

875-90 dated 20 June 1990 and 209-92 dated 19 February 1992, is further amended by deleting the second and third paragraphs of section 9.

**5.** The Regulation respecting the insurance of vegetables for processing (R.R.Q., 1981, c. A-30, r. 11), amended by the Regulations approved by Orders in Council 1184-85 dated 19 June 1985, 860-86 dated 16 June 1986, 1855-87 dated 9 December 1987, 111-89 dated 8 February 1989, 874-90 dated 20 June 1990 and 209-92 dated 19 February 1992, is further amended by striking out the words “and pay the assessment payable” in section 14.

**6.** The Regulation respecting the insurance of apples (R.R.Q., 1981, c. A-30, r. 14), amended by the Regulations approved by Orders in Council 1185-85 dated 19 June 1985, 860-86 dated 16 June 1986, 1855-87 dated 9 December 1987, 111-89 dated 8 February 1989, 874-90 dated 20 June 1990, 209-92 dated 19 February 1992 and 233-94 dated 9 February 1994, is further amended by deleting the second and third paragraphs of section 3.

**7.** The Regulation respecting the insurance of cigar and pipe tobacco (R.R.Q., 1981, c. A-30, r. 18), amended by the Regulations approved by Orders in Council 1187-85 dated 19 June 1985, 111-89 dated 8 February 1989, 874-90 dated 20 June 1990 and 209-92 dated 19 February 1992, is further amended by striking out the words “and pay the assessment payable” in the first paragraph of section 14.

**8.** The Regulation respecting the insurance of blueberries under the collective plan, approved by Order in Council 578-91 dated 1 May 1991 and amended by the Regulations approved by Orders in Council 521-92 dated 8 April 1992, 378-93 dated 24 March 1993 and 7-95 dated 11 January 1995, is further amended by deleting paragraph 3 of section 4.

**9.** The Regulation respecting the insurance of commercial grain corn crop under the collective plan, approved by Order in Council 2364-85 dated 20 November 1985 and amended by the Regulations approved by Orders in Council 1006-86 dated 9 July 1986, 526-87 dated 8 April 1987, 1310-87 dated 26 August 1987, 1139-88 dated 20 July 1988, 571-89 dated 19 April 1989, 1075-90 dated 1 August 1990, 1402-91 dated 16 October 1991, 209-92 dated 19 February 1992, 364-92 dated 18 March 1992, 332-93 dated 17 March 1993, 231-94 dated 9 February 1994 and 1647-94 dated 24 November 1994, is further amended by deleting paragraph 3 of section 4.

**10.** The Regulation respecting the insurance of forage crops and cereal crops under the individual plan and the collective plan, approved by Order in Council 794-95 dated 14 June 1995, is amended by striking out the words “and shall be accompanied by the amount of the assessment exigible under the insurance coverage chosen” in the first paragraph of section 5.

**11.** The Regulation respecting the insurance of honey under the collective plan, approved by Order in Council 1188-85 dated 19 June 1985 and amended by the Regulations approved by Orders in Council 1300-86 dated 27 August 1986, 1309-87 dated 26 August 1987, 1302-88 dated 31 August 1988, 997-89 dated 28 June 1989, 1077-90 dated 1 August 1990, 1403-91 dated 16 October 1991, 156-92 dated 12 February 1992, 333-93 dated 17 March 1993, 232-94 dated 9 February 1994 and 1646-94 dated 24 November 1994, is further amended by substituting the following for section 4:

“4. A producer wishing to insure his honey crop shall do so by applying to the Régie before 30 April of the insurance year. The application shall be made on the registration form supplied by the Régie.”.

**12.** This Regulation comes into force on the date of its publication in the *Gazette officielle du Québec*.

9722

Gouvernement du Québec

### **O.C. 498-96, 24 April 1996**

Forest Act  
(R.S.Q., c. F-4.1)

#### **Standards of forest management for forests in the public domain**

Regulation respecting standards of forest management for forests in the public domain

WHEREAS under subparagraphs 1 to 9 of the first paragraph of section 171 of the Forest Act (R.S.Q., c. F-4.1), the Government, by regulation, may prescribe standards of forest management regarding

- (1) the surface and location of cutting areas;
- (2) the protection of the shores of lakes and watercourses;
- (3) the protection of water quality;

(4) the installation and use of piling, lopping and sawing areas;

(5) the location and construction of roads;

(6) the site of forest camps;

(7) forest management activities according to the resources to be protected or the territorial units whose destination is determined in a land use plan referred to in section 25;

(8) the application of silvicultural treatments;

(9) the protection of forest regeneration;

WHEREAS under the second paragraph of section 171 of the Act, the Government, by regulation, may determine what resources are to be protected and define the territorial units whose destination is determined in a land use plan referred to in section 25;

WHEREAS under the third paragraph of section 171 of the Act, the standards prescribed by the Government may vary according to the different territorial units in a land use plan referred to in section 25;

WHEREAS the Regulation respecting standards of forest management for forests in the public domain was made by Order in Council 1627-88 dated 26 October 1988 and amended by Order in Council 911-93 dated 22 June 1993;

WHEREAS it is expedient to replace that Regulation;

WHEREAS in accordance with sections 10 and 11 of the Regulations Act (R.S.Q., c. R-18.1), a draft of the Regulation attached to this Order in Council, entitled Regulation respecting standards of forest management for forests in the public domain, was published in Part 2 of the *Gazette officielle du Québec* of 29 March 1995 with a notice that it could be made by the Government at the expiry of 45 days from that publication;

WHEREAS it is expedient to make the Regulation with amendments;

IT IS ORDERED, therefore, upon the recommendation of the Minister of State for Natural Resources:

THAT the Regulation respecting standards of forest management for forests in the public domain, the text of which is attached to this Order in Council, be made.

MICHEL CARPENTIER,  
*Clerk of the Conseil exécutif*

## Regulation respecting standards of forest management for forests in the public domain

Forest Act  
(R.S.Q., c. F-4.1, s. 171)

### DIVISION I INTERPRETATION

1. In this Regulation,

“accommodation centre” means an establishment lodging people on a commercial basis that can accommodate at least 20 persons per day, built on an area forming a single block; (*centre d’hébergement*)

“all-terrain vehicle trail” means an all-terrain vehicle trail laid out and maintained by any operator, used every year and indicated in the five-year forest management plan; (*sentier de véhicule tout terrain*)

“annual plan” means the plan referred to in section 57 of the Forest Act; (*plan annuel d’intervention*)

“archaeological sector” means a place where archaeological sites are concentrated and the surrounding grounds whose geographical characteristics offer an archaeological potential; (*secteur archéologique*)

“archaeological site” means a place where archaeological property is located that is entered in the register kept by the Ministère de la Culture et des Communications; (*site archéologique*)

“area frequented by caribou south of the 52° parallel” means a territory used by a herd of at least 50 caribou for calving, breeding or winter feeding; (*aire de fréquentation du caribou au sud du 52° parallèle*)

“bear den” means a site used by bears to spend the winter and indicated in the five-year forest management plan; (*tanière d’ours*)

“bed of a watercourse” means a natural depression in the ground free of vegetation or with a predominance of aquatic plants and characterized by signs of waterflow; (*lit d’un cours d’eau*)

“boat access route to trapping grounds” means a route comprising rivers, lakes and portage trails used for access to trapping grounds, identified by a native community, used every year and indicated in the five-year forest management plan; (*parcours d’accès en embarcation aux terrains de piégeage*)

“bridge” means a structure with abutments that crosses an obstacle and without which there would be an interruption in the roadway; (*pont*)

“bridging” means a rigid removable structure that crosses a watercourse, preventing contact between machinery and the water and the bed of the watercourse, enabling water to flow freely; (*pontage*)

“burial site” means a place where the body of a deceased person is interred and that is indicated in the five-year forest management plan; (*site de sépulture*)

“caribou calving area north of the 52° parallel” means a territory frequented by at least 5 caribou cows per square kilometre during the period from 15 May to 1 July; (*aire de mise bas du caribou au nord du 52° parallèle*)

“cliff inhabited by a colony of birds” means a cliff, and a strip of land 100 metres wide measured backwards from the cliff edge, where there are at least 10 seabird nests per 100 metres of frontage; (*falaise habitée par une colonie d'oiseaux*)

“commercial species” means a tree species listed in Schedule 2; (*essence commerciale*)

“complementary vacation site” means a site comprising at least 3 vacation lots where the concentration is at least 1 lot per 0.8 hectare, developed to complete the development of a grouped vacation site located on the shores of a lake where the biophysical characteristics of the environment no longer make it possible to comply with the installation criteria for a grouped vacation site; (*site de villégiature complémentaire*)

“concentrated trail network” means a site developed for recreational purposes and comprising various hiking trails at a density of 2.5 kilometres per square kilometre and a strip of land 30 metres wide surrounding the site; (*réseau dense de randonnées diverses*)

“culvert” means a conduit incorporated into the structure of a road, enabling water to flow freely from one side of the road to the other; (*ponceau*)

“cutting with regeneration and soil protection” means the harvesting of all trees whose usable diameter is at least equal to the diameter determined for each species in the management permit, by taking all the precautions required to avoid damaging the advance growth and by minimizing any disturbance of the soil; (*coupe avec protection de la régénération et des sols*)

“developed canoe-camping course” means a route comprising rivers, lakes and portage trails along the

banks and shores of which there are 2 or more wilderness campgrounds maintained by a government agency, a municipality, the Fédération québécoise de canot-camping or a canoe-camping club recognized by the Fédération, and indicated in the five-year forest management plan; (*parcours aménagé de canot-camping*)

“developed or semi-developed campground” means an area developed for a minimum of 10 campsites, accessible by roads suitable for motor vehicles and offering electricity or running water service for each campsite or group of no more than 20 campsites, and its service areas, such as communal shelters, toilets and parking lots; (*camping aménagé ou semi-aménagé*)

“dock and boat ramp site” means a public site comprising a dock and a ramp for pleasure boats, developed for outdoor activities, and its service areas, such as communal shelters, toilets and parking lots; (*site de quai et rampe de mise à l'eau*)

“downhill skiing site” means a site comprising a downhill ski centre and its service areas, such as communal shelters, toilets and parking lots; (*site de ski alpin*)

“dwelling” means any building intended for occupancy by human beings and provided with a drinking water supply system and a waste water disposal system connected to the ground; (*habitation*)

“ecological or nature interpretation centre” means a site comprising trails developed for the purposes of ecological education or nature interpretation and its service areas, such as communal shelters, toilets and parking lots; (*centre écologique ou d'interprétation de la nature*)

“ecological reserve” means an ecological reserve within the meaning of section 1 of the Ecological Reserves Act (R.S.Q., c. R-26.1); (*réserve écologique*)

“ecological site” means a proposed ecological reserve indicated in the land use plan for the lands in the public domain referred to in sections 21 and 77 of the Act respecting the lands in the public domain (R.S.Q., c. T-8.1) or in the plan referred to in section 4 of the Ecological Reserves Act; (*site écologique*)

“fish” means any fish within the meaning of section 1 of the Act respecting the conservation and development of wildlife (R.S.Q., c. C-61.1); (*poisson*)

“fish habitat” means a lake, a swamp, a marsh, a floodplain delimited by the 2-year mean high-water level or a watercourse frequented by fish; where the limits of a floodplain cannot be established as indicated, they shall correspond to the natural high-water mark; (*habitat du poisson*)

“fish hatchery” means a site comprising infrastructures and installations for the breeding of fish; (*station piscicole*)

“five-year forest management plan” means the plan referred to in section 52 of the Forest Act; (*plan quinquennal d’aménagement forestier*)

“forest and recreation zone” means a forest and recreation zone indicated in the land use plan for the lands in the public domain referred to in sections 21 and 77 of the Act respecting the lands in the public domain; (*zone forestière et récréative*)

“forest management sector” means a part of the forest area measuring a maximum of 250 hectares located within a parcel of the forest management unit and to which the same silvicultural treatment is applied in a given year; (*secteur d’intervention*)

“geotextile membrane” means a geotextile formed by a needlepunch nonwoven manufacturing process, with a minimum tensile strength of 1 000 newtons and an apparent opening size of less than 150 micrometers; (*membrane géotextile*)

“grouped vacation site” means a site comprising at least 5 vacation lots where the concentration is at least 1 lot per 0.8 hectares; (*site de villégiature regroupée*)

“heronry” means a site where at least 5 nests have been used by great blue herons, black-crowned night herons or American egrets during at least 1 of the past 5 nesting seasons, including a strip of land 500 metres wide surrounding the site or, where the lay of the land makes it impossible to extend the strip to 500 metres, a smaller territory; (*héronnière*)

“highway corridor” means a public highway numbered by the Minister of Transport and located in the hardwood forest zone or in the fir and mixed forest zone, described in Schedule 1, or such a public highway located in the spruce forest zone, linking two local municipalities, or such a highway located not more than 50 kilometres from the most densely populated part of a local municipality or an access road to an Indian reserve, to the settlements of Kitcisakik, Hunter’s Point, Pakuashipi, Oujé-Bougoumou and Winneway, to an accommodation centre or a welcome centre in an outfitting operation, a controlled zone or a wildlife sanctuary within the meaning of sections 86, 104 and 111 of the Act respecting the conservation and development of wildlife; (*corridor routier*)

“historic district” means a territory declared as such by the Government under the Cultural Property Act (R.S.Q., c. B-4); (*arrondissement historique*)

“historic site” means a place classified as such under the Cultural Property Act; (*site historique*)

“holder of a management permit” means the holder of a management permit or a third party to whom the permit holder entrusts the performance of the work authorized by the permit; (*titulaire d’un permis d’intervention*)

“ice bridge” means a structure built solely from water and snow and reinforced if necessary by a frame of interconnected logs; (*pont de glace*)

“intermittent watercourse” means a watercourse whose bed dries up periodically; (*cours d’eau à écoulement intermittent*)

“interregional trail or outlying trail of the concentrated networks” means a hiking trail developed for recreational purposes, linking 2 municipalities or 2 regions or linked to a concentrated trail network, excluding a snowmobile trail and an all-terrain vehicle trail; (*parcours interrégional de randonnées diverses ou circuit périphérique des réseaux denses*)

“island or peninsula inhabited by a colony of birds” means an island or a peninsula less than 50 hectares in area where there are at least 25 nests per hectare of colony-dwelling bird species other than herons; (*île ou presque île habitée par une colonie d’oiseaux*)

