate of Approval (Industrial Sewage No. 4-0129-94-956) issued by MOE. Approval was granted for the oil/water separator at the contaminated soil stockpile.</p>
1995	<ul style="list-style-type: none"> ▪ Phase 4 Cell was constructed in the summer/fall of 1995 with landfilling commencing in the summer of 1996.
August 1, 1995	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment prohibited leachate recirculation in Phases 1, 2, and 3.</p>
December 1995	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling is occurring on the top of Phase 3. Phase 4 recently constructed. Soil stockpile is being constructed on top of Phase 1.
September 1996	<ul style="list-style-type: none"> ▪ Leachate haulage to Napanee started
September 11, 1996	<p>Notice to amend Certificate of Approval (Waste) No. A371203 was issued by MOE. The amendment approved the expansion of the leaf and yard waste facility to an organic waste composting facility.</p>
November 1996	<ul style="list-style-type: none"> ▪ From Aerial mapping - active area is Phase 4 with soil stockpiled on Phases 1, 2 and 3.
1997	<p>Change in ownership - Canadian Waste Services Inc.</p>
January 1997	<ul style="list-style-type: none"> ▪ North Leachate Pump chamber installed
February 1997	<ul style="list-style-type: none"> ▪ First phase of leachate recirculation system installed in Phase 4
November 1997	<ul style="list-style-type: none"> ▪ Landfilling is occurring on the top portion of Phase 4. Contaminated soil stockpile on top of Phase 1 is in place. Sedimentation pond in northwest corner (Pond 2) is not yet constructed.
1998	<ul style="list-style-type: none"> ▪ Last level of recirculation piping installed in Phase 4
Summer 1998	<ul style="list-style-type: none"> ▪ Phase 5 constructed

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Fall 1998	<ul style="list-style-type: none"> ▪ Installation of temporary gas collection and flaring system to establish gas generation rates - two temporary vertical gas extraction wells, a temporary gas collection trench, and temporary flaring/mechanical system.
November 5, 1998	<ul style="list-style-type: none"> ▪ Small landfill fire in Phase 5 waste. Soil sampling of adjacent properties indicated no impact to surrounding environment.
December 1998	<ul style="list-style-type: none"> ▪ From Aerial photography - Phase 5 has been constructed and waste placement has begun in Phase 5. Soil is being stockpiled on top of Phases 1, 2 and 3.
1999	<ul style="list-style-type: none"> ▪ Two levels of leachate recirculation installed in Phase 5
Summer 1999	<ul style="list-style-type: none"> ▪ Northwest sedimentation pond (Pond 2) constructed
November 1999	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling is occurring in Phase 5. Northwest sedimentation pond (Pond 2) has been constructed. Landfill flare is not in place.
December 21, 1999	<p>Certificate of Approval (Air) No. 8-4076-99-006 issued by MOE. The certificate was issued for a permanent, enclosed flare.</p>
2000	<ul style="list-style-type: none"> ▪ First loads of biosolids received at compost pad for composting
April to May 2000	<p>Installation of 24 vertical gas extraction wells in landfill mound. Throughout the year, connection of 12 cleanouts and 9 leachate cleanouts, along with the landfill gas wells, to the system occurred.</p>
August 29, 2000	<p>Certificate of Approval issued by MOE, approving the installation of the Phase 1 leachate collection system.</p>
Fall 2000	<ul style="list-style-type: none"> ▪ Leachate collector installed on north and west sides of Phase 1
December 2000	<ul style="list-style-type: none"> ▪ From Aerial photography - landfilling on top of Phase 3. Soil stockpile on top of Phase 1 is being depleted. The peripheral leachate collector on Phase 1 has been constructed. Sedimentation pond in northwest corner (Pond 2) is in place. Landfill flare has been installed.
February 2001	<ul style="list-style-type: none"> ▪ Landfill gas collection and flaring started
Summer 2001	<ul style="list-style-type: none"> ▪ Leachate collector replaced between Manhole 1 to 4.
July 10, 2001	<ul style="list-style-type: none"> ▪ Landfilling on the north slope of Phase 2.
2002	<p>Condensate drain traps were installed at low points in the gas collection system to reduce the amount of moisture at the flare.</p>
Summer 2002	<ul style="list-style-type: none"> ▪ Leachate collector replaced between Manhole 1 and 7.
July 2002	<ul style="list-style-type: none"> ▪ Landfilling is occurring on the north face of Phase 1. Contaminated soil stockpile on top of Phase 1 is nearly completed.
2003	<ul style="list-style-type: none"> ▪ Change in ownership - Waste Management of Canada Corporation
2003	<ul style="list-style-type: none"> ▪ High pressure odour misting system installed
2003	<ul style="list-style-type: none"> ▪ 10 new vertical gas collection well installed
May 8, 2003	<p>Certificate of Approval (Air) No. 1355-5LRN9N issued, which revoked the previous Certificate of Approval. The notice approved the operation of the flare and gas collection system, comprising of a maximum of 54 wells, 12 leachate manholes and 9 cleanouts.</p>
2004	<ul style="list-style-type: none"> ▪ 6 new vertical gas collection well installed
Spring 2004	<ul style="list-style-type: none"> ▪ Leachate receiving station was constructed in Napanee
2006	<ul style="list-style-type: none"> ▪ Final year of odour spray system operation
June 18, 2007	<p>Submission of final closure plan to MOE</p>
2007	<ul style="list-style-type: none"> ▪ 3 new vertical gas collection wells installed, and 5 vertical gas collection wells were redrilled. Pumps were also placed in select wells to lower leachate levels and improve gas collection.
Summer 2008	<ul style="list-style-type: none"> ▪ 5 vertical gas collection wells were redrilled, and the gas header pipe on the east and west slopes was upgraded from 150mm diameter to 300mm diameter to improve flow and decrease friction loss. Isolation valves were also added at various locations on the gas header.
August 19, 2008	<ul style="list-style-type: none"> ▪ Certificate of Approval (Industrial Sewage Works No. 5268-7E8LJW) issued, approving upgrades/construction to the south sedimentation pond (Pond 3).
Fall 2008 through Summer 2009	<ul style="list-style-type: none"> ▪ Upgrades/construction of south sedimentation pond (Pond 3).

