

Manitoba Agriculture and Resource Development

Boreal Wetlands Conservation

CODES OF PRACTICE

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Boreal Wetlands Conservation Codes of Practice

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Developed by Manitoba Agriculture and Resource Development

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- Ducks Unlimited Canada
- Manitoba Wildlife Federation
- Canadian Sphagnum Peat Moss Association
- Manitoba Hydro
- Forest Industry Association of Manitoba
- Manitoba Mining Association
- Thomas Nepinak Consulting

Copies of this publication are available at:

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Photo Credit: Ducks Unlimited Canada

Preface

This guidebook is part of Manitoba Agriculture and Resource Development's Forest Practices Initiative and contributes to the best management practices produced under the Boreal Wetlands Conservation Codes of Practice and the Made-in-Manitoba Climate and Green Plan. It provides direction for developers, resource managers, operators, conservation officers, and auditors conducting or assessing development in or near wetlands in Manitoba's boreal zone.

The Boreal Wetlands Conservation Codes of Practice were developed by the Boreal Wetlands Conservation Codes of Practice Development Committee and the Forest Practices Committee.

The development committee includes members from Manitoba Agriculture and Resource Development, Ducks Unlimited Canada, Manitoba Wildlife Federation, Canadian Sphagnum Peat Moss Association, Manitoba Hydro, Forest Industry Association of Manitoba, Manitoba Mining Association and Thomas Nepinak Consulting.

The recommendations, as much as possible, are:

- measurable
- practical
- based on scientific evidence, traditional knowledge and collective experience
- flexible and applicable in a variety of ecological conditions
- clearly presented for consistent interpretation and application
- supported by technical terminology and definitions

Integrated Resource Management Teams (IRMTs) are regionally-based working groups from several departments and branches of government. IRMTs review proposed projects and receive updates on the status of current projects. IRMTs are also instrumental in determining licence or permit terms and conditions before they are issued, which can include monitoring and decommissioning requirements. IRMT will incorporate the Boreal Wetland Conservation Codes of Practice into permits or licences as conditions of a project's approval.

These codes of practice will be reviewed and updated every five years, or earlier if required.

The Boreal Wetlands Conservation Codes of Practice can be found on the Forestry Branch website of Manitoba Agriculture and Resource Development: www.manitoba.ca/sd/forests_and_lands/forestry/index.html.

The Boreal Wetlands Codes of Practice respect existing Indigenous or treaty rights, as recognized and affirmed by section 35 of the *Constitution Act, 1982*.

The Manitoba government recognizes its duty to consult in a meaningful way with First Nations, Metis communities, and other Indigenous communities when any proposed provincial law, regulation, decision or action may infringe upon or adversely affect the exercise of a treaty or Aboriginal right of that First Nation, Metis or other Indigenous community.

Introduction

Manitoba's boreal zone contains over 22 million hectares of wetlands - that's nearly one-third of the province. These wetlands provide Manitobans with many environmental, social, economic and cultural benefits, including:

- purifying our water
- reducing the effects of flooding and drought
- providing habitat for wildlife
- storing vast amounts of carbon in their soils (between 18.5 and 27.9 billion tonnes).

Many boreal wetlands are characterized by highly connected moving water. Development that impacts this hydrological connectivity will have both upstream and downstream effects on biodiversity and habitat, and their carbon sequestration capacity. Roads and crossings can often have a significant impact on a well-functioning wetland. When a road is built that blocks the natural flow of water through a wetland, it will cause one side to flood and the other to dry out, reducing the benefits the wetland provided. But these impacts can also be managed and controlled.

This is one reason why the Made-in-Manitoba Climate and Green Plan committed to developing best management practices that address how impacts from development on Crown lands can be reduced. The Boreal Wetland Conservation Codes of Practice address how to avoid, minimize and offset impacts to boreal wetlands that result from the development of resource and access roads and crossings. By reducing impacts on Crown lands, the codes of practice will help contribute to a no-net-loss of boreal wetland benefits in Manitoba.

These codes of practice provide certainty for resource developers by providing guidance about where and how to operate within and around boreal wetlands on Crown lands. The general guidelines are:

- **Avoid** boreal wetlands where possible.
- **Minimize** impacts to boreal wetland function where avoidance is not possible.
- **Offset** permanent impacts to boreal wetland function when minimization is not possible or not effective.



The codes of practice will rely on continuous improvement of best management practices to avoid, minimize and offset permanent impacts to boreal wetlands. Best management practices will incorporate the latest science, technology and traditional knowledge. They will be reviewed and updated every five years.