“mossy black spruce stand” means a black spruce stand whose forest cover density is less than 40 % and that grows on soil more than 40 % covered by moss; (*peissière à épinettes noires et cladonies*)

“muskrat habitat” means a swamp or a pond at least 5 hectares in area inhabited by muskrats; (*habitat du rat musqué*)

“natural district” means a territory declared as such by the Government under the Cultural Property Act; (*arrondissement naturel*)

“natural high-water mark” means the point of transition from a predominance of aquatic vegetation to a predominance of land vegetation; if there is no aquatic vegetation, it means the point beyond which there is no more land vegetation; (*ligne naturelle des hautes eaux*)

“observation area” means a scenic outlook developed for the observation of nature; (*site d’observation*)

“observatory” means a site comprising infrastructures intended for astronomical or meteorological observation and its service areas, such as communal shelters, toilets and parking lots; (*observatoire*)

“outdoor recreation centre” means a site developed for the purposes of outdoor activities and its service areas, such as communal shelters, toilets and parking lots; (*base et centre de plein air*)

“parcel” means a subdivision of the forest management unit that makes it possible to locate, describe or record biophysical characteristics used as a basis for forest management; (*parcelle*)

“public beach” means a site comprising a beach, a strip of land extending 300 metres inland from the shoreline and the facilities necessary for swimming and relaxation; (*plage publique*)

“rest area or picnic ground” means a site developed on the side of a highway corridor for rest purposes and its service areas, such as communal shelters, toilets and parking lots; (*halte routière ou aire de pique-nique*)

“restaurant or accommodation site” means a site that includes a dwelling offering restaurant or accommodation services on a commercial basis, or an area where an establishment has been constructed offering lodging for hunting and fishing activities on a commercial basis; (*site de restauration ou d'hébergement*)

“riparian ecotone” means the transitional area between the water environment and the arborescent vegetation, characterized by the muscinal, herbaceous or shrubby vegetation of wetlands and sometimes including a few scattered trees; (*écotone riverain*)

“salt lick” means the site of a swamp, spring or body of water, including a strip of land 100 metres wide surrounding the site, that is frequented by moose and where mineral salts occur in concentrations greater than 3 parts per million of potassium and greater than 75 parts per million of sodium; (*vasière*)

“salvage cutting following a destructive agent” means the felling or harvesting of trees in a stand that has deteriorated as a result of a natural disaster, such as an insect infestation, a cryptogamic disease, a forest fire or a windfall, in order to salvage the timber which would otherwise be lost and to prevent the propagation of insects or diseases; (*coupe de récupération à la suite d'un agent destructeur*)

“sand pit” means an open-air site where unconsolidated substances such as sand, gravel and soil are extracted from surface deposits; (*sablière*)

“sanitary landfill and in-trench disposal site” means an elimination site within the meaning of paragraph 1 of section 1 of the Regulation respecting solid waste

(R.R.Q., 1981, c. Q-2, r. 14); (*site d'enfouissement sanitaire et de dépôts en tranchées*)

“scenic route” means a highway corridor identified as the principal interregional access road or itinerary proposed on the map of the tourist guide published jointly by the Government and the regional tourism associations; (*circuit panoramique*)

“snowmobile trail” means a snowmobile trail within the meaning of paragraphs *h*, *i* and *j* of section 1 of the Regulation respecting snowmobiles (R.R.Q., 1981, c. C-24, r. 21), used every year and indicated in the five-year forest management plan; (*sentier de motoneige*)

“sojourn area” means an area regularly frequented by natives and located along a boat access route to trapping grounds, at the meeting point of a portage trail and a river or lake, identified by a native community and indicated in the five-year forest management plan; (*aire de séjour*)

“strip cutting with regeneration and soil protection” means cutting with regeneration and soil protection carried out in strips no more than 60 metres wide and leaving an uncut strip at least as wide as the cut strip; (*coupe par bandes avec protection de la régénération et des sols*)

“territorial reference unit” means a common area or a subdivision thereof forming a single block and measuring less than 100 square kilometres in the case of the hardwood forest zone, less than 300 square kilometres in the case of the fir and mixed forest zone and less than 500 square kilometres in the case of the spruce forest zone, those zones being described in Schedule 1 and indicated in the general forest management plan referred to in Chapter III of the Forest Act; (*unité territoriale de référence*)

“watercourse” means any permanent or intermittent watercourse that is situated on lands in the public domain and flows in the bed of a watercourse; (*cours d'eau*);

“waterfowl gathering area” means a site, measuring at least 25 hectares, constituted by a swamp, a floodplain delimited by the 2-year mean high-water level, an intertidal zone, an aquatic plant community or a band of water no more than 1 kilometre wide as measured from the low-water mark, that is frequented by geese or ducks during nesting or migration seasons and where there are at least 50 birds of those species per kilometre measured along a straight line between the 2 most distant points of the shoreline or 1.5 birds per hectare; where the limits of a floodplain cannot be established as indicated, they

shall correspond to the natural high-water mark; (*aire de concentration d'oiseaux aquatiques*)

“water intake” means a site comprising a water intake subject to the Drinking Water Regulation made by Order in Council 1158-84 dated 16 May 1984 and the 60-metre strip of vegetation surrounding it; (*prise d'eau*)

“white-tailed deer yard” means a wooded area measuring at least 250 hectares where white-tailed deer gather during the period when the snow cover exceeds 40 centimetres in the part of the territory south of the St. Lawrence River and west of the rivière Chaudière and 50 centimetres elsewhere; (*aire de confinement du cerf de Virginie*)

“wilderness campground” means a site developed for camping with no running water or electricity service; (*camping rustique*) and

“winter road” means a road the composition of whose roadway limits its use solely to the period during which the ground is frozen to a depth of at least 35 centimetres. (*chemin d'hiver*)

For the purposes of this Regulation, an outdoor recreation centre, a developed or semi-developed campground, a wilderness campground, an ecological or nature interpretation centre, an accommodation centre, a rest area or picnic ground, an interregional trail or outlying trail of the concentrated networks, a public beach, a water intake, a concentrated trail network, a snowmobile trail, an all-terrain vehicle trail, a dock and boat ramp site, a sanitary landfill and in-trench disposal site, an observation area, a restaurant or accommodation site, a downhill skiing site, a grouped vacation site, a complementary vacation site and a fish hatchery are those for which a right has been granted under a statute or regulation of the Government.

## DIVISION II PROTECTION OF SHORES, BANKS, LAKES AND WATERCOURSES

**2.** A holder of a management permit shall preserve a buffer strip 20 metres wide along the banks of a peat bog with a pond, of a swamp, of a marsh, of a lake or of a permanent watercourse, as measured from the line of the stands adjacent to the riparian ecotone.

This section does not apply to any section of the banks of the peat bog located more than 500 metres from a pond, nor to a holder of a management permit for mining activities where he is carrying out mining activities, to a holder of a management permit for a wildlife or recreational development project, to a holder of a man-

agement permit for public utility works, nor in the cases provided for in section 17.

**3.** A holder of a management permit for public utility works who builds a power line or a gas pipeline requiring the deforestation of the buffer strip shall preserve the stumps, shrubs and grass in that strip, or reestablish such vegetation.

**4.** Notwithstanding section 2, a holder of a management permit may harvest trees in a stand located in the buffer strip where the land in that strip has a slope of less than 40 %.

Notwithstanding the foregoing, when harvesting the trees, the permit holder shall not reduce the number of standing live trees per hectare to less than 500 trees of all species having a diameter of 10 centimetres or more, as measured at a height of 1.30 metres above the highest ground level. Cutting with regeneration and soil protection and strip cutting with regeneration and soil protection are nevertheless prohibited in the buffer strip.

Notwithstanding the second paragraph, in the case of the stands of species referred to in Part B of Schedule 2, the intensity of the cutting shall be identical to that in the adjacent management sectors having such forests, without reducing the basal area to less than 14 m<sup>2</sup>/ha.

**5.** Notwithstanding section 2, where a forest camp is set up near a lake or a permanent watercourse, a holder of a management permit may clear no more than 3 visual openings in the buffer strip. None of those visual openings may exceed 10 % of the part of the camp facing the lake or watercourse.

The permit holder shall preserve the stumps, grass and advance growth in those openings.

Within all of those openings, the permit holder may lay out only one road, no wider than 5 metres, leading to the lake or watercourse.

**6.** Notwithstanding section 2, a holder of a management permit for mining activities who lays out an access to a peat bog with a pond, to a swamp, to a marsh, to a lake or to a permanent watercourse in order to carry out mining exploration activities or to install equipment required by such operations or a holder of a management permit who digs a drainage ditch for silvicultural purposes may clear an opening no wider than 5 metres in the buffer strip.

A holder of a management permit for mining activities shall preserve the stumps, grass and advance growth in that opening.

### DIVISION III PROTECTION OF WATER QUALITY

**7.** No person may operate machinery used in a forest management activity in a strip of land 5 metres wide on both sides of a permanent watercourse, except for the construction, improvement or maintenance of a road, the digging of a drainage ditch for silvicultural purposes or the installation or maintenance of infrastructures.

**8.** A holder of a management permit who carries out a forest management activity beside a lake, a watercourse or a fish habitat shall remove any trees or parts of trees that fall into the lake, watercourse or fish habitat during the carrying out of such activity.

**9.** A holder of a management permit who lays out a trail across a watercourse or a fish habitat shall install bridging. At the end of the work, the permit holder shall remove the bridging.

The first paragraph does not apply to a person who lays out an ice bridge, provided that he stabilizes the banks with log mats that are interconnected and are installed across the full width of the trail. Upon completion of the works, he shall leave those mats in place and, if necessary, remove the log frame that was used to reinforce the ice bridge.

**10.** When harvesting trees or using a winter road, a holder of a management permit shall block the runoff from the surface of that road and the water flowing in the ruts of the hauling trails channelling surface water into the hydrographic system, and shall divert that water towards a vegetation area located at least 20 metres from any lake or watercourse, as measured from the natural high-water mark.

**11.** Every person digging a drainage ditch for silvicultural purposes shall construct a settling pond at least 20 metres from the watercourse into which the ditch flows and shall drain that pond where the height of the water above sediments is less than 30 centimetres over at least 50 % of the pond area.

Notwithstanding the foregoing, no person may dig a drainage ditch for silvicultural purposes in a waterfowl gathering area or in a muskrat habitat.

**12.** No person may clean or wash machinery in or within 60 metres of a lake, a watercourse or a fish habitat, nor park or operate machinery on the ground cover referred to in section 18.

### DIVISION IV LAYOUT AND USE OF PILING, LOPPING AND SAWING AREAS

**13.** Subject to section 14, a holder of a management permit may not lay out a piling, lopping or sawing area in a forest along a highway corridor between the buffer strips referred to in paragraph 2 of section 47 or within 20 metres of any lake, watercourse or fish habitat, as measured from the natural high-water mark, nor over more than 25 % of the length of both sides of a road running through stands of species referred to in Part B of Schedule 2.

Where the buffer strips referred to in the first paragraph do not have to be preserved, in accordance with paragraph 2 of section 47 or with section 79, the permit holder may not lay out the area referred to in that paragraph over a width equivalent to four times the width of the roadway, including that roadway and equally distributed on both sides of the centre of the roadway.

The permit holder shall divert runoff from that area towards a vegetation area.

When stripping the soil for piling purposes, the permit holder shall pile up organic matter for later reuse no closer than within 20 metres of any lake or watercourse. After the area is abandoned, he shall respread the organic matter that has been piled up.

Within 2 years after it is abandoned, the permit holder shall ensure that the area is regenerated with commercial species and that the distribution coefficient of such regeneration, established in accordance with section 90, is at least equal to the coefficient existing before the cutting of the species over that area.

The permit holder shall also ensure, within the deadlines indicated in the management manual for the adjacent territory, that that coefficient is maintained.

The fourth and fifth paragraphs do not apply to the piling area of logs harvested by partial cutting.

**14.** In order to launch and float timber, a holder of a management permit may install a piling and sawing area as well as a timber launching structure along a lake or watercourse, in accordance with the following conditions:

(1) the area must be used for more than 3 years;

(2) before using the area, the permit holder must remove organic matter and pile it up for later reuse at a distance of more than 20 metres from the lake or watercourse, as measured from the natural high-water mark;

(3) if the permit holder raises the level of the ground along the watercourse or lake, he must construct a retaining wall;

(4) the permit holder may clear the bank or shore along a maximum length of 300 metres where a single mobile slasher is used, 450 metres where 2 mobile slashers are used and 600 metres where more than 2 mobile slashers are used;

(5) where the permit holder clears the shore or bank for 450 or 600 metres, he must use the mobile slashers concurrently for at least 4 months a year;

(6) the permit holder must pile the waste from sawing operations at a distance of more than 20 metres from the lake or watercourse, as measured from the natural high-water mark;

(7) the permit holder must divert the drainage water from that area towards a vegetation area located at least 20 metres from the lake or watercourse, as measured from the natural high-water mark; and

(8) the permit holder must preserve a buffer strip 30 metres wide between the forest road and the piling and sawing area. Notwithstanding the foregoing, he may harvest trees therein in accordance with section 4.

When the area is abandoned, the permit holder shall clean it of all materials, infrastructures or waste and then respread the organic matter that has been piled up.

Within 2 years after it is abandoned, the permit holder shall ensure that the area is regenerated with commercial species and that the distribution coefficient of such regeneration, established in accordance with section 90, is at least equal to the coefficient existing before the cutting of the species over that area.

The permit holder shall also ensure, 8 years after the area is abandoned, that the coefficient is maintained.

**15.** No person may carry out an activity referred to in section 14 in the following territorial units:

- (1) a caribou calving area north of the 52° parallel;
- (2) a waterfowl gathering area;
- (3) a cliff inhabited by a colony of birds;
- (4) a heronry;
- (5) an island or peninsula inhabited by a colony of birds; and
- (6) a salt lick.

## DIVISION V LOCATION AND CONSTRUCTION OF ROADS

**16.** Every person constructing or improving a road other than a winter road shall respect the natural drainage of the soil by installing a culvert to maintain the normal flow of water. The diameter or span of the pipe of such culvert shall be at least 30 centimetres. The end of the culvert shall extend at least 30 centimetres beyond the base of the fill supporting the road and the fill in that location shall be stabilized at the same time. If the culvert is made of wood, its span may not exceed 1 metre.

