



PLEASE NOTE

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For more information concerning the history of these regulations, please see the [Table of Regulations](#).

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CHAPTER E-9

ENVIRONMENTAL PROTECTION ACT

WASTE RESOURCE MANAGEMENT REGULATIONS

Pursuant to section 25 of the *Environmental Protection Act* R.S.P.E.I. 1988, Cap. E-9, Council made the following regulations:

- 1. In these regulations**
- | | Definitions |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| (a) “Act” means the <i>Environmental Protection Act</i> R.S.P.E.I. 1988, Cap. E-9; | Act |
| (b) “active area” means any area used for transfer, storage, disposal, separation, processing or treatment of compostable material including the tipping area, the composting area and the curing pad; | active area |
| (c) “active composting area” means any area used for the initial active phase, distinguished by a rapid increase in composting temperature to 55 degrees celsius or higher, of in-vessel composting or open windrow composting; | active composting area |
| (d) “approval” means Ministerial approval pursuant to section 2; | approval |
| (e) “backyard composting” means the composting at a residential dwelling site of organic waste, including grass clippings, leaves or food waste, where | backyard |
| (i) the waste is generated by the residents of the dwelling unit or neighbouring dwelling units or both, and | |
| (ii) the annual production of compost does not exceed 60 cubic metres; | |
| (f) “biosolids” means organic materials which originated as settled matter in facilities treating municipal or industrial liquid wastes and may be used as feedstock for composting operations; | biosolids |
| (g) “CCME Guidelines” means the Canadian Council of Ministers of the Environment document “Guidelines for Compost Quality” dated March 1996 as amended from time to time; | CCME Guidelines |
| (h) “Canadian Environmental Quality Guidelines” means the Canadian Council of Ministers of the Environment document “Canadian Environmental Quality Guidelines” dated 1999 as amended from time to time; | Canadian Environmental Quality Guidelines |
| (h.1) “carrier” means a carrier that is authorized under the laws of Canada or a province to transport hazardous waste; | carrier |

compost	(i) “compost” means a product of composting which is used or sold for use as a soil amendment, artificial topsoil or growing medium or for some other application to land in accordance with these regulations;
compostables	(j) “compostables” means <ul style="list-style-type: none"> (i) food scraps including meat, fish, dairy products and bones, (ii) paper food wrap, (iii) boxboard containers and packaging, (iv) all non-recyclable paper products including, but not limited to, paper towels, paper tubes, paper plates, construction and poster paper, and wax paper, (v) leaves and yard waste, and (vi) any other material that is biodegradable and organic.
composting	(k) “composting” means the biological decomposition of organic materials, substances or objects under controlled circumstances to a condition sufficiently stable for nuisance-free storage and safe use in land applications;
composting area	(l) “composting area” means an area where organic material undergoes the rapid initial stage of composting;
composting facility	(m) “composting facility” means a waste resource management facility where composting occurs;
compostable organic material	(n) “compostable organic material” means vegetative matter, food processing waste, landscaping, garden and horticultural wastes, kitchen scraps, food processing wastes, and other organic wastes which can be readily composted in composting facilities;
corporation	(o) “corporation” means the Island Waste Management Corporation constituted pursuant to section 18 of the Act;
C & D debris	(p) “C & D debris” means materials not of a hazardous nature which are normally used in the construction of buildings, structures, roadways, walls and other landscaping material, and includes soil, asphalt, brick, mortar, drywall, plaster, cellulose, fibreglass fibres, gyproc, lumber, and wood but excludes chemically treated lumber and wood;
C & D disposal site	(q) “C & D disposal site” means a construction and demolition debris disposal site used for the disposal of C & D debris;
curing area	(r) “curing area” means an area where organic material that has undergone the rapid initial stage of composting is further stabilized into a mature finished compost;
Department	(s) revoked by EC163/04;

- (t) “food waste” means food waste
- (i) any residual vegetative waste other than leaf and yard materials or woody materials,
 - (ii) residual waste of animal origin including meat, fish, bones, carcasses or shells but not including manure, and
 - (iii) biosolids from residential, industrial, commercial or institutional sources;
- (u) “foreign matter” means any matter resulting from human intervention and made of organic or inorganic components including metal, glass and synthetic polymers that may be present in compost but foreign matter does not include mineral soils, woody material, and rocks; foreign matter
- (u.1) “generator” means a person who has possession of hazardous waste, other than household hazardous waste, immediately before the hazardous waste is transported; generator
- (v) “hazardous waste” means any waste material that hazardous waste
- (i) contains a toxic substance specified in the list of Toxic Substances pursuant to the *Environmental Protection Act* (Canada) Interprovincial Movement of Hazardous Waste Regulations, or
 - (ii) has been listed as a hazardous substance pursuant to the *Transportation of Dangerous Goods Act* (Canada) or any regulations made pursuant to that Act;
- (w) “hazardous waste management facility” means a facility or place operated for the purpose of treatment, disposal, recycling, reclamation, or storage of hazardous waste; hazardous waste management facility
- (x) “industrial waste” means garbage, refuse, sludge, rubbish, tailings debris, litter and other discarded materials resulting from industrial or commercial activities requiring approval under section 9 of the Act; industrial waste
- (y) “in-vessel composting” means any composting method in which composting materials are contained in an enclosed reactor, vessel or building and which utilizes forced ventilation with treatment of ventilation air for odour reduction; in-vessel composting
- (z) “landfill” means a facility for the disposal of remaining waste; landfill
- (aa) “leachate” means the fluid captured above the flexible membrane liner of a landfill; leachate
- (bb) “leaf and yard waste” means vegetative matter resulting from gardening, horticulture, landscaping or land clearing operation, including materials such as tree and shrub trimmings, plant remains, leaf and yard waste

	grass clippings, leaves, trees and stumps, but excluding C & D debris and contaminated organic matter;
lifespan	(cc) “lifespan” means the period of time in which a landfill, composting facility, or C & D disposal site is in active operation plus any subsequent period during which effects monitoring is required;
manifest form	(dd) “manifest form” means the manifest form as set out in Schedule D of these regulations;
open windrow composting	(ee) “open windrow composting” means composting in which compostable organic material is open to the atmosphere during the composting process and includes windrow composting in a building but where there is no treatment of ventilation air for odour reduction;
receiver	(ee.1) “receiver” means a person who is in the business of receiving hazardous waste from a generator, waste-generating facility or a carrier;
recyclables	(ff) “recyclables” means <ul style="list-style-type: none"> (i) glossy paper, newsprint and flyers, corrugated cardboard, paper egg cartons, computer paper, bond paper, fax paper, and envelopes, (ii) polyethylene terephthalate, high density polyethylene, polyvinyl chloride, low density polyethylene, and polypropylene, (iii) all clear and colored glass bottles and jars, (iv) milk cartons, (v) tetra packs, (vi) food and beverage cans, empty metal aerosol cans, and metal products made of aluminum, steel, brass, and copper, and (vii) all dry cell batteries including nickel-cadmium batteries;
remaining waste	(gg) “remaining waste” means any solid waste material that is not a compostable or recyclable and includes, but is not limited to <ul style="list-style-type: none"> (i) toothbrushes and toothpaste tubes, (ii) glass dishes, (iii) ceramics, (iv) light bulbs, (v) pens, pencils, and crayons, (vi) plastic food wrap, (vii) vinyl, leather, and textiles, (viii) plastic or metal cutlery, (ix) styrofoam, (x) plastics #6 and #7, (xi) foil liners and bags, and

(xii) fly ash and boiler ash produced by the Trigen Energy From Waste plant;

(gg.1) “special waste” includes

special waste

- (i) asbestos-containing material,
- (ii) metal-containing soils that pass a leachate test,
- (iii) hydrocarbon-contaminated soils,
- (iv) sharps such as needles, broken glass and other sharp objects capable of causing cuts or punctures,
- (v) burnable waste from ships and aircraft from outside the province,
- (vi) oil-soaked materials,
- (vii) diseased potatoes from testing laboratories,
- (viii) empty ammonium nitrate fertilizer bags,
- (ix) screenings from a waste treatment plant,
- (x) non-hazardous laboratory waste,
- (xi) creosoted or pressure-treated material,
- (xii) biomass wet with a solvent,
- (xiii) absorbent materials and clothing contaminated with human or animal blood, tissue or bodily fluids produced from
 - (A) surgical, medical or veterinary procedures in hospitals, medical centers or clinics, or veterinary hospitals or clinics, or
 - (B) body-piercing procedures in tattoo or body-piercing establishments;

(gg.2) “waste-generating facility” means an industry, factory, commercial business or institution, including a school or hospital, or other place where hazardous waste, other than household hazardous waste, is generated;

waste-generating facility

(hh) “waste incinerator fly ash” means the finely-divided particulate matter, generated by the combustion of municipal solid waste, which is captured for disposal;

waste incinerator fly ash

(hh.1) revoked by EC576/04. (EC691/00; 529/01; 163/04; 576/04)

waste manifest form

DISPOSAL OF WASTE

2. (1) No person shall dispose of

Prohibition

- (a) remaining waste;
- (b) compostable material;
- (c) recyclables; or
- (d) special waste,

except at the appropriate landfill, recycling plant or composting facility approved to accept each of these materials pursuant to these regulations.