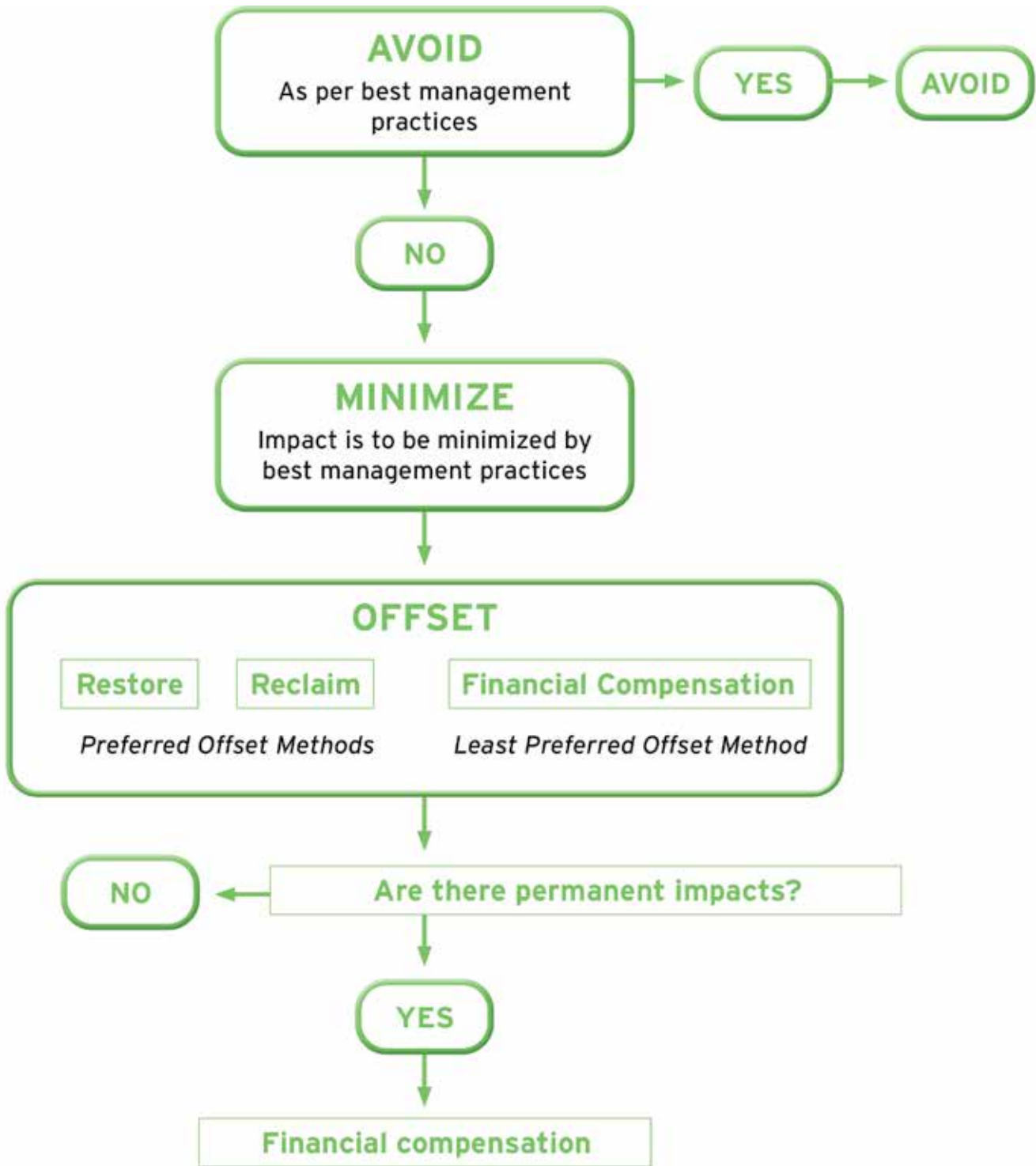


Figure 1 - This flow chart shows how to follow the Boreal Wetland Conservation Codes of Practice.

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Avoidance Best Management Practices

Purpose

The Avoidance Best Management Practices (BMP) provide general guidelines for avoiding impacts to boreal wetlands in Manitoba.

Resource managers are expected to incorporate these practices into the lifecycle of resource and access roads and crossings, from planning to decommissioning. Manitoba's boreal zone contains a wide range of forest types, site conditions, aquatic ecosystems, wetlands and other features. Appropriately designed and located wetland crossings are often required when building resource and access roads and crossings.

Maintaining hydrological connectivity is extremely important. Wetland functions are the natural processes of a wetland, while wetland benefits are those derived from wetland functions, such as ecological goods and services, or other economic and cultural values that result from well-functioning wetlands. By avoiding boreal wetlands when constructing resource and access roads and crossings, wetland functions and benefits can be conserved.

The objectives of Avoidance Best Management Practices are:

- to provide guidance to resource and access road and crossing developers and resource managers to avoid causing impacts to boreal wetlands when planning and constructing resource and access road and crossings
- to maintain a no-net-loss of boreal wetland benefits

Avoiding Boreal Wetlands

Avoidance is the most efficient and effective mitigation strategy and can ultimately lead to no-net-loss of wetland benefits. Developers can choose to avoid boreal wetlands and can instead construct adjacent to these areas.

Avoidance usually involves decisions to stay out of and away from wetlands. However, it is important to note that wetland functions and benefits can still be impaired by activities that occur close to wetlands. In these situations, buffer guidelines will be established by Manitoba Agriculture and Resource Development. The guidelines will be based on factors that include the risk of potential impacts, and the wetland functions and benefits that may be impacted. *Forest Management Guidelines for Riparian Management Areas* (2009) recommend buffer distances of 30 to 100 metres. Project-specific buffer distances should be discussed with regionally-based Integrated Resource Management Teams (IRMTs). For more information on buffer guidelines, see: www.manitoba.ca/sd/forestry/pdf/practices/riparian_mgmt_re_sept2009.pdf

Identifying Boreal Wetlands

When planning to develop resource and access roads and crossings, the first step is to identify where boreal wetlands are located. Maps, provincial datasets or inventories should be consulted during the planning process. The following is a list of potential sources to help identify boreal wetlands:

Dataset	Description	Location
Forestry Resource Inventory (FRI) / Forest Lands Inventory (FLI)	Inventory of forest attributes, including wetlands and non-productive forest classes.	Manitoba Land Initiative (MLI): http://mli2.gov.mb.ca/
Ontario Land Cover Classification for UTM 15	Land cover classes consist of vegetation types (e.g., forest, wetlands and agricultural crops or pasture) and categories of non-vegetated surface (e.g., water bodies, bedrock outcrops or settlements).	Ontario Land Cover Data Base: www.ontario.ca/data/provincial-land-cover
Manitoba Heritage Habitat Corporation (MHHC) Wetland Classification	The classification consists of Canadian Wetland Inventory (CWI) classes (e.g., bog, fen, marsh, swamp, shallow/open water) and wetland condition (e.g., no impact, constructed, farmed, partially drained, completely drained and partly filled).	Manitoba Land Initiative (MLI): http://mli2.gov.mb.ca/
Aerial Imagery	Orthophotography for various regions of Manitoba; not contiguous in coverage.	Manitoba Land Initiative (MLI): http://mli2.gov.mb.ca/
Sentinel Satellite Imagery	Satellite imagery at 10m resolution; updated continuously.	www.sentinel-hub.com/ https://sentinel.esa.int/
Ducks Unlimited Canada Enhanced Wetland Classification Inventory	Region-based image classification approach that produces a raster of wetland and vegetation classification.	Contact Ducks Unlimited Canada.
Digital Elevation Models (DEM)	Digital elevation models are a collection of three dimensional coordinates representing an X and Y horizontal location on the ground along with its associated elevation (one metre resolution).	Manitoba Lands Initiative (MLI): http://mli2.gov.mb.ca/dems/index.html
LiDAR	Laser-derived elevation models with a resolution of 25 cm, limited to southern Manitoba.	Manitoba Lands Initiative (MLI): http://mli2.gov.mb.ca/dems/index_external_lidar.html
Soil Mapping	Municipal maps of soil properties, primarily within Manitoba's agriculture zone.	Manitoba Lands Initiative (MLI): http://mli2.gov.mb.ca/soils/index.html
Manitoba Land Use / Land Cover Classification	Land cover maps available for southern and central Manitoba.	Manitoba Lands Initiative (MLI): http://mli2.gov.mb.ca/landuse/index.html
Canadian Land Cover Classification and Earth Observation Data	Remote sensing products available for government and commercial use.	Canada Centre for Remote Sensing (CCRS): www.nrcan.gc.ca/maps-tools-publications/satellite-imagery-and-air-photos/10782
Provincial database on rare elements, including rare species and species at risk	Conservation status ranks for rare species and communities in GIS database.	Manitoba Conservation Data Centre (MBCDC): www.manitoba.ca/sd/environment_and_biodiversity/cdc/request.html

If available, drone imagery, surficial geology datasets, hydrological properties (e.g., direction and flow of water), soil and peat depth datasets, or carbon storage maps should be consulted. Ground surveys of a proposed route should also supplement and verify existing data, because large scale maps or datasets may not account for the existing variation of the landscape. This includes identifying features such as small wetlands, ephemeral drainages, rare and protected species, cultural sites and mineral licks. These data will help inform resource managers and developers when selecting the route that maximizes wetland avoidance.

For more information, visit:

- [Field Guide: Boreal Wetland Classes in the Boreal Plains Ecozone of Canada](#) (2018)
- [Resource Roads and Wetlands: A Guide for Planning, Construction and Maintenance](#) (2016)
- [Operational Guide for Forest Road Wetland Crossings](#) (2014)

Prioritizing Boreal Wetlands for Avoidance

Resource managers and developers should also consider the wetland functions and wetland benefits that are at risk of being impacted. This information can be used throughout the planning process to help determine where to prioritize certain wetlands for avoidance. The following factors should be considered in this respect:

- impacts to downstream infrastructure, flows and water quality, such as for wetland complexes
- area of wetlands impacted
- presence of uncommon species or species of concern, such as rare or protected species
- unique wetlands in a given area
- potential cumulative effects, such as the amount of previous drainage that has occurred in the watershed, or the likelihood of being impacted by other development activities
- the value or importance of the wetland to Indigenous Peoples, communities or stakeholders
- some wetland types or classes may be more challenging than others to minimize impacts
- carbon storage potential

Resource managers and developers should consider the full lifecycle of resource and access roads and crossings when planning for avoidance. The challenges for minimization and related costs should also be considered as part of the planning process. If minimization is difficult and the costs are high, avoiding these wetlands is recommended.



Photo Credit: Ducks Unlimited Canada

Relevant Provincial Legislation

Authorization for road planning is granted to each applicant by Manitoba Agriculture and Resource Development and Manitoba Conservation and Climate. These departments approve each plan and issue licences under The Environment Act. Several forms of authorization regulate and guide road management planning, construction, maintenance and decommissioning. This includes:

- The Water Rights Act
- The Sustainable Watersheds Act
- The Water Protection Act
- The Peatlands Stewardship Act
- The Endangered Species and Ecosystems Act
- The Forest Act



Photo Credit: Ducks Unlimited Canada

Minimization Best Management Practices

The Minimization Best Management Practices (BMP) provide general guidelines for resource and access roads, water and wetland crossing planning, construction, monitoring, access management and decommissioning. Originally developed for forestry operations, the guidelines are applicable to all resource and access roads and crossings management, where appropriate.

