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North Renfrew Waste Management
Board of Operations
North Renfrew Landfill Site
Operations Manual

Prepared for:

North Renfrew Waste Management
Board Of Operations

Prepared by:

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1.0 INTRODUCTION

A Provincial Certificate of Approval is required under Part V, Section 27 of the Environmental Protection Act to establish a waste management system or a waste disposal site. This is the licence granted by the regulating agency which permits the operation of the landfill by the applicant or its agents. In Ontario, Certificates of Approval are granted by the Ontario Ministry of the Environment and Energy (MOEE). The Certificates often specify numerous conditions which must be obeyed in order to retain approval to operate the landfill or waste processing facilities. A Certificate of Approval is required before a waste disposal management system or a waste disposal site can be used, operated, established, altered, enlarged or extended.

The objective of an Design and Operations Report is to provide the conceptual design and operating plans required to support an application for a Certificate of Approval to build, operate and close the North Renfrew Landfill Site, in accordance with Part V of the Environmental Protection Act.

The purpose of this Operations Manual is to provide a layout of the operational procedures for the North Renfrew Landfill Site taking into consideration both the Certificate of Approval and the Design and Operations report.

1.1 Approvals History

In January 1987 the Town of Deep River initiated the search for a new landfill site. The Village of Chalk River and the Townships of Rolph, Buchanan, Wylie & McKay participated in the study. The Ontario Ministry of Environment was funding the study between 1987 and 1992. During this period new provincial regulations came into being and MOE requested that the study be reviewed and updated to conform to the new legislation.

In May 1994 the three municipalities formally entered into an agreement to form the North Renfrew Waste Management Board.

In November 1994 the North Renfrew Waste Management Board submitted a "Task 1 Report – Assessment of Problems and Opportunities" in accordance with the Environmental Assessment process.

In March 1995 the Board submitted the "Task 2 Final Report – Alternative Waste Management Systems and Diversion" and the "Task 4 Final Report – Landfill Siting Methodology and Public Consultation Plan".

In January 1996 the Board submitted the "Task 5 Final Report – Landfill Site Selection".

In May 1996 the Board submitted the "Task 3 Final Report – Implementation of Waste Management Systems".

In February 1997 the Board submitted an application for a Certificate of Approval to operate the North Renfrew Landfill Site.

In October 1997 the Minister of Environment accepted the Environmental Assessment submitted by the Board.

In March 1998 the Minister of Environment issued the Notice of Approval to Proceed with the Undertaking as required under the Environmental Assessment Act.

On the 28th of May 1999 the Ontario Ministry of Environment issued Provisional Certificate of Approval No. A420010 to the North Renfrew Waste Management Board to operate the North Renfrew Landfill Site. The Certificate of Approval is provided in Appendix A.

1.2 Site Description and Ownership

The North Renfrew Landfill Site is located in the Town of Deep River, approximately 1.5 kilometres northeast of the Village of Chalk River. The civic address is 995 Bagg's Road and the site is accessed via Plant Road in the Town of Laurentian Hills (formerly the Townships of Rolph, Buchanan, Wylie & McKay).

The site is on recreational bush land on the west side of Bagg's Road, 2.5 kilometres north of Plant Road and 1.5 kilometres south of Miller Road. Bagg's Road is sparsely populated with only three residences, the nearest is 1.8 kilometres south of the entrance to the landfill site. Chalk River Laboratories (Atomic Energy of Canada Ltd) owns all the land on the east side of Bagg's Road.

The nearest residence at the time the site was opened is located 750 metres west of the site. Maskinonge Lake is located approximately 900 metres east of the site. A site location map is provided in Figure 1.

The waste disposal area is limited to a 2.8¹ hectare (7 acre) footprint, which is located within a total site area of 26 hectares (64.05² acres). The Attenuation Zone, located on AECL land, is approximately 63 hectares (156 acres). These details are provided in Figure 2.

The site was purchased from Atomic Energy of Canada Ltd by the Town of Deep River and registered as Part Lot 5, Concession 11, Town of Deep River, designated as Part 1 on Reference Plan 49R-14136. The Town of Deep River holds the property in trust for the Town of Deep River and the Town of Laurentian Hills (formerly the Townships of Rolph, Buchanan, Wylie & McKay and the Village of Chalk River). An Access Agreement dated 19 August 1999 between Atomic Energy of Canada Limited, and the Town of Deep River, and the Town of Laurentian Hills, gives the North Renfrew Waste Management Board exclusive use of the groundwater in the Contaminant Attenuation Zone located on AECL property on Lots 6 and 7, Concessions 10 and 11. There is a Certificate of Prohibition registered against the property to identify its use as a landfill site.

1.3 Site History and Background

The site was used as a family farm until 1945, at which time it was purchased by Atomic Energy of Canada Ltd. The farm was located on both sides of Bagg's Road, and although AECL did not require the entire property, they purchased the parcel on the west side to accommodate the vendor. AECL sold the property to the municipalities in 1999, for use as the new landfill site.

The Site was developed to replace the Miller Road Landfill Site, which serviced the Town of Deep River, and the Buchanan Landfill Site, which serviced the Village of Chalk River and the Townships of Rolph, Buchanan, Wylie & McKay.

¹ C of A 420010 1i
² Survey by John Goltz October 1997

1.4 Site Capacity

The site is designed to serve the Town of Deep River (population 4,200), the Town of Laurentian Hills (population 2,800) and Chalk River Laboratories (AECL) for twenty-five years. The approved volume of the site is 150,000 m³ and it is expected to contain 75,000 tonnes of solid, non-hazardous residential, industrial, commercial and institutional waste. Peak traffic is estimated at 25 trucks and 400 private vehicles per week.⁴

1.5 Site Design

The North Renfrew Landfill Site is designed as a natural attenuation site.⁵ The water table under the footprint was found at 4 to 6 metres deep in sandy soil. Both the surface and ground water drain towards Maskinonge Lake entirely within AECL property. The ground water flow rate is such that any leachate produced at the landfill site would take fifty years to reach Maskinonge Lake.⁶ A facility layout plan is provided as Figure 3.