**17.** In a waterfowl gathering area, no person may construct a road within 60 metres of a lake or a permanent watercourse or within 30 metres of an intermittent watercourse, as measured between the natural high-water mark and the ditch on the side of the road closer to the watercourse or lake.

In places where the soil is impervious hardpan, the distance referred to in the first paragraph shall be at least four times the number of metres corresponding to the height of the slope of the lakeshore or the bank of the watercourse, with a minimum of 60 metres.

Where the topography or hydrography of the site makes it impossible to respect those distances, those situations shall be specifically approved by the Minister and, in the case of a holder of a management permit, shall be indicated in the annual management plan.

In the situations described in the third paragraph, a written application shall be filed justifying an exemption from the first or second paragraph and indicating the protection measures for the aquatic environment.

The Minister of Natural Resources shall consult the Minister of the Environment and Wildlife where the situations described in the third paragraph require the construction of a road within 20 metres of the lake or watercourse. Construction of a road within 5 metres of a permanent watercourse or a lake requires authorization by the Minister of the Environment and Wildlife.

Where a road is constructed or improved within 60 metres of a lake or a permanent watercourse or within 30 metres of an intermittent watercourse or at a lesser distance than that referred to in the second paragraph in such a way that the road runs alongside the lake or watercourse in accordance with the third paragraph, the slope of the road's embankment on the side closer to the lake or watercourse shall be reduced to a ratio of at least 1.5(H) : 1(V) and, where the erosion of that embankment entails a risk of carrying sediments into a water-



course, a lake or a fish habitat, the slope of that embankment shall be stabilized using the usual techniques, such as those referred to in section 25.

The sixth paragraph of this section does not apply to anyone who stabilizes the embankment referred to in that paragraph with a geotextile membrane and riprap.

Every person shall preserve the ground cover and the stumps within the distances prescribed in the first paragraph, except in a sand pit and on the site of the road to be constructed (including the roadway, the shoulders and the slopes of the road's embankments) and where clearing is required for the road.

In places where the soil is impervious hardpan, every person shall leave the hardpan intact and preserve the humus, except for the place occupied by a road constructed in accordance with the provisions of the second paragraph or when constructing a road crossing a watercourse.

**18.** Every person constructing or improving a road that crosses a watercourse shall preserve the ground cover and the stumps within 20 metres of the watercourse, outside the roadway, the shoulders and the slopes of the road's embankment, as measured from the natural high-water mark.

At that same time, the slope of the road's embankment, between the banks of the watercourse and under the depth of flow for which the embankment was designed, shall be stabilized with a geotextile membrane covered with riprap or a retaining wall.

The slope of the road's embankment not covered by the second paragraph shall be reduced to a ratio of at least 1.5(H) : 1(V), and that embankment shall be stabilized using the usual techniques, such as those referred to in section 25, within 20 metres from the watercourse referred to in the first paragraph and above the watercourse if the road structure includes an embankment.

The third paragraph of this section does not apply to anyone who stabilizes the embankment referred to in that paragraph with a geotextile membrane and riprap.

**19.** Every person constructing or improving a road on land whose slope is greater than 9 %, where the foot of the slope is less than 60 metres from a watercourse or lake, shall divert runoff from ditches at least every 65 metres towards a vegetation area. Where runoff has to be diverted from one side of the road to the other, a culvert shall be installed measuring at least 30 centimetres in diameter or the equivalent in terms of cross-sectional flow area.

At that same time, the slope of the road's embankment shall be reduced to a ratio of at least 1.5(H) : 1(V), and that embankment shall be stabilized using the usual techniques, such as those referred to in section 25.

The second paragraph of this section does not apply to anyone who stabilizes the embankment referred to in that paragraph with a geotextile membrane and riprap.

**20.** When constructing or improving a road, no person may excavate soil over a width greater than 4 times the width of the roadway.

Notwithstanding the foregoing, a person may open or work a sand pit in accordance with sections 21, 22 and 23.

In the stands of species referred to in Part B of Schedule 2, the right-of-way of the road shall be cleared over a width of less than 30 metres, except where a piling, lopping or sawing area is laid out in accordance with section 13.

In all other forest stands that are not covered by the third paragraph and have not reached maturity, the right-of-way of the road may not be cleared over a width greater than four times the width of the roadway.

**21.** Every person working or opening a sand pit while constructing, improving or maintaining a road shall completely clear the required part of the site before using it, remove and pile up the organic matter for later reuse no closer than within 20 metres of a lake, a watercourse or a fish habitat and extract the non-consolidated substances in the part that is the most distant from any lakeshore or the bank of any watercourse.

The person shall divert runoff towards a vegetation area located at least 20 metres from any lake or watercourse, as measured from the natural high-water mark.

After the sand pit is abandoned, the person shall reduce its slopes, clear the surface of the site of debris, waste, machine parts and other litter and then respread the organic matter that has been piled up.

Where the sand pit is located south of the 52° parallel, the person shall, within 2 years after it is abandoned, ensure that the area is regenerated with commercial species and that the distribution coefficient of such regeneration, established in accordance with section 90, is at least equal to the coefficient existing before the cutting of the species over that area.

The person shall also ensure that the coefficient is maintained 8 years after the area is abandoned.

Where the sand pit is located north of the 52° parallel, the person shall ensure that the area is regenerated with species adapted to the site as soon as the pit is abandoned.

The abandonment of a sand pit referred to in this section corresponds to 31 March of the year in which the lease referred to in section 140 of the Mining Act (R.S.Q., c. M-13.1) is not renewed or ceases to be in force.

**22.** In a mossy black spruce stand, no person may work or open a sand pit within 35 metres of a public road numbered by the Minister of Transport, within 60 metres of a lake, a permanent watercourse or a fish habitat, within 100 metres of an ecological reserve or an ecological site, within 150 metres of a dwelling, within 150 metres of a developed or semi-developed campground or within 1 000 metres of a municipal water intake.

The prohibition set forth in the first paragraph in respect of a mossy black spruce stand does not apply to an activity that is subject to an authorization certificate issued subsequently to a decision by the Government under section 31.1 of the Environment Quality Act (R.S.Q., c. Q-2).

For the purposes of the first paragraph, a dwelling shall be located on a lot leased under section 47 of the Act respecting the lands in the public domain, or be erected under section 88 of the Act respecting the conservation and development of wildlife or be located in a wildlife sanctuary within the meaning of section 111 of that Act.

**23.** Notwithstanding section 22, a holder of a management permit may, when constructing, improving or maintaining a road, work and open a sand pit at least 10 metres from the buffer strip referred to in section 2 and at least 30 metres from a fish habitat, provided that the sand pit is not dug lower than the natural high-water mark of the adjacent watercourse or lake.

**24.** When constructing or improving a road, no person may pile up the soil, debris and materials removed in the space between the shoulder of the road and the limits of its right-of-way, nor dump them outside the limits of that right-of-way. In addition, the ground between the ditch and the outer limit of the right-of-way shall be graded.

For the purposes of this section, the right-of-way may cover a maximum width equivalent to 4 times the width of the roadway.

**25.** Every person constructing or improving a road shall stabilize the excavated soil and the embankments

by soil stabilization techniques harmonizing as far as possible with the natural surroundings, taking into account the intended purpose, where the erosion of such road entails a risk of carrying sediments into a watercourse, a lake or a fish habitat. Such stabilization techniques include, in particular, reforestation, restoration of the ground cover, gabions and riprap using a geotextile membrane where required.

**26.** Every person constructing or improving a road that crosses a watercourse or a fish habitat shall construct a bridge or install one or more culverts, ensuring the free passage of water and fish.

The construction of bridges or the installation of culverts shall not reduce the width of the watercourse by more than 20 %, as measured from the natural high-water mark. In the case of culverts, the width ensuring the free flow of water shall correspond to their diameter or their span.

The second paragraph does not apply to a person who makes the calculations referred to in Schedules 3, 4 and 5 to determine which installations are appropriate for crossing the watercourse. In those cases, the installations shall allow the passage of the 10-year instantaneous maximum flow for drainage basins less than 60 square kilometres in area and of the 20-year daily peak flow for drainage basins more than 60 square kilometres in area without reducing the width of the watercourse by more than 50 %.

The 10-year instantaneous maximum flow for basins less than 60 square kilometres in area shall be calculated using the method described in Schedule 3. The 20-year daily peak flow for basins more than 60 square kilometres in area shall be calculated using the method described in Schedule 4.

The required size of culverts shall be determined using the table in Schedule 5, which takes into account the fact that the depth of flow for which the culvert was designed must be equal to or less than 85 % of the vertical clearance available after the culverts are buried. Any shape of culvert other than circular shall have a cross-sectional flow area at least equal to that of the size required according to that Schedule. The roadway shall be at an elevation higher than the depth of flow for which the culvert was designed and the embankment of such road shall be stabilized, during the construction of the road, between its base and that depth of flow as provided for that purpose in section 18.

The construction of bridges or the installation of culverts shall not be allowed to cause erosion in the watercourse. In addition, those works shall be stabilized against any potential risk of erosion.

Any culvert referred to in this section shall have a diameter or span of at least 45 centimetres. The span of a wood culvert shall be less than one metre and its top and sides shall be covered with a geotextile membrane. The height of a wood culvert shall be greater than 80 % of its span.

**27.** Notwithstanding section 26, the holder of a management permit who lays out and uses, during the freezing period, a winter road across a watercourse or a fish habitat may install bridging or lay out an ice bridge. Such bridging shall be seated on log mats installed above the natural high-water mark in order to prevent it from sinking into the ground, thus ensuring that it can be removed before the end of winter. In addition, the ground cover of the banks shall be preserved. If the bridging must be covered with unconsolidated or frost-susceptible material, the permit holder shall first cover it with a geotextile membrane.

At the end of the work, the permit holder shall remove the bridging in order to prevent sediments from being carried into the watercourse and shall leave the mats in place.

Where the permit holder lays out an ice bridge, he shall stabilize the banks with interconnected log mats installed across the full width of the roadway. At the end of the work, he shall leave the mats in place and in the spring shall remove any log frame that was used to reinforce the ice bridge.

**28.** Every person installing a culvert with a bottom in a watercourse or a fish habitat shall ensure that the culvert is installed following the slope of the bed of the watercourse and that the inner wall of its base is located below the natural bed of the watercourse at a depth equivalent to 10 % of the culvert's height, except in locations where the conditions of the soil make it impossible to install it at such a depth.

**29.** Every person installing a culvert with a bottom in a fish habitat shall ensure that the slope of the bed of the fish habitat is less than 1 % if the length of the bridging does not exceed 25 metres and is less than 0.5 % if the length exceeds 25 metres.

Where the slope of the watercourse is in excess of the slope referred to in the first paragraph, mitigation measures such as the installation of culverts with a diameter greater than the diameter calculated using Schedules 3, 4 and 5, the construction of a bridge, the installation of an arch culvert or the placement of deflectors inside the culverts shall be used to ensure the free passage of fish.

This section does not apply to a person who installs a culvert in accordance with the second paragraph of section 26.

**30.** Where a person installs culverts parallel to one another, he shall space the culverts at least 1 metre apart.

It is prohibited to enlarge a watercourse.

**31.** Every person installing a culvert in a watercourse or a fish habitat shall ensure that the end of the culvert extends beyond the base of the fill supporting the road without exceeding 30 centimetres and shall stabilize that fill. Except for rectangular culverts made of reinforced concrete, he shall also backfill above the culvert up to a height equivalent to the diameter or span of the culvert divided by 4 plus 30 centimetres, for culverts with a diameter or span of 600 millimetres or less, or equivalent to the diameter or span of the culvert divided by 4, with a minimum of 60 centimetres for culverts with a diameter or span of 700 to 3 600 millimetres, or at least 1.5 metres for structural plate culverts whose diameter or span is greater than 3 600 millimetres.

**32.** Every person installing a culvert in a watercourse or a fish habitat shall ensure that the bed of the watercourse is stabilized at the intake and at the outlet of the culvert and that the passage of fish is not obstructed.

Where the holder of a management permit, a manager of an outfitting operation, of a controlled zone or of a wildlife sanctuary within the meaning of sections 86, 104 and 111 of the Act respecting the conservation and development of wildlife, or an undertaking that carries out mining activities or public utility works regularly uses a road crossing a watercourse, that person or undertaking shall ensure that the bed of the watercourse is stabilized at the intake and at the outlet of the culvert and that the condition of the culvert allows water to flow freely.

**33.** Every person installing a culvert or constructing a bridge over the watercourse of a developed canoe-camping and downriver canoeing course or of a boat access route to trapping grounds shall ensure that its minimum clearance is at least 1.50 metres above the natural high-water mark.

**34.** Every person installing a culvert in a watercourse or in a fish habitat shall ensure, at the time of installation, that diversion structures, such as channels and dikes, do not obstruct the passage of fish. At the end of the work, the person shall remove the dikes and fill in any channels that were used to divert a watercourse and are no longer in use.

**35.** Where a person constructs a road crossing a lake or a bay within a lake, he shall construct a bridge.

This section does not apply to an activity that is subject to an authorization certificate issued subsequently to a decision by the Government under section 31.1 of the Environment Quality Act.

**36.** Every person constructing or improving a bridge to cross a watercourse or a fish habitat shall ensure, at the time of the work, that diversion structures, such as channels, dikes and caissons, do not obstruct the passage of fish or reduce the width of the watercourse by more than two-thirds, as measured from the natural high-water mark. At the end of the work, he shall remove the dikes and fill in any channels that were used to divert the watercourse and are no longer in use.

**37.** Work in a fish habitat for the installation of a structural plate culvert or for the construction or improvement of a bridge shall not be carried out during the upstream migration of fish.

**38.** Every person constructing or improving a bridge to cross a watercourse or a fish habitat shall stabilize the bed of the watercourse around the bridge's abutments and pillars.

**39.** The construction of a bridge or the installation of a culvert or bridging is prohibited in a spawning area or within 50 metres upstream of a spawning area indicated in the annual management plan.

This section does not apply to an activity that is subject to an authorization certificate issued subsequently to a decision by the Government under section 31.1 of the Environment Quality Act.

**40.** Every person constructing or improving a road that crosses a watercourse or a fish habitat shall ensure that the water in the ditches is diverted outside the right-of-way towards a vegetation area located at least 20 metres from the watercourse, as measured from the natural high-water mark.