Prohibition, C & D disposal sites	(2) Subject to section 59, no person shall dispose of C & D debris except at a C & D disposal site operated in accordance with these regulations.
Approval, landfill, etc.	(3) No person shall own, construct, manage, operate, alter or modify <ul style="list-style-type: none"> (a) a landfill; (b) an ash disposal site; or (c) a composting facility which can process more than 60 cubic metres of compost annually except where <ul style="list-style-type: none"> (d) approval for the undertaking has been obtained from the Minister; and (e) a permit authorizing the undertaking has been issued to the person by the Minister.
Approval, C & D disposal sites	(4) Subject to section 59, no person shall own, construct, manage, operate, alter or modify a C & D disposal site except where <ul style="list-style-type: none"> (a) approval for the undertaking has been obtained from the Minister; and (b) a permit authorizing the undertaking has been issued to the person by the Minister.
Farm composting	(5) Clause (1)(b) does not apply to composting undertaken in accordance with normal farm practices and Codes of Practice established pursuant to the <i>Farm Practices Act</i> R.S.P.E.I. 1988, Cap. F-4.1.
Prohibition - waste incinerator fly ash	(6) No person shall dispose of waste incinerator fly ash except at an approved hazardous waste management facility.
Fee & revocation of permit	(7) The Minister may <ul style="list-style-type: none"> (a) charge an annual fee for any approval or permit sought pursuant to this section; and (b) revoke, at any time, any permit issued pursuant to this section where, in the opinion of the Minister, the person to whom the permit is issued is not in compliance with these regulations. (EC691/00; 50/01; 163/04)
Requirements	2.1 (1) No carrier, receiver, generator or person who operates a waste-generating facility shall transport hazardous waste off the site at which it was produced, unless the carrier, receiver, generator or person who operates a waste-generating facility <ul style="list-style-type: none"> (a) is registered and issued a provincial registration number under subsection (4); and (b) completes a manifest form, as set out in Schedule D of these regulations, prior to transporting the hazardous waste off the site at which it was produced.

(2) A carrier, receiver, generator or person who operates a waste-generating facility who wishes to be registered for the transport of hazardous waste off the site at which it was produced, shall

Application

- (a) apply to the Minister to be registered on the form approved by the Minister; and
- (b) pay the fee of \$100.

(3) An applicant under subsection (1) shall provide such other information as the Minister may require and shall keep the Minister informed of any changes of address or other pertinent information.

Information

(4) The Minister may register and issue a provincial registration number to an applicant under this section.

Provincial ID
number

(5) Every carrier, receiver, generator or person who operates a waste-generating facility shall

Requirements

- (a) retain a copy of the manifest form, completed pursuant to subsection (1), for at least two years, for every shipment of hazardous waste transported or received by the carrier, receiver or person who operates a waste-generating facility;
- (b) send or cause to be sent a copy of the original manifest form, completed pursuant to subsection (1), to the department responsible for the environment in the originating province and to the destination province of the hazardous waste; and
- (c) ensure that any copies of a manifest form that are required to be retained or sent to a department under this subsection are complete and show all of the information contained in the original manifest form completed pursuant to subsection (1).

(6) Subsection (1) does not apply to a carrier, receiver, generator or person who operates a waste-generating facility in respect of the transportation of hazardous waste off the site at which it was produced if the carrier, receiver, generator or person who operates a waste-generating facility

Application of
subsection (1)

- (a) transports the hazardous waste to a destination outside the province for recycling; and
- (b) holds an applicable permit of Equivalent Level of Safety issued by Environment Canada. (EC163/04; 576/04)

REMAINING WASTE LANDFILL

3. Applications for an approval to construct or operate a landfill shall be accompanied by

Application for
approval

- (a) a report detailing information required by sections 4 to 30 of these regulations;

(b) any other supporting documentation the Minister may require.
(EC691/00)

LANDFILL DESIGN AND CONSTRUCTION

- | | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minimum standards | 4. (1) All of the components, systems, and features of every landfill shall be <ul style="list-style-type: none"> (a) designed to function over the lifespan of the landfill; and (b) of a demonstrable technology. |
| Alternative technology | (2) Alternatives to the landfill components, systems, and features described in these regulations may be employed where they are based on improved technologies or on changing waste characteristics. |
| Alternative design | (3) Where the corporation proposes an alternative design to the minimum standard, it shall be the responsibility of the corporation to demonstrate to the satisfaction of the Minister that the proposed alternative design is capable of achieving an equivalent or higher level of protection than the minimum standards. (EC691/00) |
| General landfill requirements | 5. All landfills shall be designed to incorporate the components, systems, and features required by sections 6 to 30. (EC691/00) |

LANDFILL LINER SYSTEM

- | | |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bearing capacity | 6. (1) The subbase of the landfill liner system shall be composed of material of sufficient bearing capacity to support the material to be placed above it during the lifespan of the landfill. |
| Insufficient bearing capacity | (2) Where material is encountered in the subbase which does not meet the bearing capacity, the material shall be excavated and replaced by the corporation with appropriate structural fill material of sufficient bearing capacity. (EC691/00) |
| Compacted clay liner component | 7. (1) Every compacted clay liner component of the landfill liner system shall <ul style="list-style-type: none"> (a) be protected during and after construction from damage due to frost, desiccation, over-hydration, differential movement and impact; (b) be no less than 1,000 mm in depth; (c) be placed in uniform, horizontal lifts of approximately 150 mm maximum loose thickness and constructed to ensure that the minimum hydraulic conductivity of the compacted soil is 1×10^{-7} cm/sec or less; and (d) be installed in accordance with the requirements set out in Schedule C. |

- (2) The corporation shall submit test results to the Department in order to ensure the compacted clay liner meets the requirements of subsection (1). Testing
- (3) The testing required by subsection (2) shall be Cost of testing
- (a) undertaken by a testing agency approved by the Minister; and
- (b) paid for by the corporation.
- (4) The compacted clay liner may be modified, if required, with an admixture such as bentonite clay in order to achieve the required hydraulic conductivity. Modification
- (5) Where a compacted clay liner is modified pursuant to subsection (4), the hydraulic conductivity shall be uniform throughout the entire thickness of the soil. (EC691/00) Uniform conductivity
- 8.** The flexible membrane liner component of the compacted clay liner shall be Flexible membrane liner component
- (a) manufactured of a high density polyethylene of a minimum 80 mil thickness; and
- (b) installed in accordance with the conditions set out in Schedule C. (EC691/00; 529/01)
- 9.** The leachate collection system shall Leachate collection system
- (a) be able to convey all of the leachate to a common point for treatment as required;
- (b) have a hydraulic conductivity of 1×10^{-3} cm/sec or greater;
- (c) be sloped so that it can adequately drain the leachate;
- (d) be provided with adequate protection above the leachate collection system to prevent clogging of the leachate collection system; and
- (e) not exceed a depth of 300 mm or less of leachate head on all portions of the liner, excluding the leachate sumps, during routine operations. (EC691/00)
- 10.** (1) The various components of a leachate collection and removal system shall Standards for components
- (a) be chemically compatible with the anticipated waste and leachate characteristics;
- (b) provide access for inspection, monitoring flow, monitoring head, controlling flow and cleaning;
- (c) maintain integrity under both dynamic and static loading events for all phases of landfill development;
- (d) contain geosynthetic fabrics that are specified on the basis of calculations which incorporate the leachate generation and flow

rates anticipated to occur during the operating and post-closure phases of the facility; and
 (e) be designed to prevent the passage of fines in the leachate collection and piping systems as well as to mitigate or eliminate the effects of any material capable of reducing the hydraulic flow capacity of the leachate collection and piping systems.

Recirculation (2) Recirculation of leachate shall be limited to emergency operations and shall be in accordance with the provisions of a contingency plan approved by the Department.