1.5.1 Buffer Zone and Screening

The 2.8 hectare footprint is surrounded by a buffer area which varies between 60 metres and 270 metres.

The Buffer Zone is the first 30 metres outside the fill area footprint and is identified by the perimeter road and the chain link and page wire fences. The Buffer Zone shall not be used for waste disposal but may be used for receiving and recording waste arrivals, monitoring, surface water management, contingency measures, perimeter road, and waste diversion activities. A 30 metre Buffer Zone is required as a firebreak around dumps under the Forest Fire Prevention Act (Section 17). It must be clear of trees and combustible material.

All parts of the buffer area outside the buffer zone fence shall be maintained with a healthy vegetative cover to minimize erosion. This area will not be used for any landfill operations apart from monitoring, surface water management, and contingency measures. Trees will be maintained for screening purposes.⁷

1.5.2 Roads and Maintenance

Access to the site is via Bagg's Road from Plant Road. Bagg's Road was upgraded from an unmaintained seasonal road to a paved road to provide access to the landfill site. The Town of Laurentian Hills maintains the road under an agreement between the Town of Deep River and the Town of Laurentian Hills.

The access road from Bagg's Road to the perimeter road is a 7.0 metre road and is surfaced with asphalt grindings⁸ and will be maintained in good condition at all times.

The perimeter road is 7.0 metres wide and constructed of native soil.⁹ Gravel surfacing will be added if it deteriorates. The perimeter road will be graded monthly or more often as required. The construction of the perimeter road will be completed as landfilling progresses.

3 D & O 1997 Gartner Lee 3.2
4 D & O 1997 Gartner Lee 4.8.3
5 D & O 1997 Gartner Lee 1.2 a
6 D & O 1997 Gartner Lee 2.1.4
7 C of A 16, D & O 4.8.1
8 D & O Addenda 4.8.3
9 D & O Addenda 4.8.3

Additional temporary access roads to the waste tipping face will be developed and maintained as required. These roads will typically be built with the on-site crawler loader and back-bladed daily to keep them smooth.

The access road and all on-site roads shall be maintained so that vehicles hauling waste to and on the site may travel readily on any day under all normal weather conditions.¹⁰ Dust suppressants will be applied as required to prevent dusty conditions.

1.5.3 Site Fencing and Access Control

Access to the site shall be limited to such times as an Attendant is on duty and the site shall be restricted to use by authorized persons.¹¹

There are four sets of locking gates. There are two sets at the Bagg's Road entrance to the site. There is a locking gate at the Re-Use Compound and an other locking gate in the rear fence to access the monitoring wells. All gates are kept locked when the site is closed.

Chain link fencing two metres high is installed around the entrance and waste diversion facilities and extends along the south side and partially along the west side of the landfill site to discourage the movement of bears. Page wire fencing surrounds the remainder of the landfill site.¹²

1.5.4 Signage¹³

Signs identifying the site will be maintained at the entrance gate. This sign will indicate the "North Renfrew Landfill Site"; Certificate of Approval No. A 420010; Hours of Operation; Waste and Recyclables accepted only from residents and businesses of the Town of Deep River and the Town of Laurentian Hills; No Trespassing; a schedule of Tipping Fees; and emergency contact telephone number.

"Danger – No Trespassing" signs and No Hunting symbols will be maintained at regular intervals along the perimeter fence.

Signs designating "Scrap Metal Recycling"; "Tire Recycling"; "Re-Use Compound"; "Recycling Depot"; "Household Hazardous Waste Depot"; "Brush Chipping Area"; "Lumber Chipping Area"; "Leaf & Garden Waste Composting Area"; "Waste Disposal Area – Tipping Face" and any other site facility will be maintained at the appropriate locations.

1.5.5 Screening

Most of the land surrounding the footprint is currently forested with a mix of mature trees and underbrush, and will be retained as a visual and noise barrier.¹⁴ Additional screening is provided by three rows of trees planted to the southwest of the footprint.

An earthen berm will be maintained along the gap in the trees at the southwest corner of the footprint as a visual and noise barrier.

¹⁰ Reg 347 11.1

¹¹ Reg 347 11.2

¹² D & O 1997 Gartner Lee 4.8.6

¹³ D & O 1997 Gartner Lee 4.8.6

¹⁴ D & O 1997 Gartner Lee 4.8.2

1.5.6 Surface Water Run-Off

Any storm water or spring melt that comes in contact with the waste will be retained and infiltrated within the landfill working area with temporary berms, ditches and grading.¹⁵ Any berming, grading and ditching to be left in place longer than one month will be stabilized with topsoil and vegetation.

1.5.7 Landfill Gas Management

Gases generated within the landfill will be allowed to vent naturally through the landfill cover material.

Any enclosed structure on the landfill site footprint and buffer shall be passively vented or equipped with a methane gas detector and an active venting system.¹⁶

1.5.8 Leachate Management: Surface and Ground Water Monitoring

Surface and Ground Water shall be monitored according to Schedule "B" of the Certificate of Approval (as may be amended) and according to the report entitled "Ground Water and Surface Water Assessment – Proposed North Renfrew Landfill Site" dated February 1997.¹⁷

The Board's environmental consultant shall supervise the collection of surface water and groundwater samples. Water level measurements may be completed and recorded by trained Board employees.¹⁸

A copy of this report will be made available by the North Renfrew Waste Management Board.

The Attenuation Zone shall be maintained in its existing natural state of vegetation.¹⁹ All monitoring wells shall be properly capped, locked, and protected from damage.²⁰ Any damaged wells will be repaired or replaced as soon as weather permits.

Any monitoring wells no longer required, upon approval of the Regional Director, shall be decommissioned in accordance with Ontario Regulation 903, R.R.O. 1990. A report on the abandonment of any wells will be included in the annual report to MOE.