Resource managers are expected to incorporate these practices into the lifecycle of resource and access roads and crossings from planning to decommissioning. They provide flexibility to accommodate resource management activities and address other resource values. Manitoba has a wide range of forest types, site conditions, aquatic ecosystems, wetlands and other features. Appropriately designed and located water and wetland crossings are often required to maintain hydrological connectivity. Other useful guides include:

- **Operational Guide: Forest Road Wetland Crossing** (2014);
- **Resource Roads and Wetlands: A Guide for Planning, Construction and Maintenance** (2016)
- **Field Guide: Boreal Wetland Classes in the Boreal Plains Ecozone of Canada** (2018)

Minimization Best Management Practices aim to:

- Minimize loss of productive forest land and area occupied by resource and access roads.
- Minimize the number of years that non-permanent roads are in operation.
- Minimize or avoid impacts to known resource values.
- Minimize effects on aquatic and terrestrial habitat during the life cycle of roads and crossings access.
- Avoid destroying historic or cultural sites.
- Protect natural areas and habitats where rare and endangered flora or fauna have received designation and protection under either Manitoba's The Endangered Species and Ecosystems Act or Canada's Species At Risk Act (SARA).
- Encourage communication with affected Indigenous Peoples, local communities and stakeholders in the process of planning and managing roads.
- Maintain the hydrological connectivity and biological integrity of surface water bodies and wetlands.
- Coordinate resource road development between users in order to reduce the number of roads being developed and used.
- Build and maintain roads in a way that facilitates decommissioning.

Background

The BMP was originally published in 2005. At that time, there was a need to consolidate and refine previous recommendations, resolve outstanding issues and address new issues into one forestry road management guidebook. Originally developed for forestry operations, the BMP was reviewed and revised in 2018. It now applies, where appropriate, to all industries and all resource and access roads and crossings management. The BMP consolidates requirements and references regarding resource and access roads, and water and wetland crossings, including:

- guiding principles that are expressed through goal and objective statements
- a classification system for forestry roads based upon their function
- the process of planning the development of resource and access roads and crossings
- general guidelines for construction of resource and access roads and crossings
- managing access during or following operations
- monitoring, decommissioning and reclaiming resource and access roads and crossings

Forestry Road Classification

To facilitate the communication of provincial guidelines for roads, a common set of descriptive terms for roads has been developed. Four general road classifications (Table 1) are used to describe roads within this guidebook and in the road planning and review process. These classifications describe the basic functions of roads. Forest companies in Manitoba have historically maintained their own classification system for roads (Appendix 1). Forest companies may maintain unique road classification systems for internal purposes.

Definitions and requirements of each road must be as detailed as possible, while enabling appropriate application in unique forest conditions. Not all secondary or tertiary roads are alike. Two roads with the same description may have differences in duration of operation, season of use, access, use restrictions and requirements for decommissioning and reclamation that are developed with a regional IRMT.

Table 1: General road classification

	Primary	Secondary	Tertiary	Winter
Description	General access throughout the forest	Access to and within operating areas	Access to and within harvest blocks	Access to and within harvest blocks
Duration	Permanent	Generally medium term	Generally short term	Generally short term or may be a permanent winter road
Season of Use	All weather	All weather	Usually seasonal or winter within harvest block	Winter

Forestry Road and Crossings Management Planning Process

The forestry road planning process involves three planning phases:

- *Forest Management Plan (FMP)* generally describes the company's strategies and activities for the duration of the long-term plan (20 years), including harvest operations, proposed road access and standard operating procedures.
- *Operating Plan (OP)* describes in greater detail the planned harvest operations and the forestry roads to be developed in association with these operations during the planning term and standard operating procedures.
- *Forestry Road Development Plan (FRDP)* include maps, tables and other information that describe the planning for all existing and proposed roads. They include road retirement and decommissioning within distinct geographic areas of a forest management licence (FML) area. Significant amendments (as identified by the IRMT) to the FRDP will be added to existing plans. FRDP are required for all new operating areas.

Road Planning

The planning process for all roads and crossings must identify resource values that may require special consideration. It must also address the concerns of Indigenous Peoples, local communities and stakeholders. Discussion should identify consequences of road development. Other potential uses of each road should be studied to satisfy more than one purpose, identify safety concerns and consider potential fees for other commercial users.

During the planning process, other issues addressed should include:

- access management, including retirement strategies with details of road decommissioning, timelines and methods, if required by IRMT
- the timing and sequencing of harvest, if industry applicable
- the volume of harvest operations within the road network, if industry applicable
- future forest management responsibilities (ex: reforestation, surveys, fire protection), if industry applicable
- options to mitigate potential impacts
- whether stakeholders request to use the same road - if so, IRMT will decide on road responsibilities

Forest Management Plan (FMP)

The FMP outlines the forest development activities to be carried out during its term. Each primary, secondary and long-term winter road is discussed in terms of road development and access management and decommissioning. The planning process in the FMP includes the identification, on a map, of one-kilometre wide corridors of the primary, secondary and long-term winter roads and alternatives. These roads will access the identified operating areas in the FMP. The FMP will forecast the length and class of the new and existing roads. More details are available in Manitoba's Submission Guidelines for Twenty Year Forest Management Plans at: www.manitoba.ca/sd/forestry/pdf/practices/20_year_forest_plan_2007.pdf

Operating Plan (OP)

The OP shows the location of all primary and secondary forestry roads slated for construction, improvement or decommissioning during the operating period. The proposed location of all forestry roads between blocks should be indicated in the OP at least one year before construction. The OP identifies the planned length of the primary and secondary road construction, including the planned number and type of water and wetland crossings. Guidelines for the development of an OP are provided by the Forestry Branch at: www.manitoba.ca/sd/forests_and_lands/forestry/index.html.