Alarms (3) Tanks, sumps, or other storage units associated with leachate collection and removal systems shall be equipped with high-level alarms. (EC691/00)

Standards for collection pipes

11. Collection pipes shall

- (a) be a minimum of 150 mm diameter DR35 PVC having 12 mm perforations at the four and eight o'clock positions with perforations spaced a maximum of 150 mm center to center;
- (b) not require solvent welding;
- (c) where the collection pipes penetrate liners, be designed to prevent leakage and accommodate landfill settlement;
- (d) be designed to carry the peak leachate flow and shall have a minimum slope of 1% and a minimum flow velocity of 0.3 m/s;
- (e) have sufficient wall thickness and bedding to accommodate all static and dynamic loads incurred during construction and operation;
- (f) where the collection pipe is a perforated (lateral) collector pipe, have a minimum spacing of 45 m within any tributary cell area;
- (g) where the collection pipe is an unperforated primary (main) collector pipe, be provided with manholes at
 - (i) a maximum of 150 m spacing,
 - (ii) at changes in direction and grade, and
 - (iii) at junctions with secondary collector pipes from all tributary cell areas;
- (h) be installed with a drop of 300 mm between a secondary collector pipe entering a manhole and the primary collector pipe; and
- (i) be installed with a minimum drop of 50 mm across primary flows through manholes. (EC691/00)

Standards for manholes

12. All manholes shall

- (a) be a minimum of 1.2 m in diameter with precast and benched bases and inlet and outlet holes precast and gasketed;
- (b) have lifting holes grouted and joints sealed with gaskets;
- (c) be provided with a cast iron cover and frame grouted to the manhole top;

- (d) where the manhole is over 2 m in depth, be fitted with galvanized steel ladders;
- (e) extend 150 mm above the finished grade. (EC691/00)

- 13.** (1) Pump stations may be used to extract or transfer leachate where Pump stations
- (a) gravity systems are not feasible; and
 - (b) the use of a pump station has been approved by the Department.
- (2) Where a pump station has been approved pursuant to subsection (1), the pump station shall Standards for pump stations
- (a) be designed so as to limit unnecessary perforation of liners by collector pipes or forcemains;
 - (b) be equipped with intrinsically safe or explosion proof equipment;
 - (c) be equipped with manually initiated two speed fans to ventilate wet walls, accessible for maintenance purposes;
 - (d) be mechanically ventilated at 5 volume changes per hour and 10 volume changes per hour on high speed;
 - (e) meet the requirements of the Environmental Protection Act Sewage Disposal Regulations (EC298/97);
 - (f) be designed to prevent overflow of leachate during station failure;
 - (g) be installed in a lined excavation;
 - (h) have a chamber that is pressure tested to twice the maximum achievable leachate level if the pump station is lying outside of the fill material and liner;
 - (i) be constructed of materials that are corrosion resistant or readily replaceable for all infrastructure exposed to leachate or leachate gases; and
 - (j) have forcemains of plastic materials such as PVC or polyethylene with a wall thickness capable of withstanding anticipated pressures, with joints tested for leaks at twice the maximum surge pressure before the forcemain is put into place. (EC691/00)
- 14.** (1) A minimum 450 mm thick cushion layer shall be placed above the leachate collection layer. Cushion layer
- (2) The cushion layer shall be of structural fill material capable of separating the waste material from the leachate collection layer. Separation
- (3) Waste material, free of large or long objects which could cause stress to the liner, shall be placed above the cushion collection layer. (EC691/00) Placement of waste material
- 15.** The purpose of the landfill final cover system is to Landfill final cover system
- (a) control the amount of surface water infiltration into the buried waste material;

- (b) limit erosion and sedimentation;
 - (c) control the release of methane gas from the landfill; and
 - (d) protect the underlying waste from exposure. (EC691/00)
- Requirements **16.** The landfill final cover system shall consist of
- (a) a grading pad;
 - (b) a low hydraulic conductivity layer; and
 - (c) a vegetative layer. (EC691/00)
- Grading pad interim cover pad **17.** The grading pad of the landfill final cover system shall
- (a) be a minimum of 300 mm thick;
 - (b) consist of structural fill material capable of supporting the material above; and
 - (c) allow for the lateral movement of gases. (EC691/00)
- Low hydraulic conductivity layer **18.** The low hydraulic conductivity layer of the landfill final cover system shall
- (a) be designed to limit the surface water infiltration into the waste material; and
 - (b) consist of either a flexible membrane liner manufactured of a low density polyethylene of a minimum 40 mil thickness or an equivalent flexible membrane liner approved by the Minister. (EC691/00)
- Vegetative layer **19.** The vegetative layer of the landfill final cover system shall
- (a) serve to stabilize the final cover system from the forces of wind and water erosion;
 - (b) provide a low-maintenance surface; and
 - (c) consist of a minimum of 300 mm of topsoil with a vegetative surface. (EC691/00)
- Settling **20.** All components of the landfill final cover system shall be designed to accommodate settling and consolidation of the waste material below so that ponding of water does not occur on the surface. (EC691/00)
- Leachate management system **21.** (1) The leachate management system shall consist of infrastructure and monitoring systems designed to monitor, control and treat leachate prior to discharge into the surrounding environment.
- Requirements (2) Every leachate management system shall
- (a) have a leachate collection and removal network from the waste burial portion of the landfill which shall be hydraulically separated from the landfill's storm water system;
 - (b) function year round;
 - (c) function effectively during the lifespan of the landfill;
 - (d) have a means of monitoring all leachate flow;
 - (e) record both instantaneous and total flows; and

- (f) have adequate storage capacity.
- (3) All leachate shall be treated to remove contaminants prior to discharge into the environment and tested in accordance with the parameters set out in Schedule A. Contaminants
- (4) The discharge standards for all leachate shall be determined by the Minister based on Discharge standards
- (a) the background water quality in the receiving water;
 - (b) identified current and projected uses of the receiving water;
 - (c) the Canadian Environmental Quality Guidelines;
 - (d) any other environmental quality standards or guidelines deemed appropriate by the Minister.
- (5) The corporation shall ensure that leachates are not acutely lethal as determined by the Environment Canada Rainbow Trout Acute Lethality Test (Reference Method EPS-1/RM/13, July, 1990). (EC691/00) Leachates
- 22.** (1) Landfill gas production shall be managed to control the discharge of potentially dangerous gases into the atmosphere. Landfill gas management system
- (2) Venting or gas collection systems shall be installed to control and monitor the gas production in the landfill. Venting
- (3) All new landfills shall be assessed for the viability of energy recovery from gas production. (EC691/00) Energy recovery
- 23.** (1) Surface water management systems shall Surface water management system
- (a) divert surface and storm water from the disposal areas of the landfill;
 - (b) control run-off discharge from the landfill;
 - (c) control erosion, sedimentation, siltration, and flooding;
 - (d) minimize the generation of leachate; and
 - (e) be tested in order to ensure compliance with the parameters set out in Schedule A.
- (2) All surface water management systems shall be hydraulically separate from the landfill's leachate management systems. (EC691/00) Separation
- 24.** (1) The seasonal high elevation of groundwater shall be maintained at a minimum of 500 mm below the lowest point of the compacted clay liner. Groundwater management system
- (2) Groundwater lowering systems shall provide for positive drainage of the groundwater away from the landfill area. (EC691/00) Positive drainage
- 25.** (1) The groundwater monitoring system for landfills shall be approved by the Minister and shall consist of Groundwater monitoring system

	<p>(a) at least one groundwater monitoring well installed hydraulically above the gradient of the landfill, and at least three monitoring wells installed hydraulically below the gradient direction; and</p> <p>(b) a monitoring well system containing a sufficient number of multi-level well nests for measurement of vertical gradients.</p>
Location of monitoring wells	(2) Locations of the monitoring wells required by subsection (1) shall be sufficiently close to the active disposal area to allow early detection of contamination and implementation of remedial measures.
Duration of monitoring	(3) All monitoring wells required by subsection (1) shall be retained throughout the lifespan of the landfill and tested in accordance with the parameters set out in Schedule A. (EC691/00)
Disposal material monitoring	<p>26. (1) All landfills and composting facilities approved after the coming into force of these regulations, and the East Prince Waste Management Facility - Wellington Center, shall have a monitoring station and monitoring systems in place to</p> <p>(a) enable inspection of material received by the landfill or composting facility; and</p> <p>(b) ensure compliance with the corporation's Program Policies.</p>
Inspection station	(2) All landfills and composting facilities approved after the coming into force of these regulations, and the East Prince Waste Management Facility - Wellington Center, shall have an inspection station and weigh scales, provided by and maintained by the corporation, at the entrance to the landfill or composting facility.
Weigh scales	(3) The scales required by subsection (2) shall provide for accurate weighing of the material to be buried or separated, according to Weights and Measures Canada Standards, (EC691/00)
Separation distances	27. (1) The distance between the active disposal area of a landfill and the nearest residential, institutional, commercial or industrial building shall be a minimum of 750 m.
Property boundary	(2) The distance between the active disposal area of a landfill and the nearest property boundary shall be a minimum of 100 m.
Water	(3) The distance between the active disposal area and the nearest bank top or high water mark of any surface watercourse or body of water, including salt water, or to any off-site well shall be a minimum of 100 m. (EC691/00)
Quality control programs	28. (1) The corporation shall provide to the Minister a description of the quality control programs to be carried out on all aspects of the landfill system and materials.