1.6 Emergency Procedures and Contingency Plans²¹

1.6.1 Fire

The design and operation of the site (i.e. 30 metre fire break between the landfill footprint and the surrounding bush) and daily application of cover material and good housekeeping will limit the potential for fires.

If a fire should begin at the landfill face, or in the composting or brush areas, it will be extinguished by dumping native soil on the fire with the loader. All buildings and equipment will be equipped with fire extinguishers that will be inspected annually. If a fire cannot be extinguished immediately, the local fire department will be notified immediately. All emergency phone numbers will be posted at the site.

15 D & O 1997 Gartner Lee 4.7

16 C of A 48

17 C of A 49, 50, 51

18 Comments Dominski 2 Sep 97; Board(Gartner-Lee) response 6 Nov 97 C of A 55 (i) ii

19 C of A 18

20 C of A 50

21 C of A 24 f

1.6.2 Emergency Situations

There will be an operating cellular telephone at the site during hours of operation. In emergency situations the Attendant will telephone the Police, ambulance, Fire Department, etc.

1.6.3 Off-Site Leachate Impacts

In the event that the results of the groundwater and surface water monitoring program indicate an off-site exceedance of the PWQO or Reasonable Use Criteria, a report shall be submitted within thirty days to the Regional Director and to the Site Liaison Committee specifying details of the exceedance and potential off-site impacts to water users, the extent and timing of contingency measures implemented, modifications to the monitoring program, and mitigation measures to reduce or prevent off-site impacts.

In the event that results of the monitoring program indicate that off-site exceedance can be predicted to occur, the annual report shall include the details of such predicted off-site exceedance, a discussion of any modifications to operations, a discussion of modifications to the monitoring program, and a discussion of mitigation or contingency measures which may be needed to prevent off-site impacts.²²

1.6.4 Contingency Plans Related to Leachate²³

In the event that the Trigger Levels described in the Ground Water and Surface Water Assessment are exceeded, the following are possible contingency options:

- Progressive installation of a Low Permeability Final Cover
- Enhanced Natural or Artificial Wetland Treatment
- Leachate Re-Infiltration
- Collection and Treatment of Contaminated Water at the Base of the Escarpment.
- And/or Pumping and Treatment of Contaminated Water from Purge Wells

1.6.5 Contingency Plan Related to Landfill Gas²⁴

If there were ever a need to control the lateral movement of landfill gas, then perimeter trenches would be excavated to below the frost depth (2 meters) lined with filter cloth, and backfilled with coarse stone to the surface to allow free venting.

1.6.6 Other Contingency Plans²⁵

Litter fencing will be used near the working face if blowing litter cannot otherwise be controlled or collected.

Additional equipment for waste compaction and covering will be hired from local contractors if there are breakdowns.

²² C of A 52, 53, 54

²³ D & O 9.1.2

²⁴ D & O 9.2

²⁵ D & O 9.3

1.7 Hours of Operation.²⁶

On days when the site is open, on-site activities other than waste receipt may occur one hour before the gate opens and up to two hours after the gate closes. Hours of operation are listed in Appendix B (as may be amended in Appendix B).

The Landfill Site gates shall be locked to the public during non-operating hours²⁷

1.8 Site Facilities²⁸

1.8.1 Electrical Service

The closest hydro poles are more than one and a half kilometres from the landfill entrance. Battery technology plus a generator will be used to provide electric power and light for the site.

1.8.2 Heating

A fuel burning oil or propane stove provides heating for the site office.

1.8.3 Buildings

Any enclosed structure on the landfill site shall be passively vented.²⁹

1.8.4 Site Office

The site office is located near the site entrance. It is a raised structure, to ensure sufficient ventilation underneath the building, thus preventing the accumulation of landfill gases in the building.

Standard safety equipment in the site office includes a first aid kit, fire extinguisher and a battery-powered combustible gas detector.³⁰ The safety equipment will be maintained in good working order.

A washroom with non-potable water and septic system is provided. Bottled drinking water is provided. Any water supplied from surface water or from a well located on the Site shall be clearly marked to indicate that the water is not potable.

1.8.5 Heavy Equipment Garage

A garage is provided to shelter the crawler-loader to facilitate routine maintenance and to moderate weather extremes to make it easier to start in the winter.

20 LANDFILL DEVELOPMENT AND WASTE DISPOSAL OPERATION

2.1 Supervision & Management

No waste or fill shall be accepted, placed, or removed from the site unless the Site Manager or Attendant is present to oversee the operations.³¹

²⁶ D & O 5.1

²⁷ C of A 26, 28

²⁸ D & O 1997 Gartner Lee 4.8.5

²⁹ C of A 48

³⁰ D & O 4.8.4

³¹ C of A 27, Reg 347 11.12

All vehicles entering the site shall stop at the Site Office. The Attendant shall verify the identity of all users of the site by asking them to show their driver's license or property tax receipt or applicable municipal permit to ensure the waste comes from the Town of Deep River or the Town of Laurentian Hills. The Attendant will inspect each load. The Attendant will record the hauler name, municipality, approximate volume, material or waste category, and date received, at the time of receipt on a Daily Record and collect the appropriate tipping fees. Daily records are provided in Appendix C.

The waste categories will be selected from the following list: Appliances, Asbestos, Blue Box, Brush, Construction & Demolition, Contaminated Soil, Household Hazardous Waste, Industrial Commercial Institutional, Metal, Residential, Re-Use, Spring & Fall Pickup, Tires, Wood, Yard Waste.