Forestry Road Development Plan (FRDP)

FRDPs are required for all new operating areas. FRDPs for existing operating areas may be developed and prioritized to address areas of particular concern. A FRDP is an effective tool for communicating road development and associated actions to reduce anticipated impacts on resource values in a given operating area. The FRDP also considers the network of existing and proposed roads.

The IRMT will provide comments and special road management conditions for each application on roads to be constructed or improved during the operating year.

A FRDP will include:

- a description of operating area (landscape features, timber values, known established uses, etc.)
- a general description of the road development and timber harvest strategy, if required
- the proposed periods of activity within the operating area (ex: 2015 to 2025)
- a map showing the road system and indicating the designation of each primary, secondary and long-term winter forestry roads
- an indication of the active period for each road
- a list of proposed open water and wetlands crossing locations and associated crossing methods - with a list of water and wetland features visible on imagery (see Glossary for definitions)
- the length of each class of forestry road to be constructed
- the access management strategy of the operating area, including plans for road decommissioning and restoration, as needed
- existing forestry roads and crossings
- known resource values within the operating area

Manitoba Agriculture and Resource Development will provide comments to the applicant about the activity proposed by each FRDP. An acceptable FRDP will detail the extent of forestry road development in a specific operating area. At the start of the planning process, Manitoba Agriculture and Resource Development will provide a list of known resource values for the operating area.

The FRDP approval process will generally involve IRMT review and mitigation of a draft FRDP, followed by submission of a finalized FRDP for final review.

IRMT will provide specific comments to each proponent on forestry roads to be constructed or improved during the operating year, and general comments for those projected during the next two years. IRMT will also identify roads and operating areas where special road management conditions will be required (e.g., caribou wintering areas, elk and moose crossings, corridors and calving areas).

Operating permits and work permits may contain specific conditions for road construction and access management proposed in the operating year. Timber inspections will determine if operating and work permit conditions have been fulfilled on forestry roads during the start of road construction.

Occasionally, situations develop or resource values are discovered after plans have been approved, which will require a change in an OP. All amendment requests must be submitted to the IRMT. The IRMT or Forestry Branch will grant approval depending on the scope of change requested.

Provincial Guidelines

As part of the development of the Road and Crossing Management guidebook, the most current road related references found in other guideline documents have been reviewed and applicable references have been incorporated into this document. Other provincial guidelines documents with road related references are listed in Appendix 2, and include:

- Forest Management Guidelines for Riparian Management Areas (2008)
- Forest Management Guidelines for Terrestrial Buffers (2010)
- Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (1996) Wildlife Guidelines for Forest Management in Manitoba (1989)

Road developers should continue to refer to these documents.

Water and Wetlands Crossings

Manitoba's The Water Rights Act defines water control works as: "... any dyke, dam, surface or subsurface drain, drainage, improved natural waterway, canal, tunnel, bridge, culvert borehole or contrivance for carrying or conducting water, that:

(a) temporarily or permanently alters, or may alter, the flow or level of water, including but not limited to water in a water body, by any means, including drainage, or

(b) changes or may change the location or direction of flow of water, including but not limited to water in a water body, by any means, including drainage."

Where water control works - such as resource road crossings - are used, the proponent should contact the Water Control Works and Drainage Licensing section to determine if a water rights licence will be required.

To apply for a water rights licence, visit:

www.manitoba.ca/sd/permits_licenses_approvals/index.html

For contact information for water resource officers, visit:

www.manitoba.ca/waterstewardship/licensing/wcwl_contacts.pdf

Provincial Roads and Highways

Manitoba Infrastructure must approve the construction of road approaches to provincial roads and highways. The road operator must apply to Manitoba Infrastructure for approval for road approaches. For permits, visit:

www.manitoba.ca/mit/hpd/permits.html

Hydro Line Right-of-Way

Manitoba Hydro must approve the development of any roads that pass underneath or along hydro line right-of-ways.

Roads Outside of Forest Management Licence Area

Non-FML road operators require a general permit or other authority (e.g., a work permit or Operating Plan) to develop roads.

General Construction Guidelines

General construction guidelines are outlined in *Resource Roads and Wetlands: A Guide for Planning, Construction and Maintenance (2016)*. The guidelines can help in planning the placement and design of resource roads. Exceptions to the following will be considered on a case-by-case basis:

- Wherever feasible, existing roads should be used to gain access to operating areas.
- Knowledge about the location and extent of the resource values will be used to refine a subsequent operating plan.
- Applicants will communicate with Indigenous Peoples, local communities and stakeholders to determine the measures required to mitigate potential impacts.
- All roads should be constructed to the minimum specifications required, while protecting the environment.
- The IRMT may identify additional resources values, depending on road development.

Specific road construction details are not provided in this document. Unless otherwise stated, the following guidelines will apply, or as determined in discussion with the IRMT.



Figure 2 - Forestry road used for the transportation of wood.