(2) For specific items including, but not limited to, flexible membrane liners and low hydraulic conductivity soil components, quality control shall be carried out by an independent third party approved by the Minister to ensure that the materials are manufactured and installed as specified and in accordance with generally accepted practices and tolerances. (EC691/00)

Quality control

29. Operation of a landfill shall incorporate, as a minimum, the following operational requirements:

Landfill operation requirements

- (a) placement of cover over all exposed remaining waste at least once each day or more often as required;
- (b) constant supervision during the hours that the landfill is open;
- (c) inspection of all loads prior to unloading;
- (d) acceptance of only the material identified in the approval of the application to operate the landfill;
- (e) control and recovery of litter;
- (f) stabilization of exposed areas to prevent erosion and sedimentation;
- (g) control of dust;
- (h) control of vectors; and
- (i) placement of appropriate signage at the entrance to the landfill which shall indicate the name of the landfill, hours of operation, emergency contact, and the materials acceptable for disposal at the landfill. (EC691/00)

30. (1) The corporation shall submit an Operation and Maintenance Manual for every landfill owned by the corporation which shall include the following:

Operation and Maintenance Manuals

- (a) record drawings and specifications for the landfill;
- (b) a copy of the approval including terms and conditions contained in the approval for the landfill, and any amendments to the approval;
- (c) a complete description of the operational requirements;
- (d) monitoring logs including, but not limited to, monitoring well logs, leachate treatment records, gas management records, household hazardous materials handling records, ozone depletion materials renewal records and storm water management records;
- (e) contingency plans as required by section 31;
- (f) copies of all report forms that are to be used at the site; and
- (g) disposal records which include the generator, for single generator loads, and carrier for the materials.

(2) The Operation and Maintenance Manuals shall be left on the landfill premises at all times and shall be available for inspection during operating hours.

Inspection

- Approval (3) The Operation and Maintenance Manual shall be submitted to the Minister for approval at least 30 days prior to commencement of operations. (EC691/00)
- Contingency plan **31.** The corporation shall provide a contingency plan that
 (a) identifies all reasonably foreseeable emergencies, including fire, explosion, leachate leakage, spills, and bomb threats; and
 (b) describes appropriate remedial measures required to prevent damage to the landfill and the surroundings. (EC691/00)
- Reports and records **32.** (1) The corporation shall ensure that records of the operation are completed daily and made available for inspection at all times.
- Content (2) The corporation shall submit a written report to the Minister on or before June 30 of each year for the immediately preceding fiscal year ending March 31, regarding the following items:
 (a) the results of leachate monitoring both pre-treatment and post-treatment including
 (i) total flows, peak and average flows, and
 (ii) leachate quality;
 (b) the results of gas production monitoring including total production, peak and average for landfills with landfill gas management systems;
 (c) the results of surface water monitoring and groundwater monitoring;
 (d) waste flow including
 (i) types of materials accepted at the landfill for the period,
 (ii) quantities of materials accepted at the landfill for the period,
 (iii) quantities of materials buried,
 (iv) quantities of materials separated for reuse and recycling.
 (EC691/00)
- Landfill closure plan **33.** (1) The corporation shall include, in the application for approval, a preliminary closure plan for the landfill.
- Idem*, content (2) The closure plan shall include the following:
 (a) the anticipated date of closure;
 (b) a description of waste that will remain as part of the closed landfill;
 (c) a description of all post-closure control and monitoring programs which will be carried out at the landfill and the length of time they will be carried out;
 (d) a description of any decommissioning of components of the landfill;
 (e) a closure schedule; and
 (f) any other information required by the Minister. (EC691/00)

- 34.** At least 180 days prior to the planned closure of a landfill, the corporation shall Notification
- (a) notify the Minister in writing of the intent to close the landfill; and
 - (b) include a detailed description of the final closure plan. (EC691/00)

COMPOSTING FACILITIES

- 35.** (1) Sections 36 to 58 apply to all composting facilities requiring approval pursuant to section 2. Application
- (2) Sections 36 to 58 do not apply to *Idem*
- (a) backyard composting;
 - (b) composting undertaken according to normal farm practices and Codes of Practice established pursuant to the *Farm Practices Act*; and
 - (c) the processing of fish waste and sewage sludge at facilities approved by the Minister. (EC691/00)
- 36.** (1) No person shall construct or operate a compost facility unless approval has been granted by the Minister. Applications for approval
- (2) Unless specifically exempted by the Minister, the corporation is to provide all information necessary to satisfy the requirements of sections 36 to 58. (EC691/00) Information
- 37.** (1) Composting facilities receiving under 10,000 tonnes of compostables per year shall incorporate the following requirements: Composting facilities under 10,000 tonnes
- (a) systems designed to minimize odour generation;
 - (b) measures to control and treat leachate and storm runoff and prevent groundwater contamination;
 - (c) a groundwater and surface water monitoring plan approved by the Minister; and
 - (d) removal of by-products, including residuals from the site, in a timely manner and disposal thereof in a manner acceptable to the Minister.
- (2) Composting facilities receiving under 10,000 tonnes of compostables per year shall have the following separation distances: Separation distances, facilities under 10,000 tonnes
- (a) the distance between the active area and the nearest foundation of an off-site structure used for commercial, industrial, residential or institutional purposes shall be a minimum of 500 m;
 - (b) the distance between the active area and the nearest property boundary shall be a minimum of 30 m; and

(c) the distance between the active area and the nearest watercourse or body of water, including salt water, shall be a minimum of 30 m. (EC691/00)

IN-VESSEL COMPOSTING FACILITIES

In-vessel composting facilities	38. (1) The receiving and tipping areas of in-vessel composting facilities shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt.
Drainage from impermeable pad	(2) All drainage from the impermeable pad shall be collected for treatment or for return to the process.
Enclosed structure	(3) The receiving and tipping area shall be in an enclosed structure. (EC691/00)
Composting area	39. (1) The composting areas of in-vessel composting facilities shall be designed to fully contain the compostable organic material and all leachate which may be generated.
Containment system	(2) The containment system shall be impermeable, and the surface of the containment system shall be constructed of concrete, asphalt, steel, or other material as approved by the Minister.
Drainage	(3) All drainage from the composting area shall be collected for treatment or for return to the process. (EC691/00)
Curing area	40. (1) The curing area of in-vessel composting facilities shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt.
Drainage	(2) All drainage from the impermeable pad shall be collected for treatment or for return to the process.
Roof	(3) All curing areas shall utilize permanent roof structures or other proven management techniques to control moisture and minimize odour and leachate generation. (EC691/00)
Leachate management systems	41. (1) Leachate management systems for in-vessel composting facilities shall be developed which shall consist of infrastructure and monitoring systems designed to <ul style="list-style-type: none"> (a) collect; (b) monitor; (c) control; and (d) treat leachate prior to being discharged into the surrounding environment.
Requirements	(2) Leachate management systems shall

- (a) have a leachate collection and removal network in the active area;
- (b) function year round; and
- (c) have a means of monitoring all treated leachate discharges.
- (3) The discharge standards for all leachate shall be determined by the Minister based on
- (a) the background water quality in the receiving water;
- (b) identified current and projected uses of the receiving water;
- (c) the Canadian Environmental Quality Guidelines; and
- (d) any other environmental quality standards or guidelines deemed appropriate by the Minister.
- (4) The corporation shall ensure that leachate shall not be acutely lethal as determined by the Environment Canada Rainbow Trout Acute Lethality Test (Reference Method EPS-1/RM/13, July, 1990). (EC691/00)
- 42.** (1) The corporation shall submit, for approval from the Minister, a surface water monitoring program for in-vessel composting facilities.
- (2) The extent of surface water monitoring requirements will be based on the design of the composting facility.
- (3) The surface water monitoring program shall
- (a) divert surface and storm water from the active areas;
- (b) control run-off discharge from the composting facility;
- (c) control erosion, sedimentation, siltration, and flooding; and
- (d) minimize the generation of leachate. (EC691/00)
- 43.** (1) The corporation shall submit, for approval from the Minister, a groundwater monitoring program for in-vessel composting facilities.
- (2) The extent of groundwater monitoring requirements will be based on the design of the composting facility.
- (3) Where any of the active area is not protected from precipitation with permanently constructed roof structures, the groundwater monitoring program shall include
- (a) at least one groundwater monitoring well installed hydraulically above the gradient of the active area and at least three monitoring wells installed hydraulically below the gradient direction;
- (b) a monitoring well system including a sufficient number of multi-level well nests for measurement of vertical gradients.