After the waste has been inspected and accepted, users will be directed to the appropriate facilities for unloading. The Attendant will reject any load of waste that is not acceptable due to either the nature or origin of the waste. This information will be noted in the Daily Record.³²

The Landfill Supervisor will perform a daily inspection and record the results on a Daily Site Inspection Record (Appendix C). This will record the condition of the access road, fencing, gates, signs, office, facilities and equipment; evidence of unacceptable wastes or illegal dumping; integrity of daily, interim, and final cover; dust conditions; litter; odours; drainage; leachate break-outs; cover material usage; and general neatness and cleanliness of the site. Deficiencies and action taken to correct them will also be recorded on the record. A monthly report will be prepared to summarize the daily reports and to record the progress of excavation, filling areas, interim and final cover, and cover material used.

2.2 Tippings Fees

Tipping fees will be charged and recorded in accordance with the existing by-laws of the Town of Deep River and the Town of Laurentian Hills.

2.3 Records and Inspections

Daily Records will be kept of inspections and waste receipts. Daily Records and Daily Site Inspections will be retained in fire-proof storage for five years, and made available for inspection by the MOE or the SLC upon request.³³

The Attendant shall keep a written record of any complaints received, including the name and address of the complainant, and the nature of the complaint. A complaints form is provided in Appendix D.

The Board, its staff and contractors, shall allow MOE personnel, upon presentation of credentials, to enter upon the premises to inspect, at reasonable times, any facilities, equipment, practices or operations and to have access to and to copy, any records required by the conditions of the Certificate of Approval.

³² C of A 30; D & O 5.3
³³ C of A 34

2.4 Landfill Development

Prior to any excavation or disposal of waste, footprint boundaries and corner posts shall be erected so as to be visible at all times.³⁴ Waste shall only be deposited within the 2.8-hectare footprint and above the base contours and below the final contours as indicated on Figures 4 and 5 and as amended in the letter provided by the MOE (Appendix A).³⁵³⁶

Waste will be placed progressively in four phases as show in Figure 6, with Phase I being in the southwest corner of the footprint. Phase II is in the southeast corner of the footprint, followed by Phase III in the northwest corner, and Phase IV in the northeast corner.

Clearing and grubbing will proceed as required for landfilling. A minimum buffer of 30 metres clear of trees, brush, or slash will be maintained at all times between the landfilling area and the forested area. Grubbing material may be used as a berm in the buffer zone as long as it is covered with soil and vegetated.

Excavation of the base contours shown in Figure 4 and referred to in the MOE letter regarding initial base contours (Appendix A) will progress as needed for waste placement, except in the event that excavation reveals groundwater above the base contours. Waste shall be placed a minimum of one metre above the maximum water table.³⁷

Waste will be placed as illustrated in Figure 7 up to the final contours shown in Figure 5. Sufficient batter boards will be maintained around the landfill tipping face to ensure the loader operator places waste up to but not beyond the final contours.

2.5 Methods of Waste Disposal and Operations

There are two basic methods of operating the site, the Trench Method and the Area Method.

The Trench Method will be used for the first lift of waste in the initial stages of operation. A small trench is excavated to the base contours (1 to 2 metres below the original ground level) about two to three times as wide as the crawler-loader used for the excavation. The native soil is sandy and the water table is four to six metres below the surface, therefore there is little likelihood that water will pond in the trenches. The excavated soil is used to cover the waste.

The Area Method will be used to landfill the waste above the first lift, up to the final contours of the site. As in the Trench Method, the working area is kept small at two to three times the width of the crawler-loader. Cover material is brought to the working area and used to cover the waste.

Vehicles delivering waste will normally unload at the bottom of the tipping face. The track loader will push the waste up the tipping face. Waste cells should be minimized to an approximate size no larger than 7m x 7m. The perimeter of the cell may be bermed with potential cover material for ease of operation. At the working face of the cell, incoming waste should be deposited and then spread in thin layers, compacted and then covered at the end of the working day. New loads would then be pushed up in thin layers to the disposal face. This garbage will then be compacted and covered. Typical compacted waste layers may be 0.5 m thick. The height of the lifts should be maintained to the height of existing fill levels. Once the lift is finished, typically 2 metres in

³⁴ C of A 12

³⁵ C of A 9, 10, & 11

³⁶ D & O 1997 Gartner Lee 4.1 & 4.2 & Figure 4 & 5

³⁷ Reg 347 11.5

height, additional cells no larger in size than 7m x 7m should be completed in a sequential manner. Figures 8 and 9 are typical schematic diagrams depicting both "Trench and Area" methods of landscaping.

Waste shall be deposited in a manner that minimizes the exposed waste at the working face.³⁸ The waste face shall be 7metres and kept at a 3:1 (33%) slope, until reaching final contours. The final contours are 4:1 (25%) slope at the perimeter, and 20:1 (5%) across the top to promote efficient drainage. Figure 10 is a typical drawing showing cell development.

Waste shall be compacted before cover material is applied³⁹, to a density of 0.5 tonnes/cubic metre.⁴⁰ The waste shall be spread in layers not exceeding 0.5 metres thick and compacted with the crawler-loader with a minimum of four passes of the tracks or until the waste rebounds as much as it compresses.

2.6 Cell Cover – Daily and Intermediate Cover

At the beginning of each working day the cover material will be removed from the face and stockpiled for reuse at the end of the day.

At the end of each working day, and within two hours of entrance gate closure, all exposed waste will be covered with 0.15 metres (six inches) of soil, or a mixture of composted leaves and woodchips or other MOE approved cover material.⁴¹ The target waste to cover ratio is 4:1.⁴²

Where existing cover material has eroded or been otherwise disturbed such that waste is exposed, the cover material shall be promptly replaced.⁴³

Interim Cover: A minimum of 0.3 metres (12 inches) of soil or a mixture of composted leaves and woodchips shall be applied to landfilling areas where landfilling is to be suspended for more than one month⁴⁴ and as soon as reasonably possible on all side slopes.