Road Location

- Every effort will be made to ensure there is a single point of access where primary and secondary roads enter an operating area or harvest block. Every effort will also be made to ensure that tertiary and winter roads do not provide access between adjacent operating areas to avoid creating loop roads.
- Tertiary roads should be restricted to one entrance and located to minimize visibility into the cut block.
- Wetlands and sensitive features should be avoided as the first option where and when possible (e.g., salt lick areas). If not possible, wetland types and associated water movement should be considered when choosing crossing location and methods.
- Primary, secondary and tertiary roads should be constructed at least 100 metres from the normal high water mark of streams, rivers, ponds and lakes, unless a greater distance requirement is identified on specific water bodies to account for concerns such as:
 - the limiting habitat of species of special concern, or threatened and endangered species
 - areas with special designation (i.e.: wildlife management areas and parks)
 - areas that are culturally sensitive
 - high value recreation areas
 - sensitive water quality

Visual Barriers

If visual barriers are required by IRMT, consider the following:

- Visual barriers to minimize disturbance of wildlife will usually be required on primary and secondary roads.
- Visual barriers to obstruct the view of the cut block may consist of regenerated forest stands (softwood taller than two metres or hardwood taller than three metres), a topographic feature, merchantable and non-merchantable stands, and non-productive forest cover.
- Visual barriers left along primary and secondary roads may be harvested when:
 - regeneration in the cut block reaches sufficient height (softwood taller than two metres or hardwood taller than three metres)
 - Operations in the area are completed, provided that the road will be closed immediately after the harvest and renewal activities, such as tree planting, occur.
 - A forest health condition persists in the visual barrier that would affect forest renewal (e.g., dwarf mistletoe), with removal limited to a portion, or single species, within a barrier or a renewal block.

- On secondary roads where access management occurs, visual barriers may not be required.
- An alternative to leaving visual barriers would be to construct roads and harvest the forest located 100 to 200 metres along the road. Harvesting the adjacent cut blocks may commence when visual barrier reaches sufficient height (e.g., softwood taller than two metres or hardwood taller than three metres).

Water and Wetlands Crossings

- All water crossings must be designed in accordance with *Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (1996)*. These crossing guidelines apply to any water body used by migratory or resident fish during any period of the year, as well as any water body linked to downstream waters that support fish.
- For wetland crossings that are not fish bearing or fish habitat, construction practices, such as those in *Resource Roads and Wetlands: A Guide for Planning, Construction and Maintenance (2016)*, should maintain hydrological connectivity and not block natural flow.
- Crossing a larger wetland at the narrowest location may be a suitable choice, with the following considerations:
 - Since narrow crossing locations can be pinch points, it is significantly more important to ensure optimal performance of a conduit at a narrow crossing location, because it may be the only conduit that maintains flow.
 - The length of road that has contact with the wetland should be minimized.
 - If a wetland that is part of a larger wetland complex must be crossed, the sections of the complex up-gradient and down-gradient of the crossing location must be considered, as they may be more adversely impacted than the area of the crossing location.
 - Since narrow crossing locations may have concentrated surface and subsurface flow, it is significantly more important to install conduits that are sized appropriately and located properly.
 - The design of the wetland crossing should satisfy the maximum flow events anticipated for the type of wetland.
 - Conduits may need to be installed at a higher density to accommodate the wetland flow.
 - The road building material required may be sourced from adjacent upland locations.
- Crossing a wetland at the widest location may be a suitable choice, with the following considerations:
 - The length of road that has contact with the wetland should be increased.
 - Installation of numerous conduits should be considered to allow multiple paths for flow across the entire width of the wetland area.
 - If a wide wetland crossing spans several different types of wetlands, road construction practices should cater to the most dynamic water regime present.
 - The road building material requirements within the wetland should be planned for in advance, as suitable material may not be available or may not be removed without affecting wetland conditions. Wide wetland crossings may span small upland areas (i.e., drier soils) that can be targeted to avoid saturated wetland soils, sometimes referred to as island hopping.
- Appropriate methods will be used to control erosion and prevent environmental harm.
- Where the proponent determines that a water crossing or wetland crossing construction plan, as identified in the OP or other authority, is not feasible and must be altered, an amendment request should be filled out for review and approval.
- Operating and work permits may contain specific conditions for road or crossing construction or access management proposed in the operating year. Inspections will determine if operating and work permit conditions have been fulfilled on roads and crossings.

Clearing Roadway and Salvage

- The preferred method for clearing centerline timber is to harvest it.
- The proponent will request approval for alternative centreline clearing methods on primary and secondary roads. The approved centreline clearing methods will be identified on operating and work permits. Damaging merchantable wood in centreline clearing should be minimized.
- If, during planning, the forest officer determines that trees are merchantable and there is a potential market (e.g., commercial product or public fuel wood), those tree species should be piled roadside. This wood shall be suitable for salvage and not mixed with debris or pushed into standing timber.
- If timber salvage is not required, alternative methods of disposing debris may be permitted.
- If merchantable trees are destroyed during road construction, the forest officer may assess timber dues and charges according to waste of merchantable timber provisions of The Forest Use and Management Regulation.
- When clearing within bogs, fens, swamps, and marshes during frozen conditions, consider clearing the crossing area using high-flotation equipment to ensure that the ground is relatively undisturbed. For all-season roads, keeping the wetland soil, root mat, and stumps relatively intact will help maintain the minimum amount of support on which the road can be built.

Impact on Productive Forest Land

- The width of a primary and secondary right-of-way (ROW) should be minimized to prevent unnecessary loss of productive forest. Applicants will identify ROW widths in the OP or other authority.
- The network of roads should be minimized to prevent unnecessary impact or loss of productive forest.
- The size of a borrow pit or stockpile area should be minimized to prevent unnecessary loss of productive forest. No borrow pits should be placed in wetlands, sensitive sites or rare sites. The IRMT may require rehabilitation of these sites.