Discharge standards

Biological test methods

Surface water management

Extent

Surface water monitoring program

Groundwater management

Extent

Requirements where no roof

Location of monitoring	(4) The location of every monitoring well required by subsection (3) shall be sufficiently close to the active area to allow early detection of contamination and implementation of remedial measures.
Duration of monitoring	(5) Every monitoring well required by subsection (3) shall be retained throughout the lifespan of the composting facility. (EC691/00)
Odour control systems	44. (1) Mechanical ventilators for in-vessel composting facilities shall be provided for the composting area, areas for the storage of compostable organic feedstock and any other area containing readily putrescible materials such as the storage room for residuals.
Negative pressure	(2) All areas referred to in subsection (1) shall be under a negative atmospheric pressure in order to avoid the escape of odours.
Ventilation air	(3) All ventilation air shall be subject to a treatment system designed to remove odours prior to release into the environment.
Aeration system	(4) The corporation shall provide a building ventilation system with a capacity for at least 12 air exchanges per hour in every active composting area. (EC691/00)
Separation distances	45. (1) The distance between the active area of an in-vessel composting facility and the nearest residential or institutional building shall be a minimum of 500 m.
Distances, commercial, industrial	(2) The distance between the active area and the nearest commercial or industrial building shall be a minimum of 250 m.
Property boundary	(3) The distance between the active area and the nearest property boundary shall be a minimum of 100 m .
Water course or body	(4) The distance between the active area and the nearest watercourse or body of water, including salt water, shall be a minimum of 50 m. (EC691/00)

OPEN WINDROW COMPOSTING FACILITIES

Receiving and tipping area	46. (1) The receiving and tipping area of open windrow composting facilities shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt.
Drainage	(2) All drainage from the impermeable pad shall be collected for treatment or for return to the process.
Enclosed structure	(3) The receiving and tipping area shall be in an enclosed structure. (EC691/00)

- 47.** (1) The composting areas of open windrow composting facilities shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt. Composting area
- (2) All drainage from the impermeable pad shall be collected for treatment or for return to the process. Drainage
- (3) All composting areas shall utilize permanent roof structures or proven management techniques in order to control moisture and to minimize odour and leachate generation. (EC691/00) Enclosed structure
- 48.** (1) The curing areas of open windrow composting facilities shall be underlain by an impermeable pad, the surface of which shall be concrete or asphalt. Curing area
- (2) All drainage from the impermeable pad shall be collected for treatment or for return to the process. Drainage
- (3) All curing areas shall utilize permanent roof structures or proven management techniques to control moisture and to minimize odour and leachate generation. (EC691/00) Odour and leachate
- 49.** Surface water management systems of open windrow composting facilities shall Surface water management
- (a) divert surface and storm water from the active areas;
- (b) control run-off discharge from the open windrow composting facility;
- (c) control erosion, sedimentation, siltration, and flooding; and
- (d) minimize the generation of leachate. (EC691/00)
- 50.** (1) Every open windrow composting facility shall undertake a groundwater monitoring program consisting of Groundwater monitoring program
- (a) at least one groundwater monitoring well installed hydraulically above the gradient of the active area, and at least three monitoring wells installed hydraulically below the gradient direction; and
- (b) a monitoring well system including a sufficient number of multi-level well nests for measurement of vertical gradients.
- (2) The location of every monitoring well required by subsection (1) shall be sufficiently close to the active area to allow early detection of contamination and implementation of remedial measures. Location of monitoring
- (3) Every monitoring well required by subsection (1) shall be retained throughout the lifespan of the composting facility. (EC691/00) Duration of monitoring
- 51.** (1) The corporation shall provide the Minister with detailed management techniques for the control of odours from the composting Odour control

process of every open windrow composting facility owned by the corporation.

Atmospheric
dispersion
modelling

(2) All open windrow facilities which
 (a) include more than 1,000 tonnes annually of food waste in their feedstock; or
 (b) exceed 10,000 tonnes annually of total feedstock,
 shall provide atmospheric dispersion modelling to determine the potential for odour at the property boundary and other receptors near the open windrow composting facility.

Modelling

(3) The modelling shall
 (a) categorize the compounds which could result in odour; and
 (b) establish odour concentrations at the property boundaries and other receptors.

Baseline odour
concentrations

(4) Baseline odour concentrations of open windrow composting facilities described in subsection (2) shall meet the requirements of the Minister and shall be used in testing for odours after the open windrow composting facility is in operation. (EC691/00)

Separation
distances

52. (1) The distance between the active area of open windrow composting facilities and the nearest structure, including residential, institutional, commercial or industrial buildings, shall be a minimum of 500 m.

Exception - food
waste, feedstock

(2) Where the open windrow composting facility
 (a) includes more than 1,000 tonnes annually of food waste in its feedstock; or
 (b) exceeds 10,000 tonnes annually of total feedstock,
 the separation distance shall be a minimum of 1,000 m.

Property boundary

(3) The distance between the active area of an open windrow composting facility and the nearest property boundary shall be a minimum of 100 m.

Watercourse

(4) The distance between the active area and the nearest watercourse or body of water, including salt water, shall be a minimum of 30 m. (EC691/00)

Composting facility
objective

53. (1) Subject to subsection (2), the corporation shall ensure that every composting facility operated by the corporation incorporates all compostable organic feedstock into the composting process the same day that it is delivered to the site.

Feedstock

(2) Where feedstock, except leaf and yard waste feedstock, is not incorporated into the composting process in the same day it is received at

the composting facility, it shall be stored in an enclosed area with a mechanical system for the capture and treatment of odorous emissions.

(3) Every composting facility shall have constant supervision during the hours that it is open. Supervision

(4) Every composting facility shall accept only the feedstock identified in the approval. Approved feedstock

(5) Any residual products associated with the composting operation shall be disposed of by the corporation in a manner acceptable to the Minister. Residual products

(6) Litter shall be controlled on the entire composting facility site. Litter

(7) Exposed areas shall be stabilized to prevent erosion and sedimentation. Exposed areas

(8) Dust particulate emission shall meet the Ministerial requirements for particulate emissions as prescribed by the Environmental Protection Act Air Quality Regulations (EC377/92). Dust

(9) Vectors shall be controlled in accordance with a control plan approved by the Minister. Vectors

(10) Signs shall be placed at the entrance to the site indicating the name of the facility, hours of operation, emergency contact, and the materials acceptable at the site. (EC691/00) Signs

COMPOST REPORTING REQUIREMENTS

54. (1) The corporation shall submit an Operation and Maintenance Manual for every composting facility owned by the corporation which shall include the following: Operation and Maintenance Manual

- (a) record drawings and specifications for the composting facility;
- (b) a copy of the approval including terms and conditions of the approval for the composting facility;
- (c) a complete description of the operational practices and procedures;
- (d) a description of measures to control and monitor the aeration of the compost to ensure that the oxygen content in the compost material is sufficient to prevent the composting mass from becoming anaerobic;
- (e) a description of measures to control the aeration, blending and mixing of the compost to minimize odorous emissions from the composting operation as well as raw material and compost storage;

	(f) a description of monitoring programs including sampling protocols, locations and frequency for monitoring wells, leachate treatment and storm water management systems; and (g) contingency plans as required by subsection 55(1).
Inspection	(2) The Operation and Maintenance Manual shall be left on site at all times and shall be available for inspection during operating hours.
Approval	(3) The Operation and Maintenance Manual shall be submitted to the Minister for approval at least 30 days prior to commencement of operation. (EC691/00)
Contingency plans	55. (1) Contingency plans for composting facilities shall identify all reasonably foreseeable emergencies including fire, explosion, leachate leakage or spills and shall describe appropriate responses to prevent an adverse affect on the surrounding environment.
Contents	(2) The corporation shall provide contingency plans addressing problems associated with vectors, groundwater contamination, equipment failure, odour generation, and complaints. (EC691/00)
Monitoring	56. (1) The type and frequency of monitoring and reporting requirements for composting facilities shall be specified in the terms and conditions of the approval.
Annual report	(2) The corporation shall submit for Ministerial approval an annual report which shall include the following information: <ul style="list-style-type: none"> (a) surface water monitoring and groundwater monitoring quality data; (b) feedstock flow including <ul style="list-style-type: none"> (i) types of materials accepted at the composting facility for the period, (ii) quantities of materials accepted at the composting facility for the period; (c) quantities of materials composted; (d) quantities of materials rejected and sent for disposal; (e) compost quality testing results; and (f) complaint records.
Log book <i>re</i> complaints	(3) The corporation shall record and respond to complaints regarding the composting operation.
Record of complaints	(4) Each complaint and associated measures taken by the corporation shall be recorded in a log book including <ul style="list-style-type: none"> (a) a description of the complaint and the date and time it was received by the corporation;

- (b) wind direction, wind speed, temperature, humidity and other atmospheric conditions at the time of the occurrence which resulted in a complaint; and
- (c) a description of the measures taken to address the cause of the complaint. (EC691/00)