2.7 Final Cover

Final cover will consist of 0.6 metres (24 inches) of native soil plus 0.15 metres (6 inches) of topsoil. The native soil shall be spread and graded to ensure smooth drainage without low spots, and compacted using the crawler-loader or equivalent to prevent voids.⁴⁵

The topsoil stripped from the footprint will be replaced as the final 0.15 metre layer of the Final Cover and may be augmented with compost. The final cover should then be planted with a fast-growing and drought-resistant native vegetative cover as soon as practical but not later than 9 months from the time that final cover is applied. Planting will normally take place after spring run-off and before the end of June, or, during the month of September as these periods are the best for germination.

Final cover shall be applied progressively, within three months of each part of the Footprint reaching its final grades.⁴⁶

38 C of A 35

39 C of A 36

40 D & O 1997 Gartner Lee 3.2 & 4.3

41 C of A 37

42 D & O 1997 Gartner Lee 4.3

43 C of A 40

44 C of A 38 & 39

45 D&O 4.6

46 C of A 19

2.8 Winter Operations

During winter, snow will be removed from on-site roads and working areas starting at the entrance gate and including roads to the tipping face. A stockpile of sand will be kept dry for spreading during icy conditions.

An alternate tipping face in a protected area will be kept available for use during high winds. Excavation of frozen soils is extremely difficult. A 750 square meter disposal area will be excavated in advance to easily receive the expected winter waste volume. A supply of 2,500 cu meters of cover material must be available for the winter. The supply may be arranged by covering a stockpile with a tarpaulin in the early autumn to keep the material dry before freezing, and/or a supply can be arranged with an outside contractor where the material is available from a high bank not subject to freezing quickly.

2.9 Landfill Equipment

A crawler-loader weighing fifteen tons, with four-way bucket and landfill package will be maintained at the site on a full time basis. It will be capable of: excavating sand to create or extend working faces; moving sand to stockpiles, loading dump trucks; moving and spreading waste; compacting waste by multiple passes; obtaining cover material from stockpiles; spreading and compacting cover material in 0.15 cm (6 in) layers; grading on site roads to the tipping face; assisting other vehicles in moving around the site in slippery conditions; and general house-keeping tasks.

In addition to the above, ancillary construction equipment may be required to carry out stripping, clearing, grading and access road construction, and ditching.

No weigh scales are provided for at the landfill site.

2.10 Handling of Wastes

2.10.1 Acceptable Wastes⁴⁷

Examples of acceptable wastes for landfilling are household garbage and debris (e.g. bagged); yard wastes; construction and demolition debris; garbage from stores, offices, schools, and government buildings. Some wastes require special handling for landfilling, such as asbestos and contaminated soil. Other wastes will be diverted from landfill and stockpiled. Outside contractors will be engaged to pick up the recyclable wastes.

2.10.2 Unacceptable Wastes

No radioactive waste, bio-medical waste, corrosive chemical waste, explosive or highly combustible waste, sewage sludge, derelict motor vehicles⁴⁷, PCB's⁴⁸; liquid industrial waste, hazardous waste (except as accepted at the Household Hazardous Waste Depot), and wastes from outside the Town of Laurentian Hills and the Town of Deep River⁴⁹ will be accepted at the landfill site. Daily records shall be maintained, for all waste refused at the site.⁵⁰

*47 D & O 1997 Gartner Lee 3.1
48 C of A 17f
49 C of A 29
50 C of A 30*

2.10.3 Asbestos Waste⁵¹

Any person bringing asbestos waste to the site must make arrangements with the Attendant in advance, including advising the Attendant of the anticipated time of arrival. The person bringing the waste must comply with all provisions of Regulation 347 Section 17 Management of Asbestos Waste, and make prior arrangements with the Site Manager, or the waste will not be accepted.

Asbestos waste will only be accepted in rigid, impermeable, sealed containers of sufficient strength to accommodate the weight and nature of the waste. Each container must display the words "CAUTION – CONTAINS ASBESTOS FIBRES" in large, legible letters. Asbestos waste being transported in bulk will not be accepted for disposal at the site, with the exception of solid asbestos shingles.

Asbestos waste will only be deposited in designated locations which will be prepared in advance, and under the direct supervision of the Attendant. All personnel shall wear dust masks and other appropriate safety equipment while the waste is being dumped and covered. The asbestos waste will be covered immediately with at least 1.25 metres (4 feet) of garbage or cover material in such a manner that direct contact with landfill equipment is avoided.

2.10.4 Petroleum Contaminated Soil

Petroleum Contaminated Soil may be disposed of at the site provided that it is not a hazardous waste according to Reg. 347 and so long as it does not cause a complaint about odour problems. If a complaint is made, the MOE District Manager shall be notified and the soils will no longer be accepted until MOE provides permission. The working face of the soil must be minimized and covered quickly.⁵² If there are no detectable odours, the soil may be used as daily or intermediate cover material.

2.10.5 Scrap Metal Recycling

Scrap metal will not be landfilled. Metal is easy to recycle and scrap metal dealers are often willing to pay to pick it up from landfill sites. It is also very destructive to landfill equipment and private vehicles using the site.

The person bringing waste to the site will separate scrap metal from other waste. White goods and reusable metal items will be placed in the Re-Use Compound. Other scrap metal will be placed in containers, which will be emptied regularly by the scrap metal contractor (every 6 months or more frequently as required). Scrap metal will not be allowed to accumulate outside the container.

2.10.6 Tire Recycling⁵³

Tires and rims that are identified as being usable will be placed in the Re-Use Compound. All other tires shall be stockpiled in the Tire Pile. A maximum of 5000 tire units (1 tire unit = 12 kg)⁵⁴ or 300 cubic metres of tires is the maximum amount allowed by MOE. A semi-trailer load, 45-foot x 8 ft x 8 ft or approximately 81 cubic metres will be stockpiled prior to recycling. The Site Manager shall notify the tire recycling contractor to remove the stockpile.