Miscellaneous

- Brush piles resulting from road construction may be compacted and buried, or kept at least five metres away from the edge of standing timber and not stored in wetlands. Brush piles may be retained to be used to decommission secondary and tertiary roads.
- Primary and secondary forestry road systems should have signs placed at the start that indicate they are logging roads and that drivers should exercise caution. An additional sign must indicate when major haul operations are in progress.
- Safe travel procedures shall be established and followed by all road users.
- Infilling wetlands must not take place.

Where the protection of the environment, resource values or public safety are of particular concern, the IRMT may require any combination of access management, visual barriers, specific road location or harvest sequencing (e.g., back to front) to regulate use of secondary roads.

Access Management

Relevant legislation and forest management licence agreements regulate the use and management of resource roads. Access management may be required at any time for the protection of the environment, resource values or public safety. Special conditions may be necessary in areas where species listed by the federal Species at Risk Act exist.

There are several provisions for restricting access on roads:

- The Provincial Parks Act Section 27 (l) authorizes posting signs to restrict travel or close any road or trail for various reasons, including the protection of resource values.
- The Crown Lands Act Manitoba Regulation 145/91 (Section 3 (1) and (2)) provides for posting signs to close a road to vehicle travel and the erection of gates or barricades as required.
- The Forest Act Forest Use and Management Regulation (78) provides for closure of forest access roads when, because of conditions such as weather, vehicle use could result in damage to the roads.
- The Wildfires Act (Section 20 (l)) provides for closure of an area to protect land, property or public safety during the wildfire season.
- Subsection 2.1 (2) of the General Hunting Regulation, Manitoba Regulation 351/87, made under The Wildlife Act, provides for posting signs to prohibit hunting within 300 metres of a resource road, a timber operation or forest harvested area for public safety, or for management, conservation or enhancement reasons. Although Subsection 2.1 (2) prohibits hunting during the active period of a timber harvesting operation, and in the forest harvested area, it does not close roads.

The IRMT and the applicant will determine the appropriate method of access management. Appropriate signage will be developed and posted, indicating the restriction of vehicles on the road.

Access management may be required during forestry operations, such as:

- during periods of inactivity, such as breaks in harvest operations
- between initial harvesting operations and silvicultural treatments
- between silvicultural treatments and future harvesting
- after all uses of the road for forestry have ended.

The access management strategy for specific roads in an operating area will be included in the FRDP or the OP.

Road Use Restrictions

Road use restrictions are used to restrict or limit motor vehicle access and normally involve blocking access at strategic locations. This is a more efficient solution than a full decommissioning.

Signs, gates, barricades and other methods may be used to restrict road use. Road use restrictions may be short or long term and may restrict all, or some, vehicle access.

The reasons for applying road use restrictions include:

- for the better management, conservation or enhancement of resource values
- for worker and public safety
- for access control when high forest fire hazard conditions exist
- to prevent damage to the road
- when roads must be closed and are expected to be reused



Figure 3 - Road use restriction example.

Applicants or the IRMT may propose road use restrictions for specific roads. Local communities or other developers of roads may also propose road use restrictions through a similar process. Discussion with Indigenous Peoples, local communities and stakeholders, and notification of road use restrictions, is required. Final recommendations from the applicant, incorporating input from the planning process, will be reviewed for approval by the IRMT.

Road maintenance during periods of inactivity

Roads are maintained by the applicant to meet the travel and use requirements for company operations at any particular time. During seasonal periods of operational inactivity, maintenance to the standard to support general vehicle traffic may not be required. There will be no requirement to maintain travel surfaces for general (third party) access. During these periods, the applicant should continue to assess the condition of features such as culverts, bridges, and slopes for erosion and crossings. This will ensure the integrity of water flow. At the start of any unmaintained sections, appropriate signage should be posted indicating that the road is not maintained and travel is not recommended.

Water and wetland crossing removals will be included in the OP or other authority. The applicant will notify DFO for review and assessment of the project proposal (see Appendix IV for contact information). Water crossing maintenance for structures left in place will continue to be the applicant's responsibility. Periodic monitoring and inspection must occur, as well as any required maintenance of water and wetland crossings. Sites of particular concern would include the current and former locations of culverts and bridges, and portions of roads where erosion risks are significant.

Effective access restrictions at strategic locations may include:

- erecting gates and signage at appropriate locations
- placing barricades such as logging debris or boulders
- constructing berms or ditches
- making sections of roads impassable
- removing culverts or bridges at some or all locations
- removing highway access points

The road developer that constructed each road water or wetland crossing will be responsible for implementation, maintenance and signage, unless another user has been given authority for road responsibility.

The IRMT will inspect crossings that have been removed and the measures implemented to prevent subsequent erosion. If these activities have been satisfactorily completed, a final inspection report will be completed and the IRMT will not require the applicant to be responsible for any future maintenance on these sites.

Decommissioning

Initial road designs should incorporate intent to decommission roads. The location and design of roads should consider future decommissioning requirements. For example, the use of impassable natural topography at the start of a road may be helpful in implementing future access management.

In general, any road no longer required for its intended purpose should be decommissioned. This activity should be undertaken when a road is inactive for an extended period. Road decommissioning is similar to road use restriction, but uses more aggressive strategies and are intended for rehabilitation, not just closure.