- 57.** (1) All compost Compost classification
- (a) shall be classified in accordance with the criteria identified in the CCME Guidelines; and
 - (b) shall meet all criteria as established for trace elements set out in Schedule B of these regulations.
- (2) Testing of the compost quality shall be completed for every 1,000 tonnes of compost produced or every three months, whichever occurs earlier, and conducted in accordance with the minimum testing procedures identified in section 4 of the CCME Guidelines. Testing
- (3) Compost which meets the criteria established in the CCME Guidelines as Category B shall be classified in accordance with metal concentrations, product maturity, amount of foreign matter, organic matter content, pH and salinity. Classification
- (4) Compost which is tested and classified as a hazardous or special waste shall be handled and treated in accordance with the requirements of the Act. (EC691/00; 529/01) Hazardous or special waste
- 58.** (1) Compost which meets the criteria established in the CCME Guidelines as Category A may be used in accordance with the uses stated in the CCME Guidelines for Category A compost. Category A compost
- (2) Use of compost which meets the criteria established in the CCME Guidelines as Category B may be used in accordance with the uses stated in the CCME Guidelines for Category B. (EC691/00) Category B compost
- (3) Revoked by EC529/01. Food crops

C & D DISPOSAL SITES

- 59.** An approval is not required for a C & D disposal site for the disposal of soil, bricks, mortar, concrete, asphalt pavement, trees, stumps, root balls, and rock, excluding rock containing a sulphide bearing material where Approval not required
- (a) the materials are placed in an excavation pit approved pursuant to the Environmental Protection Act Excavation Pits Regulations (EC753/90);
 - (b) the quantity being disposed of is less than 30 cubic metres;

- (c) the disposal is conducted by a person not involved in the business of C & D debris disposal; and
- (d) the disposal is of a private, non-commercial nature. (EC691/00)

Applications

60. (1) Applications for approval to construct or operate a C & D disposal site shall be accompanied by a report documenting the design described in section 62 and other supporting documentation as may be requested by the Minister.

Exemption

(2) Unless specifically exempted by the Minister, every person seeking approval for a C & D disposal site shall provide all information required by section 62. (EC691/00)

C & D disposal sites

61. (1) Every person who owns a C & D disposal site shall ensure that the site is selected, designed, constructed and operated so that it protects the environment during the life span of the C & D disposal site.

Diversion of debris

(2) A person who generates debris shall employ all reasonable and practical means, including source reduction, reuse or recycling, in order to divert C & D debris from being disposed of at a C & D disposal site. (EC691/00)

Design requirements

62. (1) Every owner of a C & D disposal site shall ensure the C & D disposal site incorporate the following design requirements:

- (a) a minimum of 1 metre of soil with a hydraulic conductivity of 1×10^{-5} cm/sec or less between the lowest elevation of any of the waste and the highest elevation of the groundwater or bedrock;
- (b) a plan for the placement of cover on the debris;
- (c) a controlled site entry and exit infrastructure;
- (d) a drainage plan for surface water including control infrastructure (sedimentation ponds);
- (e) appropriately designed road surfaces;
- (f) signs which indicate the name of the C & D disposal site, hours of operation, emergency contacts and all materials acceptable for disposal at the C & D disposal site;
- (g) groundwater monitoring wells including at least one groundwater monitoring well installed hydraulically above the gradient of the site and at least three monitoring wells installed hydraulically below the gradient direction;
- (h) weigh scales approved and functioning pursuant to Weights and Measures Canada Standards, for the purpose of weighing C & D debris received at the C & D disposal site;
- (i) a minimum separation distance of 30 m from the active disposal area to the nearest property boundary or to the road allocation of any common or public highway;

- (j) a minimum separation distance of 30 m from the active disposal area to the nearest bank top or high water mark of any surface water course or body of water, including salt water, or to any off-site well; and
- (k) a minimum separation distance of 150 m from the active disposal area to the foundation of the nearest off-site structure used for commercial, industrial, residential or institutional purposes.

(2) The Minister may require additional design features including, but not limited to, liner systems, leachate management systems and other control infrastructure.

Additional requirements

(3) Additional requirements may be based on the volume of material to be disposed of at the C & D disposal site, the environmental sensitivity of the area or the nature of the materials to be accepted at the C & D disposal site. (EC691/00)

Basis for additional requirements

63. (1) Every owner of a C & D disposal site shall ensure that the C & D disposal site incorporates, as a minimum, the following operational requirements:

Operational requirements

- (a) placement of cover material in accordance with the plan for cover placement approved by the Minister;
- (b) direct supervision during the hours that the C & D disposal site is open and is accepting materials;
- (c) inspection of all loads by the supervisor of the C & D disposal site prior to unloading;
- (d) acceptance of only C & D debris;
- (e) no acceptance of industrial waste unless otherwise approved by the Minister in the terms and conditions of the approval;
- (f) no acceptance of remaining waste, compostables, or recyclables;
- (g) no acceptance of liquid wastes;
- (h) litter is controlled;
- (i) stabilization of exposed areas to prevent erosion and sedimentation;
- (j) dust, odours and noise are controlled;
- (k) detailed records are kept which include the generator name, the carrier name and the quantity and types of the materials disposed of or stored;
- (l) records shall be maintained at the C & D disposal site for a minimum of two years and be available for inspection upon request;

(2) The owner of the C & D disposal site shall conduct a groundwater and surface water monitoring program at the site.

Monitoring program

(3) The owner of the C & D disposal site shall submit a written report to the Minister on or before March 31 of each year for the immediately

Groundwater

preceding calendar year, identifying the quantities and types of material disposed of at the owner's C & D disposal site.

Report of material disposed (4) If additional recycling components are utilized at the C & D disposal site, the quantities of these materials shall also be reported.

Water monitoring program (5) The owner of the C & D disposal site shall annually report to the Minister the results of the groundwater and ground and surface water monitoring program.

Security (6) The Minister may require that privately owned, commercially operated C & D disposal sites post financial security. (EC691/00)

Operation and Maintenance Manual **64.** (1) Every owner of a C & D disposal site shall prepare an Operation and Maintenance Manual for each C & D disposal site owned.

Requirements (2) The Operation and Maintenance Manual required by subsection (1) shall include the following:

- (a) record drawings and specifications of the C & D disposal site;
- (b) a complete description of the operational procedures;
- (c) monitoring well logs and surface water monitoring logs, including the location plans showing the monitoring points;
- (d) contingency plans to deal with any waste not acceptable for disposal;
- (e) contingency plans to deal with emergency issues including but not limited to fire, explosions and spills;
- (f) procedures for the maintenance of disposal records including the names of the generator and carrier of the materials; and
- (g) a copy of the approval, including all terms and conditions of the approval.

Approval (3) The Operation and Maintenance Manual shall be submitted to the Minister for approval at least 30 days prior to commencement of operation.

Inspection (4) The Operation and Maintenance Manual shall be kept on site at all times and shall be available for inspection. (EC691/00)

RECYCLING PLANTS

Prohibition **65.** No person shall construct or operate a recycling plant unless approval has been obtained from the Minister. (EC691/00)

Requirements **66.** Every person who operates a recycling plant shall, in respect of every recycling plant operated by the person

- (a) record the received weight, the processed weight, and the shipped weight of the recyclables processed at the recycling plant; and
- (b) submit a written report to the Minister, with a copy to the corporation, on or before June 30 of each year for the preceding fiscal year ending March 31. (EC691/00)

67. (1) The report required by clause 66(b) shall state Report

- (a) the weight in kilograms of each type of recyclable processed at the plant for the year covered by the report; and
- (b) the weight in kilograms of each type of recyclable not processed at the plant for the year covered by the report.

(2) Where a recyclable is reported pursuant to clause (1)(b) as not having been processed, the report shall indicate Recyclables not processed

- (a) why the recyclable was not processed;
- (b) how the recyclable was disposed of, if it was; and
- (c) what action is being taken by the person to ensure proper processing of all recyclables into reusable products. (EC691/00)

OFFENCE

68. Every person who operates a landfill, recycling plant, composting facility, or C & D disposal site that is not in compliance with these regulations is guilty of an offence. (EC691/00) Offence

SCHEDULE A
GROUNDWATER, LEACHATE, AND SURFACE WATER
MONITORING PARAMETERS

PARAMETER				
Parameter Group	Column 1	Column 2	Column 3	Column 4
	Comprehensive List for Groundwater and Leachate	Indicator List for Groundwater and Leachate	Comprehensive List for Surface Water	Indicator List for Surface Water
Inorganics				
	Alkalinity	Alkalinity	Alkalinity	Alkalinity
	Ammonia		Ammonia	Ammonia
	Arsenic		Arsenic	
	Barium		Barium	
	Boron		Boron	
	Cadmium	Cadmium	Cadmium	
	Calcium	Calcium		
	Chloride	Chloride	Chloride	Chloride
	Chromium		Chromium	
	Conductivity	Conductivity	Conductivity	Conductivity
	Copper		Copper	
	Iron	Iron	Iron	
	Lead	Lead	Lead	
	Magnesium	Magnesium		
	Manganese			
	Mercury		Mercury	
	Nitrate	Nitrate	Nitrate	Nitrate
	Nitrite		Nitrite	Nitrite
	Total Kjeldahl Nitrogen		Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen
	pH	pH	pH	pH
	Total Phosphorus		Total Phosphorus	Total Phosphorus
	Potassium	Potassium		
	Sodium	Sodium		
	Suspended Solids	Suspended Solids	Suspended Solids	Suspended Solids
	Total Suspended Solids	Total Suspended Solids	Total Suspended Solids	Total Suspended Solids
	Sulphate	Sulphate	Sulphate	Sulphate
	Zinc		Zinc	
Volatile Organics				
	Benzene			
	1,4 Dichlorobenzene			
	Dichloromethane		Dichloromethane	
	Toluene		Toluene	
	Vinyl Chloride			