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2009	<ul style="list-style-type: none"> ▪ Landfilling in old access road area - south slope
July through September 2009	<ul style="list-style-type: none"> ▪ Installation of seven (7) vertical gas extraction wells over the crest of the landfill mound, and redrilling of 12 wells on the upper north, east, and south slopes.
2010	<ul style="list-style-type: none"> ▪ Decommissioning of leachate holding lagoon north of landfill mound.
March 31, 2010	<ul style="list-style-type: none"> ▪ Notice 5 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the final closure plan, listed a date of closure for the landfill, and dates for completion of final cover installation for various phases of the landfill. The notice also requested the submission of a revised financial assurance calculation, contingency plans, design for the final cover system, design for low permeability liner for compost pad and pond, and revised environmental monitoring plan, by June 30, 2010.
June 25, 2010	<ul style="list-style-type: none"> ▪ Submission of financial assurance plan, final cover construction quality assurance plan, contingency plans for the leachate and landfill gas collection systems, design for low permeability liner for compost pad and pond, and odour monitoring plan, to MOE to satisfy various conditions from March 31, 2010 Certificate of Approval amendment.
June 29, 2010	<ul style="list-style-type: none"> ▪ Submission of environmental monitoring plan and groundwater/surface water contingency plan, to MOE to satisfy various conditions from March 31, 2010 Certificate of Approval amendment.
August 25, 2010	<ul style="list-style-type: none"> ▪ Notice 6 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the construction quality assurance plan for the final cover system.
August 27, 2010	<ul style="list-style-type: none"> ▪ Start of installation of final cover system on Phase 1.
October 28, 2010	<ul style="list-style-type: none"> ▪ Completion date of final cover placed on entire Phase 1 portion of landfill
December 2010	<ul style="list-style-type: none"> ▪ Submission of phytoremediation plan for northwest corner of property.
Spring 2011	<ul style="list-style-type: none"> ▪ Installation of three (3) vertical gas extraction wells
May 2, 2011	<ul style="list-style-type: none"> ▪ Notice 8 to Certificate of Approval No. A371203, issued by MOE. The amendment approved the construction/operation of the phytoremediation plan in the northwest corner of the property.
May 25, 2011	<ul style="list-style-type: none"> ▪ Application submitted to MOE requesting continued operation of the public drop off facility
May 25, 2011	<ul style="list-style-type: none"> ▪ Application submitted to MOE requesting that the operation of the stormwater ponds be as designed (free flowing).
June 30, 2011	<ul style="list-style-type: none"> ▪ Last load of waste accepted and disposed in landfill mound ▪ Closure of the public drop off facility ▪ Decommissioning of contaminated soil pad
July 4, 2011	<ul style="list-style-type: none"> ▪ Start of installation of final cover system on Phases 2, 3, 4, and 5
August 2011	<ul style="list-style-type: none"> ▪ Decommissioning of compost pad and pond completed.
September 23, 2011	<ul style="list-style-type: none"> ▪ Final cover system over entire Phases 2, 3, 4, and 5 completed.
January 9, 2012	<ul style="list-style-type: none"> ▪ MOE issues Environmental Compliance Approval No. A371203, consolidating the previous Certificate of Approvals and amendments. The permit also approved several submissions from June 2010, subject to various conditions. ▪ MOE issues amendment to Environmental Compliance Approval No. A371203, approving the re-opening of the public drop off facility, subject to conditions.
January 10, 2012	<ul style="list-style-type: none"> ▪ MOE issues Environmental Compliance Approval No. 1688-8HZNJG, consolidating the previous Certificate of Approvals and amendments for Industrial Sewage Works. Approval also granted under this document to allow the stormwater management ponds to operate in a free flowing manner.

The potential sources of volatile organic compounds (VOCs) on the landfill site include the following:

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	<ul style="list-style-type: none"> • The unlined Phase 1 area of the landfill, operated since 1954 until site closure in 2011;
	<ul style="list-style-type: none"> • Maintenance shop located south of the landfill footprint (date of initial operation unknown);
	<ul style="list-style-type: none"> • Sewage lagoon operated by Sutcliffe Sanitation, located on the south side of the landfill in the area now covered by Phase 4 (date of initial operation unknown, but decommissioned in 1990 prior to Phase 2 construction of the landfill);
	<ul style="list-style-type: none"> • Stormwater runoff from the contaminated soil pad constructed in 1993, located to the east of the maintenance shop;
	<ul style="list-style-type: none"> • Historic sporadic leachate seep breakouts (typically along the south and northwest sides of the landfill);
	<ul style="list-style-type: none"> • Septic sewage systems with distribution tile fields, located east of the scalehouse and maintenance shop (dates of installation unknown); and
	<ul style="list-style-type: none"> • Former abattoir located immediately south of the site (operated from the mid-1960s to early 2000s).