#### **DIVISION VI** **FOREST CAMPS**

**41.** A holder of a management permit may not set up a forest camp area in a heronry or within 30 metres of a lake or a permanent watercourse, as measured from the line of the stands adjacent to the riparian ecotone around the lake or along the watercourse.

**42.** A holder of a management permit who sets up a forest camp area shall remove and pile up organic matter

for later reuse no closer than within 20 metres of any lake, watercourse or fish habitat.

When the forest camp area is abandoned, the permit holder shall clean it of all materials, infrastructures and waste and then respread the organic matter that has been piled up.

Where the forest camp area is located south of the 52° parallel, the permit holder shall, within 2 years after it is abandoned, ensure that the area is regenerated with commercial species and that the distribution coefficient of such regeneration, established in accordance with section 90, is at least equal to the coefficient existing before the cutting of the species over that area.

The permit holder shall also ensure that the coefficient is maintained 8 years after the area is abandoned.

Where that area is located north of the 52° parallel, the permit holder shall ensure that the area is regenerated with species adapted to the conditions of the area as soon as it is abandoned.

#### **DIVISION VII** **FOREST MANAGEMENT ACTIVITIES IN** **RELATION TO RESOURCES TO BE PROTECTED** **AND CERTAIN TERRITORIAL UNITS**

**43.** A holder of a management permit may not carry out forest management activities in the following territorial units:

- (1) a caribou calving area north of the 52° parallel;
- (2) an outdoor recreation centre;
- (3) a developed or semi-developed campground;
- (4) a wilderness campground;
- (5) an accommodation centre;
- (6) a cliff inhabited by a colony of birds;
- (7) a muskrat habitat;
- (8) a rest area or picnic ground;
- (9) an island or peninsula inhabited by a colony of birds;
- (10) an observatory;
- (11) a public beach;
- (12) an observation area;

- (13) a dock and boat ramp site;
- (14) a restaurant or accommodation site;
- (15) a burial site;
- (16) a downhill skiing site;
- (17) a grouped vacation site;
- (18) a complementary vacation site;
- (19) a proposed site referred to in subparagraphs 2, 3, 5, 11 to 14 and 16 to 18 and indicated in a regional vacation development plan prepared by the Minister;
- (20) a fish hatchery; and
- (21) a salt lick.

This section does not apply to a holder of a management permit for mining activities, except where the purpose of the mining activities is to extract surface mineral substances for the construction of roads.

**44.** A holder of a management permit may not carry out forest management activities on a water intake, on an ecological site or on an archaeological site.

The Minister of Natural Resources may, in respect of an archaeological site, exempt a holder of a management permit from the application of the first paragraph after having obtained the authorization of the Minister of Culture and Communications, who shall evaluate the cultural interest of that site before granting such authorization.

**45.** Where forest management activities are carried out in an archaeological sector, except for archaeological sites to which section 44 applies, a holder of a management permit shall leave the soil intact. He shall harvest trees during the period of the year when the ground is frozen to a depth of at least 35 centimetres, by carrying out cuttings for the purpose of natural regeneration.

The Minister of Natural Resources may exempt a holder of a management permit from the application of the first paragraph after having obtained the authorization of the Minister of Culture and Communications, who shall evaluate the cultural interest of that sector before granting such authorization.

**46.** A holder of a management permit shall preserve a buffer strip 60 metres wide around the following territorial units:

- (1) an outdoor recreation centre;
- (2) a developed or semi-developed campground;
- (3) a wilderness campground;
- (4) an accommodation centre;
- (5) a rest area or picnic ground;
- (6) an observatory;
- (7) an ecological reserve, except where the boundary of the reserve is delimited by a road;
- (8) an ecological site, except where the boundary of the site is delimited by a road;
- (9) an observation area;
- (10) a dock and boat ramp site;
- (11) a restaurant or accommodation site;
- (12) a complementary vacation site;
- (13) a grouped vacation site; and
- (14) a historic site.

**47.** A holder of a management permit shall preserve a buffer strip

- (1) 30 metres wide around a sanitary landfill and in-trench disposal site;
- (2) 30 metres wide on both sides of a road identified as a highway corridor, until regeneration is established in the cutting area adjacent to that buffer strip and has reached an average height of 3 metres;
- (3) 30 metres wide on both sides of an access path to an observation area, an interregional trail or an outlying trail of the concentrated networks specifically deforested for those purposes;
- (4) 20 metres wide on both sides of the portage trails comprised in a developed canoe-camping course specifically deforested for those purposes; and
- (5) 30 metres wide around a burial site.

**48.** A holder of a management permit who carries out forest management activities during the winter shall leave intact a buffer strip 60 metres wide around a bear den. That strip may be harvested outside of winter.

**49.** Where a sojourn area is located in a forest management unit, a holder of a management permit who carries out forest management activities shall leave intact an area 40 metres by 100 metres, including the buffer strip preserved on the shores of a lake or the banks of a watercourse.

**50.** Where a camp erected under section 88 of the Act respecting the conservation and development of wildlife is set up permanently in a forest management unit, a holder of a management permit who carries out forest management activities shall leave intact an area of 4 000 square metres, including the camp area, up to a maximum of 2 camps per area assigned to the holder of exclusive trapping rights. The camps shall be indicated in the five-year forest management plan.

**51.** Where a camp established under the Act respecting hunting and fishing rights in the James Bay and New Québec territories (R.S.Q., c. D-13.1) or any camp used to trap in beaver reserves is set up permanently in a forest management unit, a holder of a management permit who carries out forest management activities shall leave intact an area of 40 000 square metres, including the camp area, up to a maximum of one camp per 100-square-kilometre unit per trapping area, where the camps are identified by a native community and indicated in the five-year forest management plan.

**52.** A holder of a management permit shall leave intact the lands leased under section 47 of the Act respecting the lands in the public domain.

**53.** A holder of a management permit shall preserve a buffer strip 60 metres wide around a refuge established on land in respect of which a right has been issued under the Act respecting the lands in the public domain or under sections 88 and 118 of the Act respecting the conservation and development of wildlife and used as a shelter by users of a concentrated trail network, an interregional trail or an outlying trail of the concentrated networks or by users of a snowmobile trail or an all-terrain vehicle trail.

**54.** Where forest operations are carried out on land adjacent to a buffer strip referred to in sections 46, 47 and 53, a holder of a management permit may harvest trees in that strip in accordance with section 4.

**55.** When harvesting the trees adjacent to a snowmobile trail, an all-terrain vehicle trail or a portage trail of a boat access route to trapping grounds or when harvesting trees in the buffer strip adjacent to a portage trail of a developed canoe-camping course, an interregional trail or an outlying trail of the concentrated networks, a holder of a management permit shall remove any trees or parts

of trees that fall on those trails while forest management activities are being carried out.

**56.** No person may use, for hauling or trucking purposes, a snowmobile trail, an all-terrain vehicle trail, a portage trail of a boat access route to trapping grounds, a portage trail of a developed canoe-camping course or a hiking trail of an interregional trail or an outlying trail of the concentrated networks that has been specifically deforested for those purposes.

**57.** Where forest management activities are carried out on the land adjacent to a snowmobile trail, an all-terrain vehicle trail, a portage trail of a boat access route to trapping grounds, a portage trail of a developed canoe-camping course or a hiking trail of an interregional trail or an outlying trail of the concentrated networks, the holder of a management permit shall restore the trail if it has been damaged during hauling.

In a buffer strip preserved along a highway corridor, a portage trail of a developed canoe-camping course, an interregional trail or an outlying trail of the concentrated networks, a holder of a management permit may not lay out a hauling trail or a road in those strips, unless it is located more than 250 metres from any other hauling trail or road. Deforestation for that purpose may not exceed the width of the hauling trail or the width of the road, including the roadway, the embankments and the ditches.

**58.** A holder of a management permit shall preserve a visual setting along a scenic route and around the following territorial units:

- (1) a historic district;
- (2) a natural district;
- (3) an outdoor recreation centre;
- (4) a developed or semi-developed campground;
- (5) an accommodation centre;
- (6) the most densely populated part of a community;
- (7) a rest area or picnic ground;
- (8) a public beach;
- (9) an observation area;
- (10) a dock and boat ramp site, where that territorial unit includes restaurant and accommodation infrastructures in its service areas;

- (11) a downhill skiing site;
- (12) a complementary vacation site;
- (13) a grouped vacation site; and

(14) a proposed site referred to in subparagraphs 3 to 5 and 8 to 13 and indicated in a regional vacation development plan prepared by the Minister.

The visual setting corresponds to the landscape visible according to the topography of the land up to a distance of 1.5 kilometres from the limit of such sites.

**59.** A holder of a management permit who carries out cutting with regeneration and soil protection in a visual setting referred to in section 58 shall make at least 3 patches whose perimeters follow the lay of the land and shall ensure that the total area of the patches does not cover more than one-third of the area of the visual setting during each third of the cutting cycle of the stands, the purpose of those measures being to preserve the quality of the landscape.

**60.** In an ecological or nature interpretation centre and in a concentrated trail network, no person may use a hiking trail for hauling or trucking purposes.

A holder of a management permit may not carry out cutting with regeneration and soil protection therein over an area greater than 10 hectares forming a single block, and he shall preserve a buffer strip at least 30 metres wide on both sides of the hiking trails.

When carrying out forest management activities therein, the permit holder shall preserve the natural setting around the equipment and infrastructures already in place and remove any trees or parts of trees that fall on a hiking trail while such activities are being carried out, thereby preserving the destination of those territorial units.

**61.** Every person shall leave intact an experimental forest, a forest education centre, a research forest and a forest station referred to in sections 107, 110, 112 and 116 of the Forest Act, unless he is carrying out a silvicultural treatment authorized in accordance with sections 108, 111 and 114 of that Act.

**62.** In a heronry, no person may carry out activities involving

(1) the application of pesticides for the purpose of controlling an insect infestation or a cryptogamic disease; or

(2) the cultivation and operation of a sugar bush for acericultural purposes.

**63.** The site of a heronry and the innermost 200 metres of the 500-metre strip of land surrounding it shall be left intact.

Within the remaining 300 metres, no person may carry out work involving the felling or harvesting of trees, the construction or improvement of roads, the opening and working of a sand pit, preparatory work for forest production purposes, the application of phytocides, pruning or forest drainage between 1 April and 31 July of each year.

Outside the period prescribed in the second paragraph, a road may be constructed or improved, but the roadway of such road may not be wider than 5.5 metres.

**64.** In a heronry and in the innermost 200 metres of the 500-metre strip of land surrounding it, a holder of a management permit may not carry out activities involving the application of phytocides.

**65.** In a waterfowl gathering area, no person may carry out activities involving

(1) the application of pesticides for the purpose of controlling an insect infestation or a cryptogamic disease; or

(2) the application of phytocides.

**66.** A holder of a management permit may not carry out activities involving the felling or harvesting of timber, preparatory work for forest production purposes or pruning in the floodplain of a waterfowl gathering area, except during the period from 16 June to 31 March of each year.

The authorized cut during felling or harvesting activities may not exceed 30 % of the trees over a 10-year period.

**67.** Section 43, paragraphs 2 and 3 of section 47, sections 50, 51, 52, 63 and 66 do not apply to a holder of a management permit for a wildlife or recreational development project.

**68.** In a forest and recreation zone other than that referred to in subparagraph 19 of the first paragraph of section 43, a holder of a management permit may not carry out forest management activities, unless he preserves and restores the forest cover by applying silvicultural treatments.

This section applies on a strip of land of a maximum width of 300 metres where such an area allows the development of vacation sites or on a strip of land of a maximum width of 500 metres where such an area includes a beach.

Such strip of land located around a lake or along a watercourse shall be measured from the natural high-water mark.

**69.** In an area frequented by caribou south of the 52° parallel, a holder of a management permit shall leave the vegetation intact in areas used by caribou for calving, breeding or winter feeding. He may not carry out cutting with regeneration and soil protection over an area greater than 50 hectares forming a single block.

Where the permit holder carries out strip cutting with regeneration and soil protection, the total area of the cut and residual strips may not exceed a maximum of 50 hectares forming a single block.

**70.** In a white-tailed deer yard, a holder of a management permit may not carry out clear cutting with regeneration and soil protection in hardwood and hardwood-dominant mixed stands on an area greater than 25 hectares forming a single block, nor in softwood and softwood-dominant mixed stands on an area greater than 10 hectares forming a single block.

In addition, the vegetation used by white-tailed deer for shelter and food shall be left intact.

This section does not apply to the holder of a management permit for public utility works who installs a power line or a gas pipeline.

**71.** In softwood and softwood-dominant mixed stands within a white-tailed deer yard, a holder of a management permit shall leave intact, between 2 areas of clear cutting with regeneration and soil protection, a buffer strip at least 60 metres wide until the dominant forest cover in those areas has reached an average height of 7 metres.

Where strip cutting with regeneration and soil protection is carried out, the total area of the cut and residual strips may not exceed a maximum of 10 hectares forming a single block.

**72.** When constructing or improving a road within a white-tailed deer yard, a holder of a management permit shall limit deforestation to a width equal to 4 times the width of the roadway, which may not exceed 7.5 metres.

**73.** A holder of a management permit who harvests timber within a white-tailed deer yard shall, in accordance with section 89, leave a space between felling or hauling trails in such a way as to preserve the advance growth of softwood species.

#### **DIVISION VIII** **SIZE AND LOCATION OF CUTTING AREAS AND** **APPLICATION OF SILVICULTURAL TREATMENTS**

**74.** In each of the 3 forest zones described in Schedule 1, the size of a single-block area of cutting with regeneration and soil protection or of the total area of the cut and residual strips of an area of strip cutting with regeneration and soil protection shall

##### **(1) in the hardwood forest zone**

(a) be equal to or less than 25 hectares for at least 70 % of the areas cut using those cutting methods;

(b) be equal to or less than 50 hectares for at least 90 % of the areas cut using those cutting methods; and

(c) be equal to or less than 100 hectares for all areas cut using those cutting methods;

##### **(2) in the fir and mixed forest zone**

(a) be equal to or less than 50 hectares for at least 70 % of the areas cut using those cutting methods;

(b) be equal to or less than 100 hectares for at least 90 % of the areas cut using those cutting methods; and

(c) be equal to or less than 150 hectares for all areas cut using those cutting methods;

##### **(3) in the spruce forest zone**

(a) be equal to or less than 50 hectares for at least 20 % of the areas cut using those cutting methods;

(b) be equal to or less than 100 hectares for at least 70 % of the areas cut using those cutting methods; and

(c) be equal to or less than 150 hectares for all areas cut using those cutting methods.