Other Organics				
			Biochemical Oxygen (BOD)	Biochemical Oxygen (BOD)
	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand	Chemical Oxygen Demand
	Dissolved Organic Carbon	Dissolved Organic Carbon	Dissolved Organic Carbon	
	Phenol		Phenol	Phenol
Field Parameters				
			Temperature	Temperature
	pH	pH	pH	pH
	Conductivity	Conductivity	Conductivity	Conductivity
			Dissolved Oxygen	Dissolved Oxygen
			Flow	Flow

(EC691/00)

SCHEDULE B
CONCENTRATIONS OF TRACE ELEMENTS IN COMPOST*:

	CATEGORY A	CATEGORY B
Trace Elements	Maximum Concentration within Product (mg/kg dry weight)	Maximum Concentration within Product (mg/kg dry weight)
Arsenic (As)	13	75
Cadmium (Cd)	3	20
Cobalt (Co)	34	150
Chromium (Cr)	210	1060**
Copper (Cu)	100	760**
Mercury (Hg)	0.8	5
Molybdenum (Mo)	5	20
Nickel (Ni)	62	180
Lead (Pb)	150	500
Selenium (Se)	2	14
Zinc (Zn)	500	1850

*See CCME Guideline for maximum cumulative additions to soil.

** See CCME Guideline for further description of these values.

(EC691/00)

SCHEDULE C

QUALITY CONTROL / ASSURANCE PROGRAM

1.0 PURPOSE

1.1 Quality Control

1. For the purpose of this specification, quality control shall be defined as a planned system of inspection and tests to directly monitor and control the quality of the work.
2. The applicant shall submit a quality control, inspection and test program for all landfill components.
3. The applicant shall employ a quality control inspector (Inspector) who may be the same person as the installation supervisor.

1.2 Quality Assurance

1. For the purpose of this specification, quality assurance is defined as a planned system of activities, carried out by the applicant or his representative, that provides assurance that the landfill components were manufactured and installed as specified.
2. The quality assurance program shall include tests similar to those carried out for quality control.

2.0 GEOMEMBRANE

2.1 General

Geomembrane shall be tested for both manufacture and installation. Both destructive and non-destructive tests shall be used.

2.2 Geomembrane Testing

1. A minimum of one complete set of quality control tests on geomembrane rolls shall be performed at the frequencies given in Table 1 to verify that all other specified parameters are in compliance with the material specifications.
2. Test samples which fail to meet strength and environmental specifications shall result in rejection of applicable rolls. Further testing

on geomembrane manufactured from the same resin batch shall be conducted to determine acceptability.

3. A quality assurance consultant shall confirm that required quality control has been done and shall certify the quality of the geomembrane, prior to delivering. A quality control certificate is required for each batch of resin and each production shift. The certificate shall include:

Product Identification

Roll Numbers

Sampling Procedures

Test Methods

Test Results (including Environmental Stress Cracking or single-point Notched and Constant Tensile Load Time to Failure test data)

Signature of Responsible Party

The consultant may also request that all production line records be submitted for review.

4. The consultant shall have authority to visit the manufacturing facility at any time to witness production and quality control testing, examine production records and take independent samples.

2.3 Non-Destructive Testing

1. Test Seams (Start-up) - Test seams shall be made to verify that adequate conditions exist for field seaming to proceed. Each seaming apparatus shall produce a test seam at the beginning of each shift. In addition, if a seaming operation has been suspended for more than four hours, or after every 5 hours or if a breakdown of the seaming equipment occurs, a test seam shall be produced prior to resumption of seaming operations.

Test seams shall be made in the field on pieces of the approved geomembrane. Each test seam shall be at least 1.5 m long x 300 mm wide for extrusion and 3 m long by 300 mm wide for fusion, with sufficient overlap for peel testing in the field tensiometer.

Two samples 25 mm wide shall be taken from each end of the test seam using an approved template. The samples shall be tested in the field tensiometer, one from each and in peel and shear respectively. Samples tested in peel shall not fail in the seam. All test samples shall exhibit film tear bond and strength as defined under seam properties, Table 1.

**TABLE 1
GEOMEMBRANE**

Material Property	Minimum Average Roll Values (Metric)	
	1.5 mm(60 mils)	
Nominal Thickness	Units	Value
Thickness, ASTM D751, NDF Mod., Nominal	mm	200
Indent Lowest Individual Reading	mm	137
Density, ASTM D1505	g/cm ³	0.940
Melt Flow Index, ASTM D1238 Cond. E. Max.	g/10 min.	1.0
Carbon Black Content, ASTM D1603	percent	2.0 - 3.0
Carbon Black Dispersion, STM D3015	rating	A2
Minimum Tensile Properties, STM D638 Stress at Yield	N/cm	231
Stress at Break	N/cm	399
Stress at Yield		
nominal gage of 1.30" per NSF Mod.	percent	13
Stress at Break		
nominal gage of 2.5" per NSF Mod.	percent	560
Tear Resistance, ASTM D1004	N/cm	1230
	N	200
Puncture Resistance, FTMS 101, 2065	N/cm	2280
	N	347
ESCR, ASTM D1693, NSF Mod., Pass	hours	1500
Dimensional Stability, ASTM D1204, NSF Mod., Max.	percent	2.0
Low Temperature Brittleness	C	-60
Single-Point Notched Constant Tensile Load Time to Failure	(hr)	200
Field Seam Properties		
1. Shear Strength	N/cm	212
2. Peel Strength	N/cm	FTB and 139

1. Film Tear Bond (FTB) is defined as failure of one of the sheets by tearing, instead of separating from the welded seam - that test specimen shall not fail by more than 10% into the seam. For double hot wedge fusion welded seam, both inside and outside tracks shall be tested.

If the seam fails to pass, the seaming apparatus shall not be used for field seaming until any deficiencies have been corrected. This shall be verified by the production and successful testing of two consecutive test seams.

2. Vacuum Testing - All extrusion welded seams and "T" seams shall be evaluated using vacuum box testing.

A sudsy soap solution shall be applied to the test section and the vacuum box placed over the section. The vacuum box shall maintain at least .2 bar vacuum during the test. Once a tight seal has been established, the

test section shall be viably examined for a period of not less than 10 seconds to determine whether bubbling of the soapy solution at the seam is occurring. The vacuum box is then moved and the process is repeated on the next adjacent section. A minimum of 100 mm overlap shall be provided between all test sections.

All locations where bubbling of the sudsy solution is observed shall be clearly marked for repairs with a high visibility marker and recorded by number on field test reports. Any failed portion of seam shall be repaired and retested.

3. Air Pressure Testing - Double wedge welded seams shall be sealed off at both ends. If the end of a seam will be an integral part of the geomembrane, the sealing shall be done in such a way that it does not harm the function of the geomembrane. The pressure feed device shall be inserted into the air channel at one end of the seam and pressurized to 1.5 - 2.0 bars. The feed valve shall be closed and the pressure sustained for a period of not less than 3 minutes. The pressure shall then be released by slitting the air channel at the opposite end of the seam. The inspector shall observe the drop in pressure on the manometer to verify the continuity of the air channel.

If a pressure loss of greater than .2 bar is observed or if the required pressure cannot be reached, then the seam shall be rejected, and shall be either reconstructed in its entirety or the leak located and patched. The entire seam shall then be retested according to the procedure outlined above.

4. All seams shall be non-destructively tested by the installer over their full length to verify the integrity of the seam. Non-destructive testing shall be performed concurrently with field seaming. All non-destructive testing shall be observed and documented by the inspector.

5. Seams failing a test shall be repaired and retested.

6. Where there are cap seams which cannot be subjected to a non-destructive test using geomembrane of the same batch under the supervision of the inspector, test the cap seams. Alternatively, remove the seam and adjacent geomembrane panel, replace and test.

2.4 Destructive Testing

1. Destructive testing of field seams shall be performed at selected locations in order to verify seaming properties. All sampling and testing

shall be done concurrently with field seaming so that verification of field seam properties is made as the work progresses and corrective action implemented, if necessary.