⁵¹ Reg 347 17

⁵² C of A 20

⁵³ D & O 1997 Gartner Lee 3.1 d

⁵⁴ Reg 347 6

2.10.7 Blue Box Recycling Depot

The Recycling Depot is established in order to receive clean Blue Box materials that would otherwise be landfilled. It is in addition to the curbside Blue Box Recycling Program and is intended for the use of those residents who have missed putting out their Blue Box or who are moving, going on holidays, or are otherwise unable to put their recycling materials in their Blue Boxes. The same instructions for materials in the depot apply as for the current existing Blue Box Recycling Program.

The Attendant shall supervise the sorting of blue box materials to the appropriate bins to ensure cross contamination does not occur. The Site Manager shall notify the recycling contractor to empty the bins when they are full.

Bins for newspaper, old corrugated cardboard, cans, glass containers⁵⁵, boxboard, and plastics are provided. Window glass will be landfilled. Storage capacity for the depot will not exceed 200 cubic metres. These materials will be transferred off-site without processing.⁵⁶

2.10.8 Re-Use Compound

Scavenging is the uncontrolled removal of material from waste at a landfill and is prohibited. Salvaging material is permitted at the designated Re-Use Compound and under the supervision of the site supervisor.⁵⁷

The fenced and gated Re-Use Compound is to be maintained in a neat and tidy condition and supervised at all times. Site users will be asked to place items that may be re-useable here. This includes items such as lumber, windows, building materials, furniture, sporting equipment, re-usable tires, etc. Site users may remove any materials placed in the Re-Use Compound at no cost if for personal use.

Paints returned to the general public must be recorded in the daily record.⁵⁸

2.10.9 Brush and Wood Chipping⁵⁹

Brush and clean, untreated wood will be stockpiled and chipped at least once per year or as required. The chipped wood will be added to the compost as a bulking agent and/or mixed with cover material.

Painted, coated or treated wood must be stockpiled separately from brush and clean wood for chipping. When chipped this material must be moved to the cover material stockpile for use as daily cover. Treated wood is toxic and cannot be added to compost intended for off-site use.

2.10.10 Leaf and Garden Waste Composting Area⁶⁰

All leaf and garden waste is to be managed on-site via a windrow-type composting operation. This waste is to be placed in windrows, within four days of receipt, that are to be approximately 3.5 metres wide (12 feet) by 2.5 metres high (8 feet) by a maximum of 50 metres long (165 feet). Any limbs greater than 5 cm (2 inches) are to be placed in the brush pile.

55 D & O 1997 Gartner Lee 3.1 a

56 D & O Addenda 5.7.4

57 C of A 43; Reg 347 11.19

58 C of A 17fv

59 D & O 1997 Gartner Lee 3.1 f

60 D & O 5.7.5; Reg 101/94 Part V, Section 31

Wood chips from the brush pile are to be mixed into the windrows. This will increase the porosity of the windrow to aid in the aerobic decomposition of the material and thus reduce odours. Finished compost can also be added to the new windrow to accelerate the composting process.

During the first 15 days that material has been added to the windrow, it will be turned every 3 days with the loader. The temperature of the windrow is to be measured and recorded daily during this period and maintained between 55 and 60 degrees Celsius. Low temperatures usually indicate a lack of moisture or insufficient nitrogen based material such as grass. Thereafter the windrow is to be turned once a month over a period of 6 months. The temperature of the windrow is to be measured and recorded weekly during this period. The compost will be finished in approximately 7 months. Windrows are to be turned more frequently if unacceptable odours occur. The presence of odours usually indicates that the pile is too wet or there is too much nitrogen-based material. The solution is to add carbon-based material such as leaves or unrecyclable cardboard, turn the pile to aerate it, and/or add soil to the mixture.

Temperatures shall be measured at a point one metre within the windrow.

The finished compost may be used as a soil conditioner in lieu of topsoil in the final cover material, or used as daily cover material, or may be given to area municipalities for use on public grounds. Before the material can be used off-site, samples of the compost are to be sent to a laboratory to determine that the material meets MOE criteria.

Records will be kept that include the source and type of materials composted, estimated quantities produced, all temperature measurements, all dates that the piles have been turned, any odour problems encountered, and final use of the product.

2.10.11 Household Hazardous Waste Depot

The Household Hazardous Waste Depot is located adjacent to the Site Office to ensure that the Attendant closely monitors the area. The local police and fire department shall be notified in writing of the existence of and current operating hours of the Household Hazardous Waste Depot. Each waste type will be stored in suitable labelled drums placed in containment cells to accommodate any spills or leaks. Signs will be posted to clearly identify each permitted waste type, outlining procedures for receipt and acceptance of waste. Additional signs will denote safety equipment, "Authorized Personnel Only", and "No Smoking".

The Depot will have a Generator Registration Number to allow the site to receive, bulk, and transfer Household Hazardous Wastes at the landfill site.

The following safety equipment will be available at the depot at all times while bulking operations are being carried out: First Aid Kit; Eyewash Unit; Fire Extinguisher; Waste Registration Forms; Safety Suit, goggles, organic filter mask, and neoprene gloves; telephone; disposable towels; absorbent material; sand, shovel and bucket; table; and written Safety and Emergency Procedures; emergency contact names and phone numbers. The Personal Protective Equipment listed above shall be worn at all times while working with pesticides, corrosive and volatile materials. Refer to Appendix E for emergency contact names and numbers that will be posted in the site office. Applicable portions of the WHIMS manual will be maintained on site.

The Attendant will inspect any household hazardous wastes received and ensure they are put on the receiving table. The Attendant will promptly inform the resident of any waste that is not acceptable and return it to the resident immediately.

Before the end of the day the Attendant (while wearing the prescribed Personal Protective Equipment) will bulk or put into storage any materials received. To limit liability only personnel authorized as part of their employment will be allowed in the Household Hazardous Waste Depot area. During paint bulking operations only authorized employees will be permitted in the bulking area, and all employees shall wear a Safety Suit, goggles, organic filter mask, and neoprene gloves

Each day of operation, the Attendant will ensure the depot is clean of spills, leaks and miscellaneous litter. The Attendant will be responsible for inspecting the depot on a daily basis, and ensuring that all safety equipment is returned to its original locations.