A single-block cutting area larger than 100 hectares shall be shaped so that its length is equal to or greater than 4 times its average width.

Such distribution of the cutting areas applies annually for all the cuttings referred to in the first paragraph and indicated in the approved annual management plan.



**75.** Until the regeneration of the areas referred to in section 74 is established in those areas in accordance with section 90 and has reached an average height of 3 metres, a holder of a management permit shall preserve, between any 2 such areas, a buffer strip at least

(1) 100 metres wide where one of the areas covers 100 to 150 hectares; or

(2) 60 metres wide where both areas are less than 100 hectares.

The buffer strip referred to in the first paragraph shall be composed of trees, bushes or brushwood more than 3 metres in height and shall serve, in particular, as a visual screen and a corridor for the movement of wildlife.

Where a holder of a management permit carries out cutting referred to in section 74 on the periphery of a salt lick, he shall preserve a buffer strip, in accordance with this section, in such a way that the strip is in contact with the salt lick.

It is prohibited to operate machinery in a buffer strip referred to in the first paragraph, except where provided for in sections 76 and 78.

**76.** Notwithstanding section 75, a holder of a management permit may harvest trees in the buffer strip referred to in that section. However, that buffer strip shall be

(1) at least 125 metres wide where one of the areas covers 100 to 150 hectares; or

(2) at least 75 metres wide where both areas are less than 100 hectares.

Notwithstanding the foregoing, when harvesting trees, the permit holder shall preserve a buffer strip serving as a visual screen and a corridor for the movement of wildlife and he shall not reduce to less than 1 500 trees per hectare the number of standing live trees of commercial species having a diameter of 2 centimetres or more, as measured at 1.30 metres above the highest ground level.

The deforestation of the felling or hauling trails to carry out the tree harvesting referred to in the first paragraph shall not exceed a width 1.5 times the width of the machinery used.

**77.** Where a highway corridor, a lakeshore or the bank of a permanent watercourse is used for the preservation of the buffer strip referred to in section 75 or 76,

the buffer strips preserved on that shore or bank or along that highway corridor in accordance with sections 2 and 47 shall be widened, on the side opposite the side adjoining the road, watercourse or lake, to the width required under section 75 or 76.

**78.** The deforestation required by the construction or improvement of a road across the buffer strip referred to in section 75 or 76 may not exceed a width of 35 metres.

**79.** The provisions of paragraph 2 of section 47 and of sections 74 to 78 do not apply to a holder of a management permit who carries out cutting with regeneration and soil protection or strip cutting with regeneration and soil protection if the permit holder preserves, between 2 cutting areas referred to in this section or between such cutting area and a cutting area referred to in section 74, an area equivalent to the largest cutting area, with forest stands composed of trees, bushes or brushwood at least 3 metres in height, until regeneration of the cut area is established in accordance with section 90 and has reached an average height of 3 metres.

For the purposes of the first paragraph, the size of a single-block area of cutting with regeneration and soil protection or of the total area of the cut and residual strips of an area of strip cutting with regeneration and soil protection shall be less than 50 hectares in the hardwood forest zone, 100 hectares in the fir and mixed forest zone or 150 hectares in the spruce forest zone.

Where a holder of a management permit carries out cutting referred to in the first paragraph on the periphery of a salt lick, the equivalent area preserved in accordance with that paragraph shall be in contact with a part of the salt lick.

**80.** The productive forest area of a territorial reference unit where harvesting is carried out shall always be composed of hardwood, mixed or softwood stands more than 7 metres in height over at least 30 % of that area.

Where the limits of a territorial reference unit are changed following a change in the limits of a common area, the provisions of the first paragraph apply to the new territorial reference unit.

In a territorial reference unit where the stands referred to in the first paragraph cover less than 30 % of the area referred to therein, that paragraph does not apply to the deforestation of a road providing access to another territorial reference unit.

**81.** A holder of a management permit who carries out salvage cutting following a destructive agent within a waterfowl gathering area, a white-tailed deer yard, an

area frequented by caribou south of the 52° parallel or outside the innermost 200 metres surrounding the site of a heronry shall comply with the special forest management plan referred to in section 79 of the Forest Act.

**82.** When constructing or improving a road, constructing a power line, laying out a piling, lopping or sawing area, setting up a forest camp or opening or enlarging a sand pit, a holder of a management permit shall harvest the trees having a diameter equal to or greater than the diameter specified in the forest management permit or in an authorization, as the case may be.

**83.** Where forest management activities are carried out on an island that is part of the lands in the public domain and has an area of less than 250 hectares or in a forest and recreation zone located on an island of 250 hectares or more, a holder of a management permit shall harvest trees in such a way as to preserve everywhere and at all times a forest cover 7 metres or more in height.

**84.** Where forest management activities are carried out in a stand located on an island that is part of the lands in the public domain and has an area of 250 to 500 hectares, a holder of a management permit shall carry out cuttings that are aimed at the natural regeneration of that stand with commercial species.

In such stand, cutting with regeneration and soil protection or the total area of cut and residual strips resulting from strip cutting with regeneration and soil protection is prohibited over an area greater than 30 hectares forming a single block. In addition, the permit holder shall ensure that the total area of the cuts does not cover more than one-third of the forest area of the island during each third of the cutting cycle of the stands.

**85.** A holder of a management permit who carries out partial cutting shall cut the trees covered by the silvicultural treatment. He may not fell or harvest less than 90 % of the basal area of those trees of commercial species nor more than 110 % of that basal area.

In addition, the permit holder shall protect the trees of commercial species, referred to in Part B of Schedule 2, having a diameter of 10 to 22 centimetres, as measured 1.30 metres above the highest ground level.

**86.** A holder of a management permit shall comply with the following standards:

(1) trees shall be cut at a height not exceeding 30 centimetres above the highest ground level, except where snow depth on the ground reaches a height equivalent to a column of water at least 20 centimetres high; in

the latter case, the height of the stumps shall not exceed 60 centimetres; and

(2) inside a forest management sector, the permit holder shall harvest only trees whose diameter is equal to or greater than that authorized in the management permit.

**87.** In a forest management sector, a holder of a management permit shall harvest the trees or parts of trees of the species or groups of species listed in his permit and containing a volume of usable ligneous matter, including previously felled trees, lodged or overturned trees and trees affected by fire, insects or disease.

Where cutting is finished in the forest management sector, the permit holder shall inspect the sector and determine the volume of trees or parts of trees referred to in the first paragraph, including the parts of the stumps exceeding the height referred to in section 86 that are usable but are unharvested.

The volume of usable ligneous matter is the sound volume in a piece of timber up to the point where the diameter of that piece of timber becomes less than the minimum top diameter indicated in the annual management permit.

**88.** Where cutting with regeneration and soil protection or strip cutting with regeneration and soil protection is carried out, a holder of a management permit shall recover, in a forest management sector or in the area that was used for piling, lopping and sawing timber, the volume of usable ligneous matter, as defined in section 87, in excess of an average of 3.5 cubic metres per hectare in each of those areas, within 1 year following the date of expiry of the permit.

Where any other silvicultural treatments are applied, the permit holder shall recover, in a forest management sector or in the area that was used for piling, lopping and sawing timber, the volume of usable ligneous matter in excess of an average of 1 cubic metre per hectare in each of those areas, within 1 year following the date of expiry of the permit.

In a common operation area referred to in section 55 of the Forest Act, the volume of unharvested usable ligneous matter may not exceed an average of 3.5 cubic metres per hectare in the case referred to in the first paragraph and an average of 1 cubic metre per hectare in the case referred to in the second paragraph. Where the volume is greater, permit holders shall recover the usable ligneous matter in accordance with the first or second paragraph, as the case may be.

## DIVISION IX FOREST REGENERATION PROTECTION

**89.** Any cutting without regeneration and soil protection is prohibited.

Where a holder of a management permit carries out, in a forest management sector, cutting with regeneration and soil protection or strip cutting with regeneration and soil protection, the area occupied by the felling and hauling trails shall be less than 33 % of the area of the forest management sector from the coming into force of this Regulation and less than 25 % from 1 April 2001.

**90.** A holder of a management permit shall ensure that the forest management sector where he harvests trees by applying silvicultural treatments is regenerated with commercial species.

No later than 4 years after that harvest, the permit holder shall ensure that such regeneration is being established with at least the same distribution coefficient as the coefficient existing before the cutting of those species.

That coefficient is the ratio, expressed as a percentage, of the number of parcels of land covering that forest management sector that contain at least 1 stump or tree whose diameter at its base is 10 centimetres or more for the commercial species listed in Part A of Schedule 2 and 6 centimetres or more for those listed in Part B of that Schedule.

The parcels of land referred to in the third paragraph are 4 square metres for softwood species in Part A of Schedule 2, 9 square metres for hardwood species in Part A of that Schedule and 25 square metres for the species in Part B of that Schedule.

For the purposes of this section, the size of the parcel is established by taking into account the dominant species before the cutting of the forest management sector.

**91.** Where the space occupied by a holder of a management permit for public utility works is located south of the 52° parallel, the permit holder shall, within 2 years following the date of the end of such use, ensure that the space he occupied is regenerated with commercial species and ensure that the distribution coefficient of such regeneration, established in accordance with section 90, is at least equal to the coefficient existing before the cutting of the species over that area.

The permit holder shall also ensure that the coefficient is maintained 8 years after the area is abandoned.

Where the work is carried out north of the 52° parallel, the permit holder shall ensure that the space occupied for those purposes is regenerated with species adapted to the conditions of that space as soon as it is abandoned.

**92.** A holder of a management permit for mining activities who digs trenches or other excavations for mining exploration activities shall meet the following standards:

(1) before digging trenches or other excavations, the permit holder shall remove organic matter and pile it up for later reuse more than 20 metres from any watercourse or lake, as measured from the natural high-water mark; and

(2) when the trenches or other excavations are abandoned, the permit holder shall fill them in and then respread the organic matter that has been piled up.

**93.** A holder of a management permit may neither fell and harvest trees on soils described as belonging to drainage class 5 or 6 of Division VII of the document entitled "Le reboisement au Québec: Guide-terrain pour le choix des essences résineuses", published by the Ministère de l'Énergie et des Ressources in 1988, nor lay out a winter road on an unwooded peat bog covered by that description, unless they are frozen to a depth of at least 35 centimetres.

**94.** Notwithstanding section 93, a holder of a management permit may intervene in an unwooded peat bog to help a winter road freeze or to fell and harvest the timber on soils referred to in that section where they are not frozen, provided that he uses machinery whose maximum loaded pressure on the ground is

(1) 25 kilopascals, where the soil is described as belonging to drainage class 6 of the document mentioned in section 93; or

(2) 40 kilopascals, where the soil is described as belonging to drainage class 5 mentioned in that document.

This section does not apply to a holder of a management permit for public utility works who builds a dam or a dike or clears submersible ground.

**95.** A holder of a management permit shall leave intact a mossy black spruce stand having an area of 4 hectares or more forming a single block.

This section does not apply to an activity that is subject to an authorization certificate issued subsequently to a decision by the Government under section 31.1 of the Environment Quality Act.

**96.** This Regulation replaces the Regulation respecting standards of forest management for forests in the public domain, made by Order in Council 1627-88 dated

26 October 1988 and amended by Order in Council 911-93 dated 22 June 1993.

**97.** This Regulation comes into force on the fifteenth day following the date of its publication in the *Gazette officielle du Québec*.

## SCHEDULE 1

### Forest zones

#### MAPPING OF THE SPRUCE FOREST ZONE<sup>(1)</sup>

MAP NUMBER	SHEET NUMBER			
	NORTH-WEST	NORTH-EAST	SOUTH-EAST	SOUTH-WEST
22-D	16	15, 16		16
22-E	1, 6 to 16	1, 2, 5 to 16	1, 2, 5 to 16	1, 6 to 11, 13 to 16
22-F	4 to 7, 9 to 16	5, 6, 9 to 16	10 to 16	4, 5, 10 to 16
22-G	12 to 15	12 to 14	13	13
32-A	6, 11 to 14	5, 12, 13	12, 13	11 to 14
32-B	9 to 16	9 to 16	9, 11 to 16	9 to 16
32-C	9, 13 to 16	9, 10, 13 to 16	9, 10, 15, 1	9, 166
32-D		16		
32-E	1 to 16	1 to 16	1, 2, 5 to 16	1, 5 to 16
32-F	1 to 16	1 to 16	1 to 16	1 to 16
32-G	1 to 16	1 to 16	1 to 16	1 to 16
32-H	3 to 7, 9 to 16	3 to 6, 9 to 16	4 to 6, 11 to 16	3 to 6, 10 to 16

<sup>(1)</sup> Sheets covering areas located north of the 50° parallel are part of this zone.