2. Test samples shall be taken at an average frequency of one test location per 150 m of seam. Sample locations shall be determined by the inspector taking into consideration the difficulty of subsequent repair and testing.
3. Samples shall be cut under the direction of the inspector. Each sample shall be indelibly numbered and identified. Each sample shall be identified with the sample number, seam number, panel number, date, name of welding technician, and welding equipment number.
4. The inspector may increase the amount of destructive testing based on the results of previous testing. Additional samples may also be required when the inspector has reason to suspect the presence of excess crystallinity, contamination, faulty seaming equipment or any reason affecting seam quality.
5. The test sample shall measure approximately 300 mm wide by 1.0 metre long with seam centred lengthwise along the sample.
6. Twenty-five (25) mm wide sample strips shall be cut from the sample using an approved die, and tested by an on-site tensiometer. Two 25 mm wide samples shall be taken from each end for shear and peel testing. The seam shall not fail either test as specified in Section 2.3.
7. The remaining sample shall be tested in an independent tensiometer to qualify seam strength properties and Film Tear Bond (FTB) according to the procedures outlined in this section.

The inspector shall cut ten (10) 25 mm wide replicate specimens from the sample and shall test 5 specimens for seam shear strength and 5 for peel strength. To be acceptable, 5 out of the 5 replicate specimens must pass for each mode of testing. All specimens must fail in Film Tear Bond (FTB); any specimen that fails through the weld, or by adhesion at the weld-sheet interface, is a non-film Tear Bond break and shall be considered a failure.

8. The test method and procedures to be used by the inspector shall employ a grip separation rate of 50 mm/min for peel and shear.

9. The area from which the destructive test sample was taken shall be repaired without delay and shall be non-destructively tested by vacuum box as described in Section 2.3.2.

2.5 Inspection and Acceptance

1. As the work progresses, the inspector shall document all locations requiring repair work and shall verify and document that all repairs have been successfully made. No work on the liner shall be allowed if the inspector is not present. This includes start-up tests, general seaming and patching, and any work on penetrations or structures.

2. Seams are only considered to be accepted after they have passed the specified non-destructive and destructive tests, and the equipment used to produce the seams has passed the required start-up tests. If a seam fails the above criteria, the seam must be reconstructed.

3. A double hot wedge fusion seam shall be considered acceptable only when both outside and inside track welds are destructively tested and meet the specification criteria.

4. If a seam fails the destructive test, the seam may be reconstructed between the point of failure and any previously accepted test.

5. In lieu of #4 above, the installer may trace the extent of unacceptable seam. Take 25 mm samples at minimum 3 metre distance on each side of failed section. Test in both shear and peel. If one or both tests fail, continue along seam at minimum 3 metre increments. Continue until tests indicate pass results. Then take large samples for field laboratory tensimeter testing. If field laboratory tests pass, make repairs - if they fail, continue.

6. Reconstruction or repair of failed seam lengths shall be either by capping of the failed seam (extrusion or fusion weld) or, in the case of a double fusion weld, by extrusion fillet welding the overlap to the bottom sheet. Cutting off the overlap and topping the failed fusion weld with extrudate will not be permitted.

7. If the overlap of the outside (i.e. visible) weld is less than 30 mm, extrusion welding of the overlap to the bottom sheet in the failed section will not be permitted.

8. Continuity of all reconstructed seams shall be subject to non-destructive testing. If reconstructed length exceeds 50 m, sample shall be taken for laboratory destructive testing.
9. The entire geomembrane surface shall be examined by the inspector to confirm that it is free of any defects, blisters, undispersed raw materials, or contamination by foreign matter. The geomembrane surface shall be cleaned, if required, so that it is free of dust, mud, debris or any other material which may inhibit a thorough examination of the surface. Any suspect areas shall be clearly marked by the inspector and non-destructively tested according to the appropriate specified testing procedure.
10. Overburden shall not be applied to any portion of the liner system until that portion system is inspected and has been approved.
11. Gouges or scratches associated with grinding or from other sources whose depths are in excess of 10% of the geomembrane thickness shall be classified as defects and will require appropriate repairs in accordance with these specifications.
12. Small tears, wrinkles or pinholes shall be repaired by seaming or patching. Other areas shall be patched or capped.
13. Patches shall be round or oval, of the same material and thickness, and shall extend a minimum of 150 mm beyond the damaged or faulty area in all directions.
14. Geomembrane surfaces to be patched, shall be abraded, in accordance with these Specifications. Surfaces must be clean and dry.
15. Use approved extrusion welding equipment.
16. All repairs shall be non-destructively tested.
17. Cut and repair any large wrinkles or “fishmouths” identified by the inspector.

3.0 COMPACTED CLAY LINER

3.1 Compacted Clay Liner Quality Control

Quality control of low permeability fill material and placement shall be based on the following minimum procedures and criteria:

1. Prior to constructing the compacted clay liner, a test section shall be constructed in two lifts to the specified thickness, consisting of not less than three panels 3 m wide and 10 m long.
2. Mixing methods shall be modified as necessary to achieve specified coefficient of permeability.
3. Placement and compaction methods shall be modified as necessary to achieve specified coefficient of permeability.
4. Samples and measurements of test section shall be taken. Physical parameters to be tested in the laboratory include grain size, moisture content, Atterberg Limits, moisture density relationship and hydraulic conductivity. Compacted in-situ density (by Nuclear Method ASTM D2922) and permeability by air entry infiltrometer shall be measured.
5. The method of construction, verified by the applicant, shall then be submitted to the Department of Fisheries, Aquaculture and Environment. Once submitted, no deviation from the method of construction will be allowed by the contractor unless written approval is obtained from the Minister.
6. The installer shall employ a certified geotechnical company with laboratory testing capabilities that can supply the qualified personnel and equipment necessary to perform the required tests.
7. The geotechnical company shall perform all required tests on the compacted clay liner material at the mixing/stockpile area. The results of these tests shall be approved prior to the material being used for liner construction.
8. The geotechnical company shall perform all tests on the compacted clay liner subgrade. The results of these tests shall be available for inspection as required.
9. The geotechnical company shall perform all required tests on the compacted clay liner material while it is being placed, and after it is complete, as defined in this specification. The results of these tests shall be submitted for approval immediately upon completion of the Test.
10. The geotechnical company shall certify that all specified requirements are met.

3.2 Compacted Clay Liner Quality Assurance

1. Quality Assurance of compacted clay liner material and placement shall be based on the following minimum procedures and criteria:

1. An independent inspector shall perform all required tests on the compacted clay liner material at the stockpile area. The results of these tests shall be submitted for approval prior to the material being used for liner construction.
2. The inspector shall perform all required tests on the compacted clay liner material while it is being placed, and after it is complete. The results of these tests shall be submitted for approval immediately upon completion of the tests.
3. The average results of any ten consecutive density tests shall be equal to or greater than the specified density.
4. Results of not more than two in any ten consecutive density tests may be less than the specified density.
5. Results of any ten consecutive moisture content tests shall be within the specified moisture content limits.
6. Results of not more than two in any ten consecutive moisture content tests may lie outside the specified content limits.
7. Permeability evaluated from results of tests shall be equal to or less than the specified permeability.
8. Average of results of any ten consecutive grain size tests shall be within the specified limits for grain size.
9. The testing shall include the items identified in Table 2 as a minimum:

**TABLE 2
COMPACTED CLAY LINER TESTING**

ITEM	TESTING	MINIMUM FREQUENCY
Clay Prior to Placement	Moisture Content	750 m ³
	Moisture-density curve	1 test/4000 m ³
	Grain Size	1 test/750 m ³
	Atterberg Limits (liquid limit and plasticity index)	1 test/4000 m ³
	Lab permeability (remolded samples)	1 test/7500 m ³
In Place Liner	Density	Every 200 m ² of exposed lift surfaces
	Moisture Content	100 m ³
	Atterberg Limits (liquid limit and plasticity index)	2 tests/hectare/lift
	Grain size (to the 2-micron particle size)	2 tests/hectare/lift
	Moisture-density curve	1,500 m ³ or a minimum of 1 every 3 days placement
	Laboratory permeability of undisturbed soil sample	2 tests/hectare/lift - undisturbed Shelby sample
	In-situ permeability	5 tests/hectare/lift - undisturbed Shelby sample

10. Any portions of the completed liner which do not achieve compacted dry density and moisture contents in the range specified shall be replaced.

2. Method of testing of the compacted clay liner shall be as follows:

1. The maximum density of low permeability fill and the optimum water content for compaction will be determined in accordance with ASTM D698, Method D.
2. Bulk density will be determined in the field in accordance with ASTM D2922 or with ASTM D1556, whichever is most suitable, to obtain a representative density of the fill tested.
3. Particle size analysis of the soil will be performed in accordance with ASTM D422.
4. Samples for hydraulic conductivity testing of the compacted soil shall be collected in thin walled Shelby tubes from the compacted liner and tested in the laboratory. Confining pressure during the permeability testing will be equal to the applicable surcharge load. (EC691/00)