The Site Manager will arrange for pickup of wastes with a licensed carrier retained under contract with the Board, and will be present while the licensed carrier is on site. Before the waste leaves the site, a Waste Manifest Form provided by the carrier shall be completed and signed by both the Site Manager and the carrier. The Site Manager is responsible for completing Section A and the carrier is responsible for completing Section B. The Site Manager shall keep the first two copies, and forward the first copy to MOE within three working days. The Site Manager is responsible to ensure the sixth copy is received from the receiver of the waste within two weeks. If this does not occur, the Site Manager is responsible to verify the waste reached its intended destination. If the waste cannot be traced within four weeks of shipment, the Site Manager is responsible to notify MOE. The second and sixth copies of the manifest will be kept on file for at least two years.

The amount of Household Hazardous Waste stored at the site will not exceed 10 tonnes at any given time.⁶¹ Storage on site will be limited to 90 days. The storage area will be kept locked at all times that the Attendant is not supervising the depot.

All spills and upsets greater than 50 litres⁶² shall immediately be reported to the Ministry's Spills Action Centre at (416) 325-3000 or 1-800-268-6060, and shall be recorded in the Site inspection record⁶³.

A report on the Household Hazardous Waste Depot will be prepared from data recorded during the year and will include all records of wastes received and refused; collection event summaries; monitoring and inspections; problems and complaints; spills and remedial action; and Waste Manifest Forms. This report will form part of the Annual Report to be submitted to MOE.

The operation of the HHW Depot is limited to the collection, processing, and storage of the following:⁶⁴

2.10.12 Motor Oil

The Attendant will visually inspect the oil to ensure that it does not contain water, antifreeze, or other contaminants. Motor oil will be bulked by the Attendant into the storage receptacles provided. Containers will be drained for one hour on a special rack, after which they will be landfilled. Only a properly licensed carrier shall remove the waste oil from the site.

61 C o A 17d

62 D & O Addenda Appendix A page 2

63 C of A 17e & 32

64 C of A 17, D& O Addenda 5.7.4.2

2.10.13 Automobile Batteries

The bin for battery storage shall have a 7.5 cm (3 inch) layer of lime. Wet cell batteries will only be stored in the bin. The Attendant will notify the recycling contractor when the bin is full. Only a properly licensed recycling carrier shall remove batteries from the site. Trained technicians shall handle all batteries⁶⁵ in accordance with Ontario Regulation 347.

2.10.14 Paints

Oil based (Alkyd) paints manufactured prior to 1972 or measured in Imperial Units (gallons or quarts) shall not be bulked with other paints, but will be lab-packed.⁶⁶

Separate labelled drums will be used for bulking paints to avoid mixing oil-based paints with latex paints. The empty paint cans shall be set aside to dry for three days before recycling or landfilling. Paint cans with less than one half inch of dried paint in the bottom may be recycling in the scrap metal bin.

Bulked oil-based paints shall be tested for PCB content and if found to contain more than 50 parts per million, shall be reported to MOE and shall be managed in accordance with Ontario Regulation 363/92 and stored in an approved PCB storage area in accordance with written instructions from MOE.⁶⁷

Paints may be given to local residents for re-use, or will be transferred from the site by a properly licensed carrier.

2.10.15 Refrigerants

All refrigerators, freezers, air conditioning units, and dehumidifiers will be stored in a designated area within the Re-Use Compound. These units will be labelled with the date received and if in working order according to the resident who dropped them off. Units that are not in working order or have been on the site for three months will be drained and tagged in accordance with Ontario Regulation 347⁶⁸. It is illegal to landfill units containing refrigerants.

Doors on refrigerators and freezers will be removed within 24 hours of receipt at the site⁶⁹ if they are capable of closing and locking and thus posing a risk of suffocation.

Every six months (or more frequently as required) the scrap metal contractor will remove these items.

2.10.16 Compressed Gas Cylinders

All compressed gas cylinders such as propane, refrigerants, acetylene, etc will be stored in the Household Hazardous Waste Depot, not in the metal recycling bin. Both full and empty cylinders can cause explosions when mixed with other scrap metal, particularly when added to the blast furnaces at steel mills.

65 C of A 17b

66 C of A 17fi

67 C of A 17f

68 C of A 17c, D & O 1997 Gartner Lee 3.1 c

69 District Comments Oct 15, 1996 5.7.1

2.11 Housekeeping

2.11.1 Noise Control

Landfill equipment shall comply with the sound level limits contained in the Ministry Model Municipal Noise Control By-Law.⁷⁰ The maximum sound level shall be 85 dBA for equipment under 75kW (100 HP) or 88 dBA for equipment over 75 kW⁷¹ measured at a height of 1.2 metres (4 feet) above the ground at a distance of 15 metres (50 feet) from the equipment at maximum governed engine speed.⁷²

The limit for sound levels due to the landfill site operation at a point of reception within 30 metres of a dwelling or camping area are 55 dBA between the hours of 7:00 A.M. and 7:00 P.M.⁷³

2.11.2 Dust Control

Because the soil type on the site consists of sandy loam, vehicular traffic does raise dust. All parts of the Buffer Zone, other than roadways, parking areas, and structures, shall be maintained with a healthy vegetative cover or other appropriate surface treatment that will minimize erosion.⁷⁴

Gravel will be applied to on-site work areas (excluding the tipping face) that are dust-prone. Water or calcium dust suppressant will be applied to roads and work areas as required.

2.11.3 Litter Control

Litter shall be picked up at the site, along Bagg's Road, and on private property adjacent to the site as required, or every two weeks as a minimum.⁷⁵

2.11.4 Pest Control

Birds, vermin, bears and other pests will be controlled by the effective placement, compaction and maintenance of cover material over the waste. Any waste exposed by erosion or by pests will be covered immediately.