**MAPPING OF THE FIR AND MIXED FOREST ZONE**

MAP NUMBER	SHEET NUMBER			
	NORTH-WEST	NORTH-EAST	SOUTH-EAST	SOUTH-WEST
12-E	1 to 3, 5 to 14	1 to 3, 5 to 14	1 to 3, 5 to 14	1 to 3, 5 to 14
12-F	4, 5	4	4, 5	4, 5
21-E	2, 3, 7, 9, 10, 16	3, 6, 7, 10, 16	4, 6, 7, 10, 11, 16	3, 7, 9, 16
21-K	12, 13	13	13	12, 13
21-L	1, 8, 9, 16	1, 7 to 10, 16	1, 7 to 10	1, 8, 9, 16
21-M	2 to 7, 9 to 16	1 to 7, 9 to 16	1, 3 to 7, 10 to 16	3 to 7, 9 to 16
21-N	3 to 11, 13 to 16	4 to 7, 10 to 16	4 to 7, 10 to 15	3 to 7, 9 to 11, 13 to 16
21-O	14, 15	13 to 15	13, 14	14, 15
22-A	2 to 16	2 to 16	3 to 7, 9 to 16	2 to 16
22-B	1 to 12, 14 to 16	1 to 16	1 to 16	1 to 16
22-C	1 to 16	1 to 16	1 to 16	1 to 16
22-D	1 to 15	1 to 14	1 to 16	1 to 15
22-E	2 to 5	3, 4	3, 4	2 to 5, 12
22-F	1 to 3, 8	1 to 4, 7, 8	1 to 9	1 to 3, 6 to 9
22-G	1, 5, 6, 11,	1, 2, 5, 6, 11	1, 2, 5, 6, 11, 12, 14	1, 2, 5, 6, 11, 12, 14, 15
22-H	2 to 4, 9, 16	2 to 4, 9, 15, 16	2 to 6, 15, 16	1 to 6, 16
31-I	13, 14	13		13
31-J	9, 13 to 16	10, 13 to 16	14 to 16	15, 16
31-K	10, 13 to 16	10, 13 to 16	13 to 15	14 to 16
31-L		16		
31-M	1, 7 to 10, 14 to 16	1, 7 to 11, 13 to 16	1, 7 to 11, 13 to 16	7 to 10, 14 to 16
31-N	1 to 16	1 to 16	1 to 16	1 to 16
31-O	1 to 16	1 to 16	1 to 16	1 to 16
31-P	3 to 16	1, 4 to 16	4 to 6, 8 to 16	3 to 6, 9 to 16
32-A	1 to 5, 7 to 10, 15, 16	1 to 4, 6 to 11, 14 to 16	1 to 11, 14 to 16	1 to 10, 15, 16

MAP NUMBER	SHEET NUMBER			
	NORTH-WEST	NORTH-EAST	SOUTH-EAST	SOUTH-WEST
32-B	1 to 8	1 to 8	1 to 8, 10	1 to 8
32-C	1 to 8, 10 to 12	1 to 8, 11, 12	1 to 8, 11 to 14	1 to 8, 10 to 15
32-D	1 to 3, 6 to 11, 14 to 16	1 to 15	1 to 16	1 to 3, 6 to 11, 14 to 16
32-E			3, 4	2, 3
32-H	1, 2, 8	1, 2, 7, 8	1 to 3, 7 to 10	1, 2, 7 to 9

#### MAPPING OF THE HARDWOOD FOREST ZONE

MAP NUMBER	SHEET NUMBER			
	NORTH-WEST	NORTH-EAST	SOUTH-EAST	SOUTH-WEST
21-E	4 to 6, 10 to 15	4, 5, 11 to 15	5, 12 to 15	4 to 6, 10 to 15
21-L	2 to 7, 10 to 15	2 to 6, 11 to 15	2 to 6, 11 to 15	2 to 7, 10 to 15
21-M	1, 8	8	2, 8, 9	1, 2, 8
21-N	12			12
31-F	8 to 11, 14 to 16	8 to 11, 14 to 16	8 to 11, 14 to 16	8 to 11, 14 to 16
31-G	1, 5, 8 to 16	1, 5, 8 to 16	1, 5, 8 to 16	1, 5, 8 to 16
31-H	1 to 16	1 to 16	1 to 16	1 to 16
31-I	1 to 12, 15, 16	1 to 12, 14 to 16	1 to 16	1 to 12, 14 to 16
31-J	1 to 8, 10 to 12	1 to 9, 11, 12	1 to 13	1 to 14
31-K	1 to 9, 11, 12	1 to 9, 11, 12	1 to 12, 16	1 to 13
31-L	1, 7 to 11, 14 to 16	1, 7 to 11, 14, 15	7 to 11, 14 to 16	7 to 11, 14 to 16
31-M	2, 3, 6, 11	2 to 6, 12	2 to 6, 12	2 to 6, 12
31-P	1, 2	2, 3	1, 2, 3, 7	1, 2, 7, 8

**SCHEDULE 2****Commercial species****PART A**Softwood species

White spruce  
Black spruce  
Red spruce  
Norway spruce  
Tamarack  
Jack pine  
Canadian hemlock  
Fir  
White cedar

Hardwood species

White birch  
Balsam poplar  
Big-toothed aspen  
Trembling aspen  
Other poplars

**PART B**Softwood species

White pine  
Red pine

Hardwood species

Swamp white oak  
White oak  
Red oak  
Burr oak  
Yellow birch  
Black cherry  
Silver maple  
Sugar maple  
Red maple  
Black maple  
Ash  
American beech  
Walnut  
Hickory  
American elm  
Slippery elm  
Ironwood  
Basswood

**SCHEDULE 3****Peak flow calculation method for drainage basins whose area is equal to or less than 60 km<sup>2</sup>**

The so-called rational method is used to calculate the 10-year interval peak flow. The method was validated for drainage basins whose area is less than 25 km<sup>2</sup>. Thus, where the area of the drainage basin covers between 25 and 60 km<sup>2</sup>, the result must be validated in the field by looking for signs indicating the water level reached by the floods of previous years or by establishing a relationship with basins that were measured on the same territory or near it. The steps in the calculation are the following:

- 1 - Delimitation of the drainage basin;
- 2 - Calculation of the average slope of the drainage basin;
- 3 - Identification of the use of the territory and of the surface deposits in the drainage basin;
- 4 - Calculation of the total area of the basin, of the proportion of each type of surface deposits per land use type and of the percentage of the basin covered by lakes and bare and semi-bare wetlands;
- 5 - Determination of the watercourse's length and calculation of the "85-10" slope of the watercourse;
- 6 - Calculation of the weighted runoff coefficient of the drainage basin;
- 7 - Calculation of the drainage basin's concentration time;
- 8 - Determination of rainfall intensity;
- 9 - Calculation of the correction coefficient for rainfall intensity;
- 10 - Determination of the reduction coefficient for peak flow;
- 11 - Calculation of the 10-year interval peak flow.

**Explanation of the steps to be followed with an example:****1 - Delimitation of the drainage basin**

The drainage basin that supplies the watercourse with water at the crossing point is delimited using a topographic map at a scale of 1: 20 000. Figure 1 shows, as an example, the delimitation of a drainage basin under study.

**2 - Calculation of the average slope of the drainage basin (S<sub>v</sub>)**

The average slope is calculated using a grid (1 cm X 1 cm) superimposed on the drainage basin. The number of times each horizontal and vertical line of that grid crosses a contour line must be determined. The length of those lines is also recorded. The calculation made to determine the average slope of the drainage basin under study is given in figure 2.

### 3 - Identification of the use of the territory and of the surface deposits in the drainage basin

With the help of the surface deposit maps, the forest maps and a knowledge of the territory, the use of the lands comprised within the drainage basin must be identified. They may be woodlands, pasturelands or croplands. Then the surface deposits for each land use type must be identified. Bare and semi-bare wetlands must also be located.

Figure 3 identifies the surface deposits and locates the bare and semi-bare wetlands in the drainage basin under study, which is completely wooded.

### 4 - Calculation of the total area of the basin, of the proportion of each type of surface deposits per land use type and of the percentage of the basin covered by lakes and bare and semi-bare wetlands

In the case of the basin under study, according to figure 3, the results are the following:

Land use type	Identification	Area (ha)	Proportion
Wooded	1A	238	57 %
Wooded	1AR	127	31 %
Wooded	2BE	19	5 %
—	Lakes and bare and semi-bare wetlands	30	7 %
—	Total area	414	100 %

### 5 - Determination of the watercourse's length (L<sub>c</sub>) and calculation of the "85-10" slope of the watercourse (S<sub>c</sub>)

The length of the watercourse is measured from the crossing point, following the course of the main watercourse extended to the watershed divide, that is, to the most distant point in the drainage basin determining the longest route a drop of water must travel to reach the crossing point.

The "85-10" slope of the watercourse is defined as the average slope of the section of the watercourse between 2 points located respectively 10 % upstream from the crossing point and 15 % downstream from the farthest limit of the drainage basin.

Figure 4 locates the line determining the length of the watercourse (L<sub>c</sub>) and figure 5 shows the calculation method for the "85-10" slope of the watercourse (S<sub>c</sub>) for the drainage basin under study.

### 6 - Calculation of the weighted runoff coefficient of the drainage basin (C<sub>p</sub>)

Firstly, using table 1, the various types of surface deposits in the drainage basin are classified on a hydrological basis.

**Table 1**

#### Hydrological classification of surface deposits

Type of deposits (designation)	Hydrological classification
IBF, IBP, 2A, 2AE 2AK, 2B, 2BD, 2BE 4GS, 5S, 6, 8E, 8F 9	AB
1A, 1AR, 1B, 1BD 1BC, 3, 8C 8A 8AR	B
4, 8G	BC
1AA, 4GA, 5A R (sedimentary rock <sup>1</sup> )	C
R (crystalline rock <sup>2</sup> )	CD

<sup>1</sup> Sedimentary rock: rock that forms most of the Appalachians and the St. Lawrence lowlands.

<sup>2</sup> Crystalline rock: igneous or metamorphic rock, sometimes intrusive, that forms the Canadian Shield.

NOTE: Type 7 deposits are classified as bare and semi-bare wetlands.

When the hydrological classification of surface deposits is completed, the runoff coefficient for each type of deposit is determined using table 2 based on land use and the average slope of the drainage basin.



TABLE 2

RUNOFF COEFFICIENTS (C)						
LAND USE TYPE	AVERAGE SLOPE OF DRAINAGE BASIN (S <sub>b</sub> )	HYDROLOGICAL CLASSIFICATION OF SURFACE DEPOSITS				
		AB	B	BC	C	CD
Croplands	< 3 %	0.30	0.36	0.41	0.47	0.51
	3 % to 8 %	0.34	0.43	0.51	0.59	0.67
	> 8 %	0.43	0.51	0.61	0.67	0.73
Pasturelands	< 3 %	0.12	0.17	0.25	0.34	0.43
	3 % to 8 %	0.17	0.25	0.33	0.43	0.51
	> 8 %	0.22	0.39	0.47	0.56	0.64
Woodlands	< 3 %	0.09	0.15	0.21	0.29	0.37
	3 % to 8 %	0.12	0.19	0.26	0.34	0.43
	> 8 %	0.18	0.26	0.34	0.43	0.51
—	Lakes and bare and semi-bare wetlands			0.05		

Then the weighted runoff coefficient for the drainage basin may be calculated (C<sub>p</sub>). In the case of the basin under study, the data and calculations are the following:

Land use type	Identification	Proportion of basin	Hydrological classification	Slope of basin (S <sub>b</sub> )	Runoff coefficient (C)
Woodlands	1A	57 %	B		0.26
Woodlands	1AR	31 %	B	> 8 %	0.26
Woodlands	2BE	5 %	AB		0.18
—	Lakes and bare and semi-bare wetlands	7 %	—	—	0.05

$$\begin{aligned}
 \text{Weighted runoff coefficient (C}_p\text{)} &= (57 \% \times 0.26) \\
 &+ (31 \% \times 0.26) \\
 &+ (5 \% \times 0.18) \\
 &+ (7 \% \times 0.05) \\
 &= 0.24
 \end{aligned}$$

### 7 - Calculation of the drainage basin's concentration time ( $t_c$ )

The concentration time of the drainage basin is determined using one of the following 2 formulas:

If  $C_p < 0.40$

$$t_c = \frac{3.26 (1.1 - C_p) L_c^{0.5}}{S_c^{0.33}}$$

where  $t_c$  : concentration time (minutes)  
 $C_p$  : weighted runoff coefficient for the basin  
 $L_c$  : length of the watercourse (m)  
 $S_c$  : "85-10" slope of the watercourse (%)

if  $C_p \leq 0.20$ ,  $S_c$  minimum to be used = 0.1 %  
 if  $0.20 < C_p < 0.40$ ,  $S_c$  minimum to be used = 0.5 %

$T_c$  minimum = 10 minutes

If  $C_p \geq 0.40$

$$t_c = \frac{0.057 L_c}{S_c^{0.2} A_b^{0.1}}$$

where  $t_c$  : concentration time (minutes)  
 $L_c$  : length of the watercourse (m)  
 $S_c$  : "85-10" slope of the watercourse (%)  
 $A_b$  : area of the drainage basin (ha)

$T_c$  minimum = 10 minutes

In the case of the basin under study, the  $C_p$  is equal to 0.24. Consequently, the first formula must be used.

$$t_c = \frac{3.26 (1.1 - 0.24) 3600^{0.5}}{1.9^{0.33}} = 136 \text{ minutes}$$

### 8 - Determination of rainfall intensity (I)

Rainfall intensity is determined using figures 6 and 7. In figure 6, average total rainfall of a 1-hour duration for the basin under study is indicated by the contour line closest to that basin. Figure 7 indicates the standard deviation for the total rainfall of a 1-hour duration.

The rainfall intensity applicable to the drainage basin is determined as follows:

$I$  = average total rainfall of a 1-hour duration + (1.305 X standard deviation for total rainfall of a 1-hour duration)

In our example, which is located on sheet 21M/6 N.E., the average is 22 mm/hour and the standard deviation

is 8 mm/hour. The rainfall intensity applicable to that drainage basin is therefore 32.4 mm/hour, that is,  $22 + (1.305 \times 8)$ .

### 9- Calculation of the correction coefficient for rainfall intensity ( $F_i$ )

Depending on the concentration time of the drainage basin, the correction coefficient for rainfall intensity is calculated using one of the following 2 formulas:

$$F_i = \frac{12.25}{t_c^{0.612}} \text{ for } 10 \text{ minutes} \leq t_c < 60 \text{ minutes}$$

$$F_i = \frac{17.07}{t_c^{0.693}} \text{ for } t_c \geq 60 \text{ minutes}$$

where  $t_c$ : concentration time (minutes)

In the case of the basin under study, the second formula must be used ( $t_c = 136$  minutes).

$$F_i = \frac{17.07}{136^{0.693}} = 0.567$$

### 10 - Determination of the reduction coefficient for the peak flow ( $F_L$ )

The retention zones such as lakes and bare and semi-bare wetlands entail a significant reduction in the peak flow. The reduction coefficient for peak flow is evaluated using the proportion of lakes and bare and semi-bare wetlands calculated at step 4 and figure 8. In the case of the basin under study, that coefficient is 0.69 (curve B, 7 % covered by lakes and bare and semi-bare wetlands).