Pest control measures will be implemented if rodents become a significant problem and may include using rat poison or engaging a licensed exterminator.⁷⁶

Electric fencing may be installed around the active waste area if bears become a serious problem. If the site does not become a routine feeding area then the bears will not likely be as much of a problem.⁷⁷

2.12 Open Burning of Waste

Waste will not be burned at the site.⁷⁸

70 C of A 44

71 Model Municipal Noise Control By-Law NPC-115 Table 115-1 pg 101

72 Model Municipal Noise Control By-Law NPC-115 Table 115-1 pg 101, Publication NPC-103 Section 6 pg 82, SAE J88a Section 3.3.1, 3.3.4, 3.3.6, 3.3.7

73 MOE Noise Levels for Landfill Sites 5.1.b Oct 98

74 C of A #16

75 C of A 23

76 District Comments Oct 15, 1996 5.9

77 District Comments Oct 15, 96 5.9

78 D & O 5.3

3.0 PUBLIC LIAISON

3.1 Site Liaison Committee⁷⁹

The Site Liaison Committee was established to represent the public directly concerning waste management issues at the landfill site. The members are encouraged to monitor site operations and the environmental monitoring program including dust, litter, odour and leachate.

The Site Liaison Committee shall have reasonable access to the site during operating hours.⁸⁰

3.2 Complaints Procedure⁸¹

The Public Complaints Procedure shall be posted at the Landfill Site Office and adjacent to Bagg's Road and Plant Road. Complaints procedure is provided in Appendix D.

4.0 ADMINISTRATION

4.1 Site Staff Requirements⁸²

A full-time Attendant will be responsible for the following duties:

- Opening and closing the site
- Checking each load entering the site for residency of vehicle operator, waste origin and classification
- Collecting waste permits
- Recording waste volumes and classifications
- Site data recording
- General housekeeping
- Arranging for removal of recyclable materials
- Monitoring and managing the on-site waste diversion operations; and
- Daily litter collection.

4.2 Training⁸³

The Attendant will also have the following training:

- Familiarity with the requirements of the Certificate of Approval and Design and Operations Report for the site (copies to be maintained on-site at all times).
- Emergency Response Procedures

⁷⁹ C of A 59, 60

⁸⁰ C of A 63

⁸¹ C of A 64

⁸² D & O 4.10

⁸³ D & O 4.10

- Contingency Plan Procedures
- WHMIS and Regulation 347 requirements and procedures.

The Site Supervisor shall be trained with respect to: the Certificate of Approval; the Design and Operations Report; regulations and legislation; environmental concerns related to materials handled at the site; Occupational Health and Safety concerns; emergency procedures and contingency plans in the event of fire, off-site impacts, and other emergency situations; and visual monitoring of the site with respect to dust impacts.⁸⁴

5.0 REPORTING

5.1 Annual Status Report

By March 31 of every year, the Board shall submit to MOE, a status report on the operations and the water-monitoring program.⁸⁵

The report shall include:

- a. An executive summary of the findings, conclusions, and recommendations.
- b. A location map showing the site within the boundaries of the Service Area.
- c. A site plan which shows the site boundaries, the fill and buffer areas, the location of the benchmark for the contour elevation survey, existing contours, areas of excavation in the previous year, the areas completed to final grade in the previous year, the areas still to be completed to final grade, the areas with completed final cover, the portions which have been vegetated or seeded, all surface water bodies and works, all significant landmarks, all nearby dwellings and water wells, location of all monitoring points, and details of any works installed in the previous year.
- d. A cross section that includes the Site footprint area.
- e. An update on any operating difficulties encountered.
- f. A report on any variances from the Design and Operations Report and Addenda, the Application for Approval, the Ground Water and Surface Water Assessment, the Noise Guidelines, and the Option to Purchase and Access Agreements.
- g. The landfill capacity used during the reporting period and the remaining capacity.
- h. A report on the types and volumes of waste diverted from disposal in the footprint by recycling and transfer from the site.
- i. A summary of any complaints regarding site operations and response to them.
- j. An analysis and interpretation of the Surface Water Monitoring results including an assessment of the surface water quality at the site boundaries, an assessment of the adequacy of the attenuation zone, and an assessment of the physical condition of the ground and surface water monitoring installations.

⁸⁴ C of A 24
⁸⁵ C of A 55; D & O 8.0

- k. An interpretation of the Ground Water Monitoring results by an experience hydrogeologist⁸⁶
- l. An assessment of whether the site operations meet the conditions of the Certificate of Approval.
- m. The implementation of any remedial works or contingency actions.
- n. An assessment every fifth year of the contingency plan.
- o. Recommendations for changes to the ground water monitoring program, the operation of the site, or the requirement for any remedial works.⁸⁷

6.0 SITE CLOSURE AND END USE⁸⁸

After the Site has reached it's final capacity, it will be closed. At least five years before it is expected to close, the Board, following consultation with the Site Liaison Committee, shall submit a closure plan to MOE. The Board shall continue to monitor the site until such time as MOE is satisfied that the leachate and gas being produced at the site would not cause an exceedance of any relevant legislation or policies respecting ground water, surface water and air quality as may be in effect at that time.

The anticipated end use is passive open space with restricted access.

7.0 WATER SUPPLY

The Board is, however, prepared to ensure that water use in the area surrounding a new landfill site is not detrimentally affected by that facility. Conditions concerning the obligation of the Board in this regard will likely be included as part of the Ministry of the Environment and Energy conditions of approval of any new landfill site(s). However, at a minimum the Board will undertake the following:

- 1. Monitoring wells surrounding the landfill site will be regularly sampled to provide early warning of any potential problems. The results of all sampling will be made available to the community liaison committee.
- 2. Contingency plans will be prepared as part of the new landfill site operating plan, to intercept affected groundwater and provide for alternative water supplies to any affected landowners during both operation of the landfill site and following closure.

⁸⁶ C of A 55i
⁸⁷ C of A 55l
⁸⁸ C of A 56; D & O 10.0

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