### 11- Calculation of the 10-year interval peak flow ( $Q_{10}$ )

That flow is calculated using the following formula:

$$Q_{10}(\text{m}^3/\text{s}) = \frac{C_p F_i I A_b F_L}{360}$$

where

$C_p$  = Weighted runoff coefficient for the drainage basin  
 $F_i$  = Correction coefficient for rainfall intensity  
 $I$  = Rainfall intensity (mm/hour)  
 $A_b$  = Area of the drainage basin (ha)  
 $F_L$  = Reduction coefficient for peak flow

For the basin under study,  $Q_{10} = \frac{0.24 \times 0.567 \times 32.4 \times 414 \times 0.69}{360}$

$$Q_{10} = 3.5 \text{ m}^3/\text{s}$$

**Figure 1**

**Delimitation of a drainage basin at  
the crossing point of a watercourse**

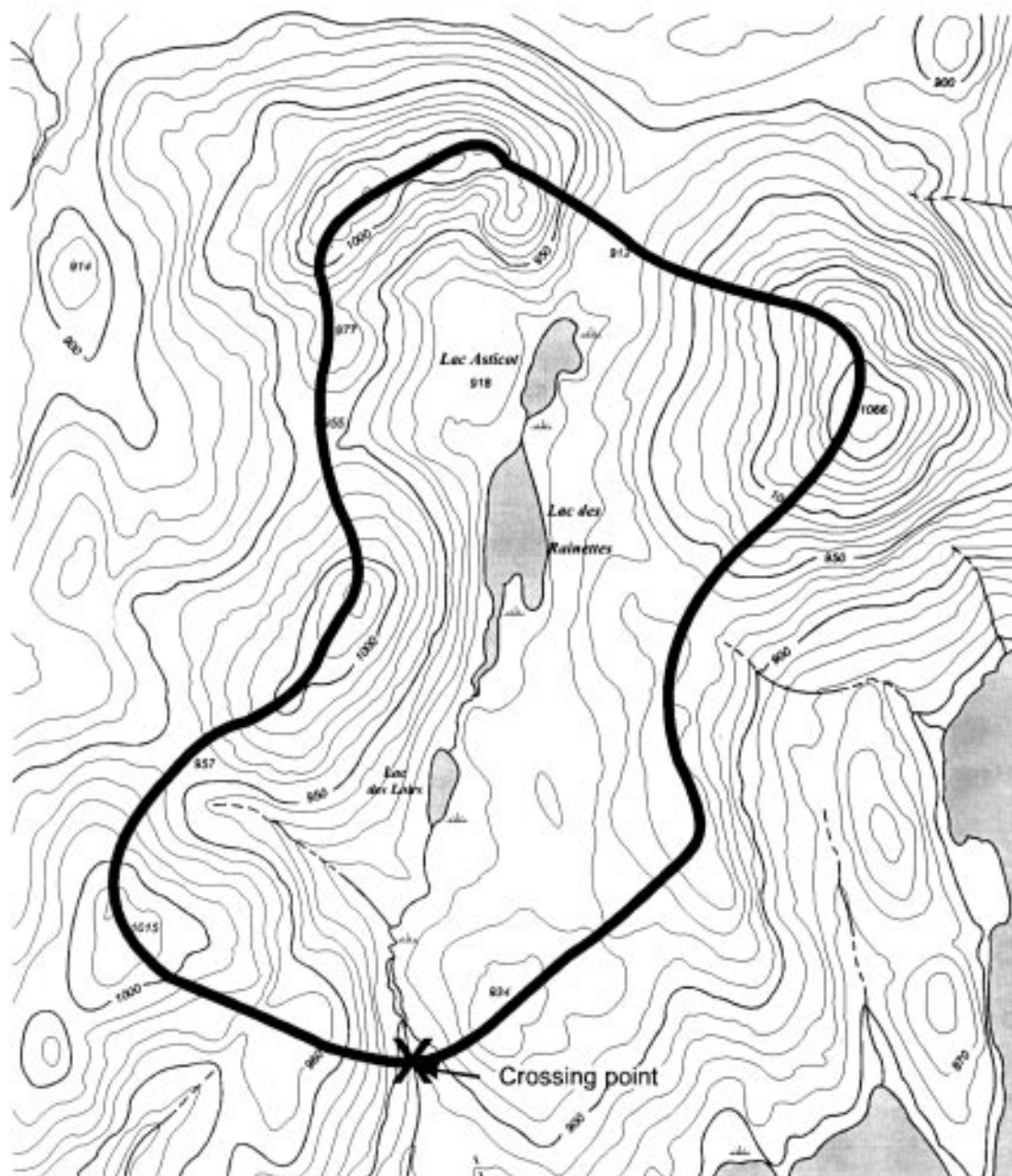
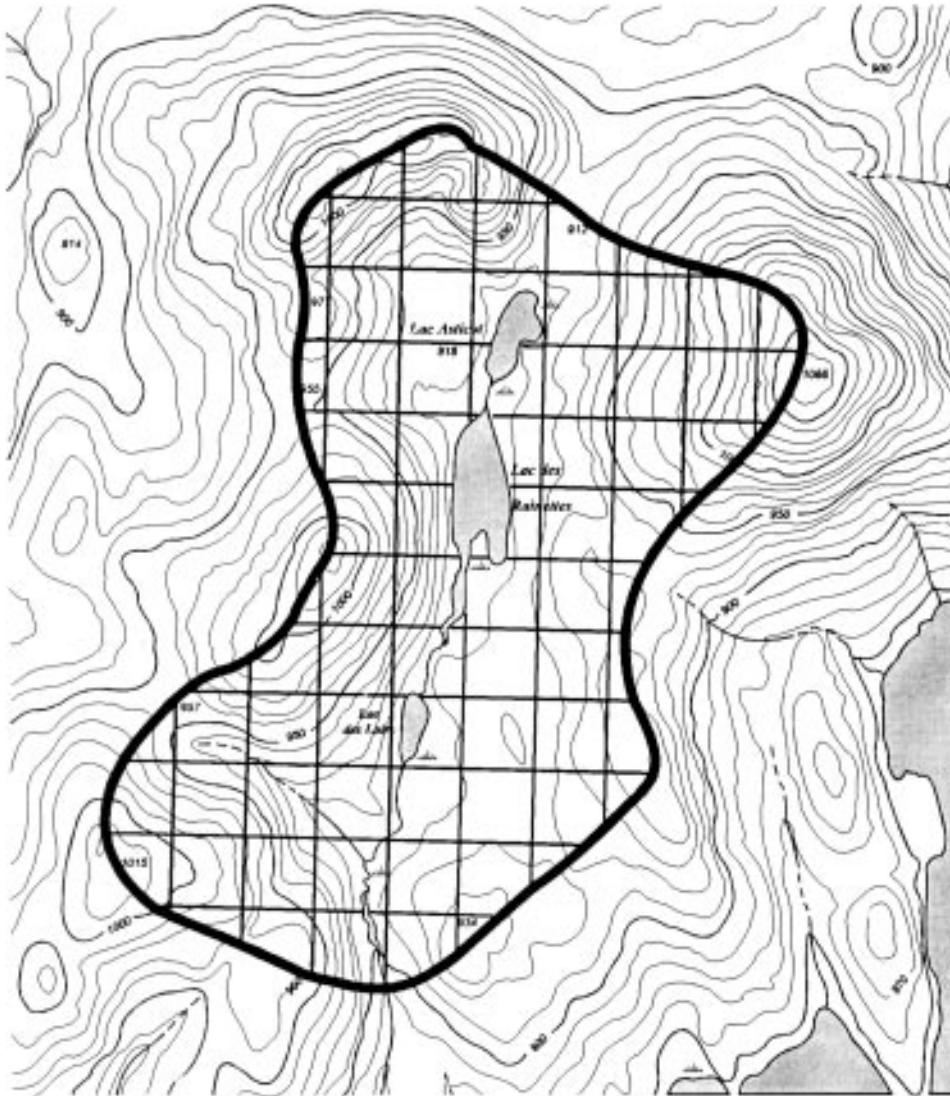


Figure 2

Calculation of the average slope of the drainage basin ( $S_b$ )

$$S_b = \frac{(N_h + N_v) \times E_q}{(L_h + L_v)}$$

- $S_b$  : Average slope of the drainage basin  
 $N_h$  : Number of times the horizontal and vertical lines cross a contour line  
 $E_q$  : Equidistance of contour lines (m)  
 $L_h$  : Length of horizontal and vertical lines (m)

$$S_b = \frac{(180 + 111) \times 10}{(16\,460 + 16\,410)} = 0,089 \text{ or } 8,9\%$$

**Figure 3****Identification of surface deposits in the drainage basin**

**Figure 4**

**Determination of the watercourse's length ( $L_c$ )**

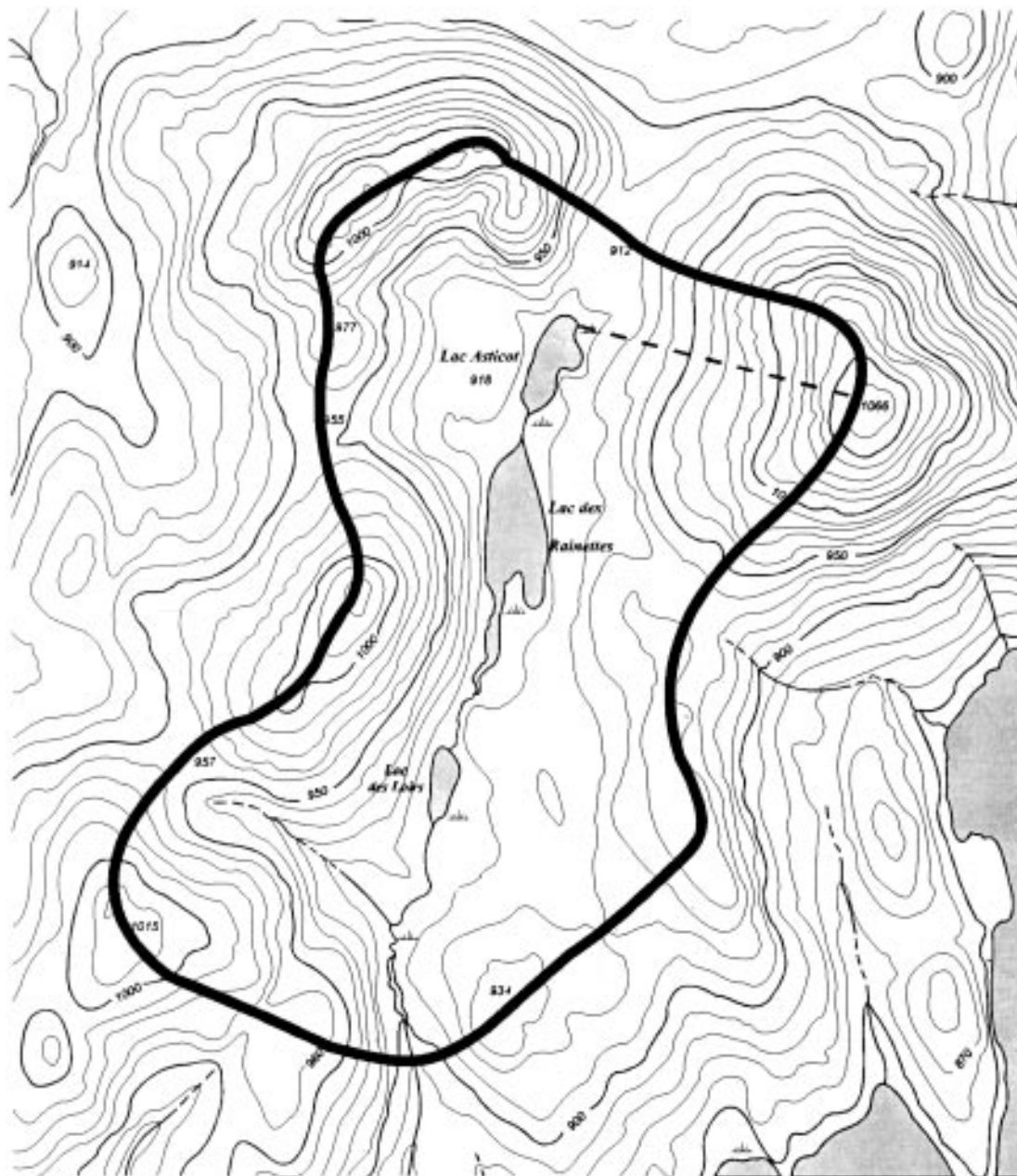
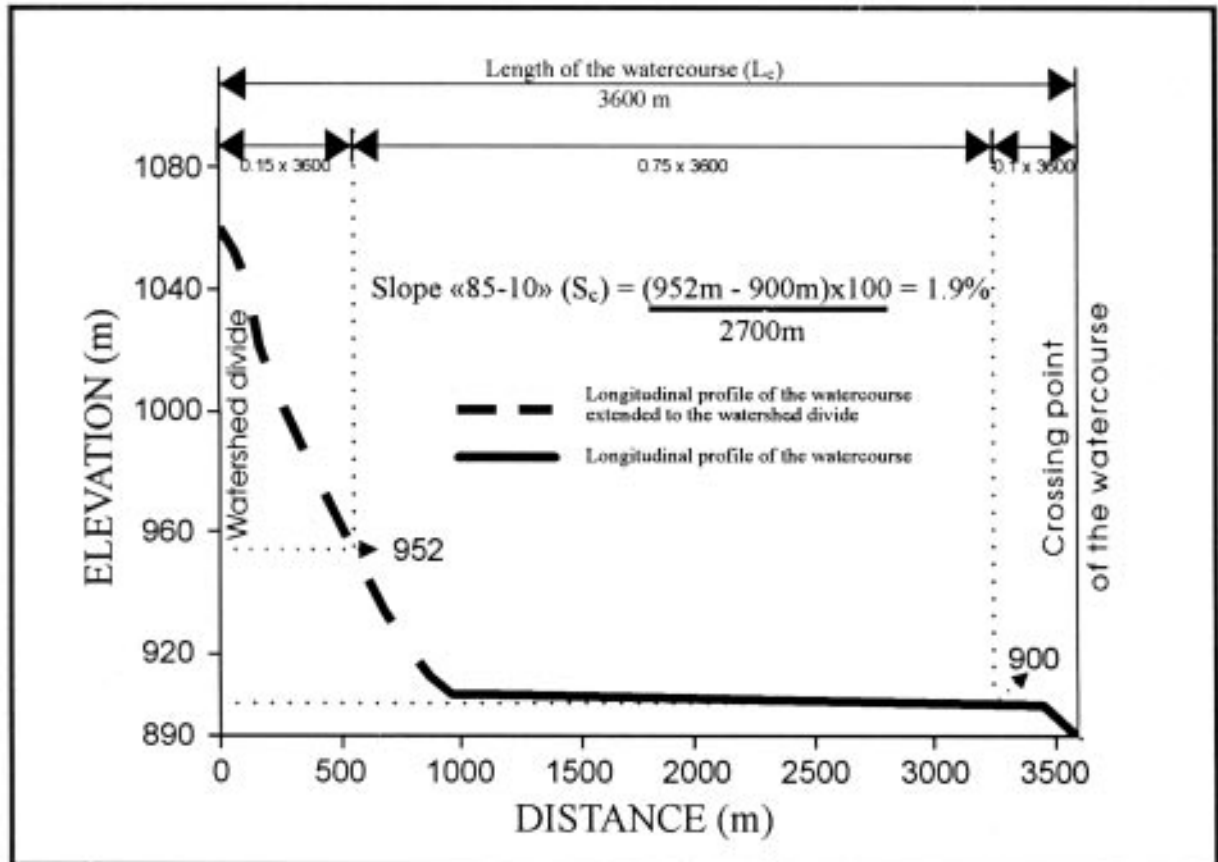
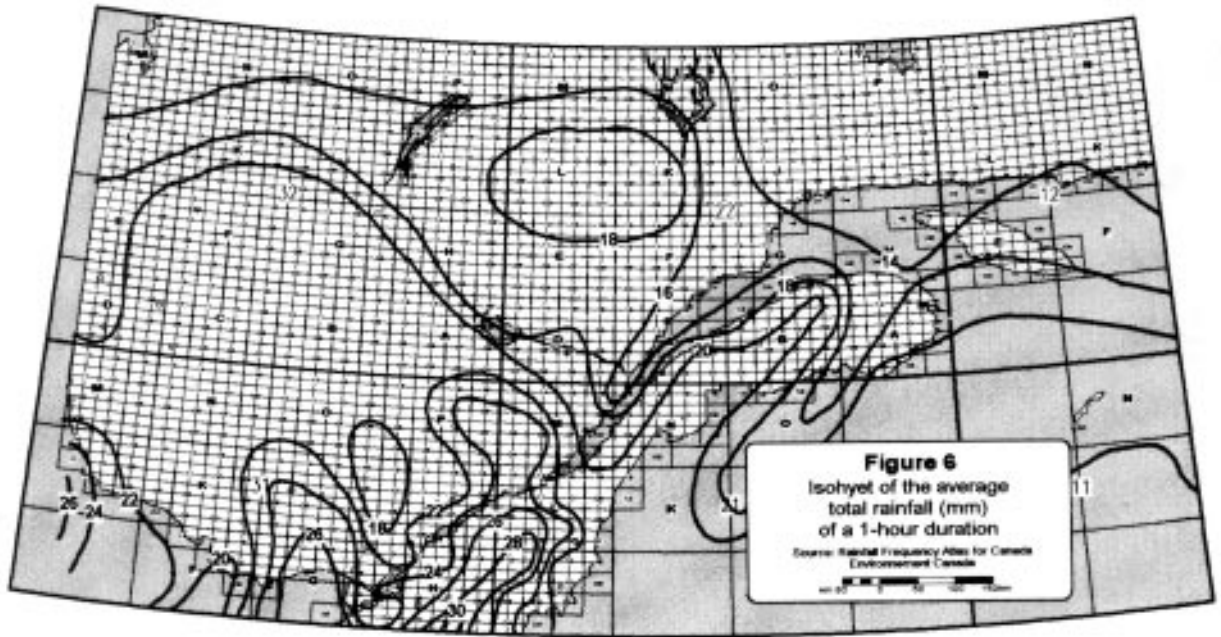


Figure 5

Calculation of the «85-10» slope of the watercourse ( $S_c$ )





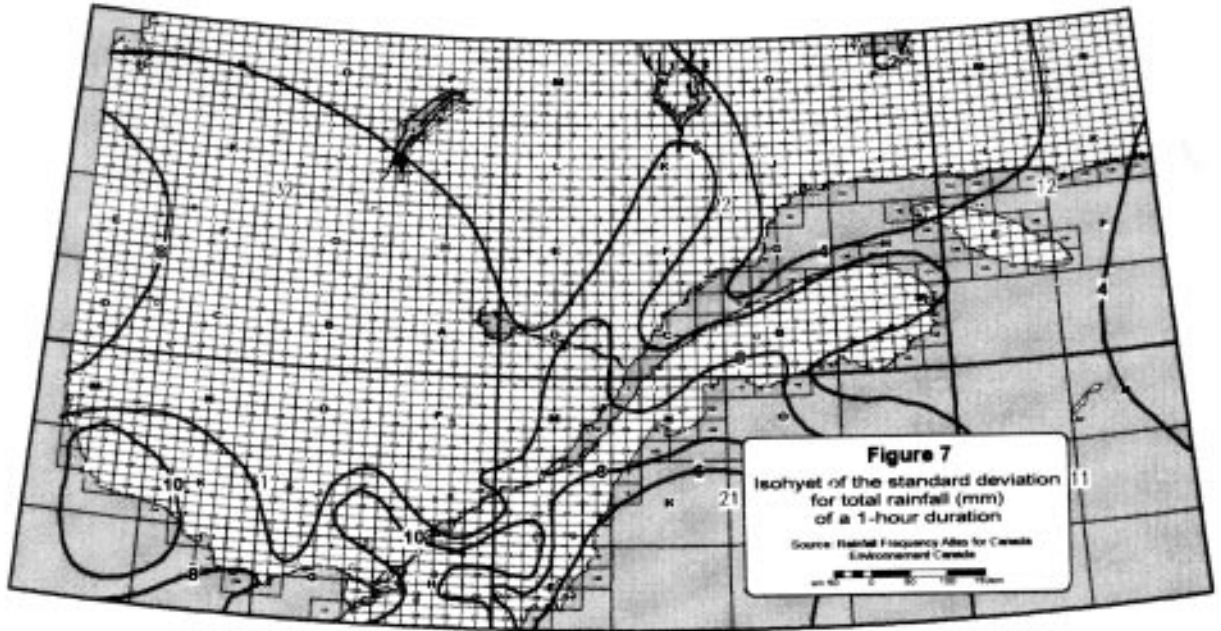
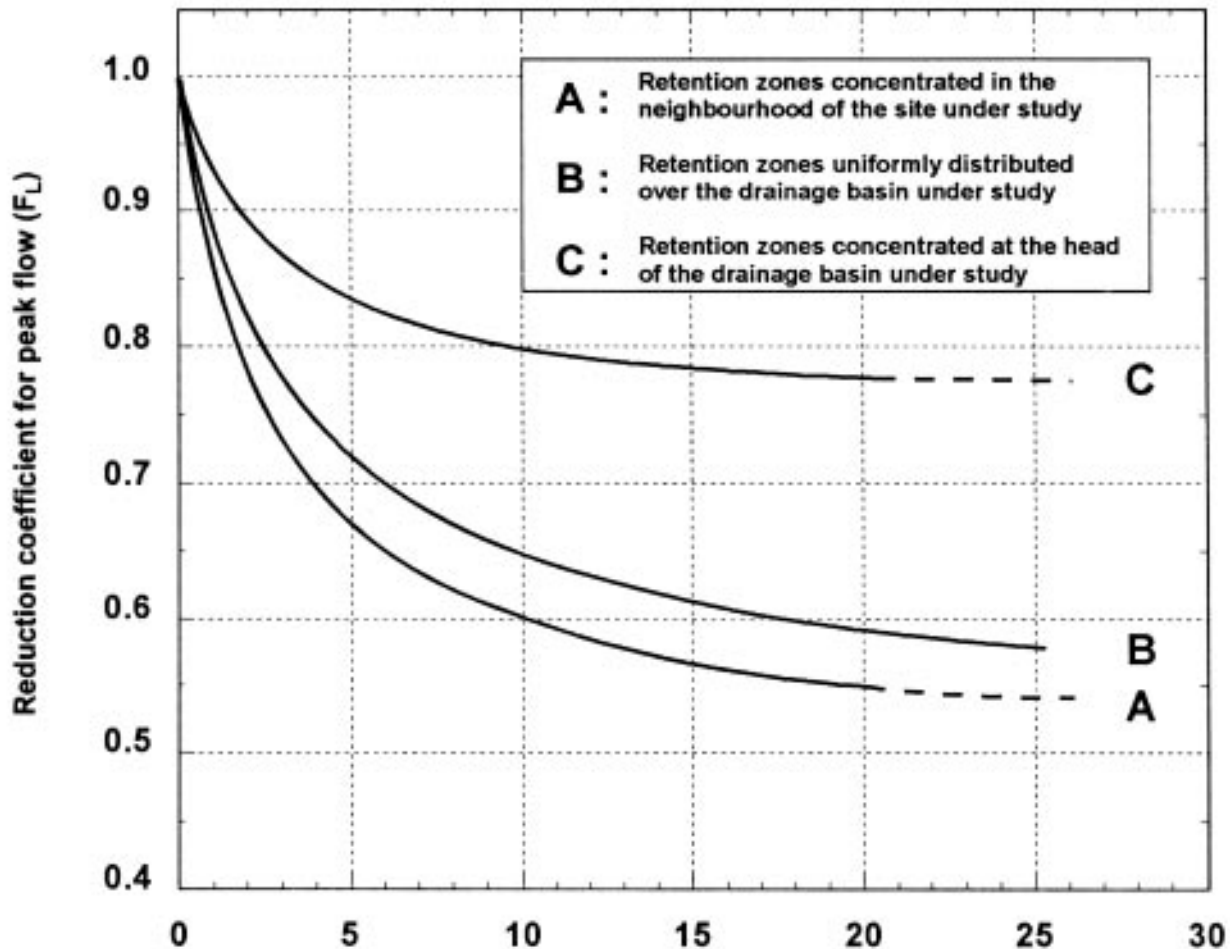


Figure 8

## ROUTING EFFECT OF LAKES AND BARE AND SEMI-BARE WETLANDS



Percentage of the area of the drainage basin covered by lakes and bare and semi-bare wetlands

Source : Manuel de conception des ponceaux, MTQ

## SCHEDULE 4

### Calculation method for the peak flow of a drainage basin of an area greater than 60 km<sup>2</sup>

The HP-40 statistical method developed by the Ministère de l'Environnement et de la Faune is used to calculate the 20-year interval maximum daily flow. The method was validated for drainage basins whose area is greater than 150 km<sup>2</sup>. Thus, where the area of the basin covers between 60 and 150 km<sup>2</sup>, the result must be validated in the field by looking for signs indicating the water level reached by the floods of previous years or by establishing a relationship with basins that were measured on the same territory or near it. The steps in the calculation are the following:

- 1- Delimitation of the drainage basin with a topographic map at a scale of 1:20 000;
- 2- Calculation of the drainage basin's area;
- 3- Calculation of the "85-10" slope of the watercourse;
- 4- Calculation of the proportion of the basin covered by lakes and bare and semi-bare wetlands;
- 5- Calculation of the 20-year interval maximum daily flow.

The delimitation of a drainage basin is shown as an example in step 1 of Schedule 3. The calculation method for the "85-10" slope of the watercourse is the same as that used for drainage basins of 60 km<sup>2</sup> or less (Schedule 3 - step 5). The 20-year interval maximum daily flow ( $Q_{1,20}$ ) is determined using the following formula:

$$Q_{1,20}(\text{m}^3/\text{s}) = \frac{0.7882 (A_b/100)^{93} (S_c)^{30}}{(S_T)^{24}}$$

where  $A_b$  = area of the drainage basin (ha)  
 $S_c$  = "85-10" slope of the watercourse (%)  
 $S_T$  = percentage of the area of the drainage basin covered by lakes and bare and semi-bare wetlands (%)

#### Example

$$\begin{aligned} A_b &= 75 \text{ km}^2 & Q_{1,20} &= \frac{0.7882 (75)^{93} (1)^{30}}{(5)^{24}} = 29.7 \text{ m}^3/\text{s} \\ S_c &= 1 \% \\ S_T &= 5 \% \end{aligned}$$

## SCHEDULE 5

### Culvert size

The table below indicates, in the case of a control at the intake, the diameter of the culvert to be installed based on the peak flow calculated ( $Q_{10}$  or  $Q_{1,20}$ ) and the type of intake. The culvert diameters indicated in this table are designed to prevent the calculated peak flow from exceeding 85 % of the vertical clearance of the pipe after burial to a depth equivalent to 10 % of its clearance.

**Diameter required for corrugated metal or thermoplastic round pipes according to the peak flow and the type of intake.**

Type of pipe	Q <sub>20</sub> ou Q <sub>1,20</sub> Class of flow (m <sup>3</sup> /s)		Required culvert diameter (mm)
	Type of intake*		
	Projection	Bevelled or straight	
Round	0 - 0.11	0 - 0.12	450
	0.12 - 0.14	0.13 - 0.16	500
	0.15 - 0.23	0.17 - 0.25	600
	0.24 - 0.33	0.26 - 0.37	700
	0.34 - 0.46	0.38 - 0.51	800
	0.47 - 0.64	0.52 - 0.70	900
	0.65 - 0.81	0.71 - 0.90	1000
	0.82 - 1.28	0.91 - 1.41	1200
	1.29 - 1.88	1.42 - 2.08	1400
	1.89 - 2.24	2.09 - 2.47	1500
	2.25 - 2.63	2.48 - 2.90	1600
	2.64 - 3.53	2.91 - 3.90	1800
	3.54 - 4.59	3.91 - 5.07	2000
	4.60 - 5.83	5.08 - 6.44	2200
	5.84 - 7.24	6.45 - 8.00	2400
7.25 - 9.72	8.01 - 10.74	2700	
9.73 - 12.65	10.75 - 13.98	3000	
12.66 - 16.05	13.99 - 17.74	3300	
16.06 - 19.95	17.75 - 22.05	3600	
Structural plate	16.80 - 20.94	18.57 - 23.13	3670
	20.95 - 25.80	23.14 - 28.51	3990
	25.81 - 31.11	28.52 - 34.38	4300
	31.12 - 37.02	34.39 - 40.92	4610
	37.03 - 43.56	40.93 - 48.15	4920
	43.57 - 50.75	48.16 - 56.09	5230
	50.76 - 58.60	56.10 - 64.78	5540
	58.61 - 67.15	64.79 - 74.25	5850
	67.16 - 76.40	74.26 - 84.45	6160
	76.41 - 86.40	84.46 - 95.50	6470
86.41 - 96.03	95.51 - 107.33	6780	

\* TYPE OF INTAKE