Decommissioning roads will be necessary to provide long-term protection of resource values, the environment and public safety. Decommissioning intends to deter any vehicle travel on the road and may involve returning the road to a vegetated state. Decommissioning also involves rehabilitating water and wetland crossings to prevent erosion and maintain hydrological connectivity. It is recognized that revegetation with appropriate vegetation mixes will occur.

Tertiary roads will normally be constructed shortly before operations and decommissioned promptly after activities are completed. Primary and secondary roads tend to be used over a longer period in an operating area. However, if a primary or secondary road will not be required over a long period, it should be decommissioned. The decommissioning of forestry roads may include such things as:

- removal of water crossings to maintain natural hydrology and acceptable re-contouring of road approaches
- taking measures to prevent erosion at water crossings and along the road
- posting signs, for safety reasons, to indicate the road has been closed
- the revegetation of all tertiary roads (Note: the revegetation of roads within provincial parks is to be done with native species only.)
- ripping portions of roads
- site preparing specific portions of roads to render them impassable by vehicle
- removal of large bridge structures and arch culverts
- removal of railway crossings

If decommissioning has been satisfactorily completed, the IRMT will not require the applicant to be responsible for any future maintenance on these sites.

Applicants may propose to decommission specific roads they manage. In some circumstances, the IRMT may not want to decommission some roads constructed by the applicant because of established use by the public, Indigenous Peoples, local communities or commercial entities. In these circumstances, the IRMT will release the applicant from responsibility and liability for the road. In the future, when alternate use is discontinued, the road may require decommissioning. If the original activities resume, the applicant may reacquire road maintenance responsibilities.

Reactivation Approval Process

Reactivation of a Decommissioned Road by an Applicant:

- The applicant submits an updated FRDP or equivalent, as determined by the IRMT.
- The IRMT reviews the FRDP or equivalent.
- The reactivation may receive initial assessment to determine if Indigenous Peoples consultation is required.
- The new FRDP is approved by IRMT.

Reactivation on a decommissioned road by a third party:

- The applicant submits a proposal with timing, distance and other relevant factors, as determined by the IRMT.
- The IRMT reviews the proposal.
- The reactivation may receive initial assessment to determine if Indigenous Peoples consultation is required.
- A work permit is issued by IRMT.



Figure 4 - Resource access road example.



Figure 5 - Forest road post-decommissioning example.



Figure 6 - Forestry road post-decommissioning after twenty years.

Relevant Legislation Related to Minimization Efforts

Authorization for road planning is granted to each applicant by Manitoba Agriculture and Resource Development. The department also approves each plan and issues licences under The Environment Act. Several forms of authorizations regulate and guide road management planning, construction and maintenance, and decommissioning.

Provincial Legislation

The Forest Act, The Crown Lands Act, The Wildlife Act and The Provincial Parks Act are provincial laws applicable to resource roads. In general, these acts give the minister the authority to regulate the use and management of resource roads. The minister may restrict or prohibit the use of motorized vehicles, erect barricades or gates, and prohibit activities (e.g., hunting), and post signs indicating these measures. These measures may be taken for public safety or to protect a variety of resource values. Pertinent sections of each act are found in Appendix III.

Federal Legislation

The Fisheries Act and the Navigable Waters Protection Act are both relevant to the development of roads, and water and wetlands crossings, where there may be potential impacts from crossings and nearby roads. Fisheries and Oceans Canada should be contacted directly for advice and clarification. Pertinent sections of each act are found in Appendix IV. These acts provide for the protection of fish habitat and navigation in water bodies.

Forest Management Licence Agreements and Timber Sale Agreements

Through the authority of a forest management licence agreement or timber sale agreement, proponents can construct and maintain forestry roads to access timber for their operations. These agreements may also include provisions for constructing roads jointly with Manitoba Agriculture and Resource Development, permit public use of forestry roads and enable the department to designate resource roads as provincial roads or highways. More recently, agreements provide proponents with directions on tree use during road construction, allow them to close roads in specific conditions, and allow them to carry out a road retirement program.

Environment Act Licences

Each proponent is also required to obtain an Environment Act Licence for their FMP. Among other requirements, each licence contains specific references to the management of forestry roads. Links to examples of Environment Act licences are found in Appendix 5.

Offset Best Management Practices

The Offset Best Management Practices (BMP) provide guidance to resource developers to offset impacts to boreal wetlands when impacts to these wetlands cannot be avoided or minimized effectively. Manitoba's boreal zone contains a wide range of forest types, site conditions, aquatic ecosystems, wetlands and other features. Appropriately designed and located wetland crossings are often required when constructing resource and access roads and crossings.

Maintaining hydrological connectivity is extremely important. Wetland functions are the natural processes of a wetland. Wetland benefits derive from wetland functions, such as ecological goods and services, or other economic and cultural values that result from functioning wetlands. Sometimes avoidance is not possible and minimization best management practices may still have permanent impacts on hydrological connectivity or other wetland functions. This guidebook proposes several options for offsetting permanent impacts to wetlands that result from the development of resource and access roads and crossings.

The objectives of the Offset Best Management Practices are:

- to provide guidance to resource road developers when permanent impacts to boreal wetlands are unavoidable or cannot be minimized
- to maintain a no-net-loss of boreal wetlands through offsetting requirements

Offset Requirements

Not all projects will require a similar amount of offset. Wetlands will differ in their type, size and function, so their offset requirements will differ accordingly. While specific offset requirements will be determined on a case-by-case basis by Manitoba Agriculture and Resource Development, these guidelines provide broad-based options for consideration.

Offset requirements are expected to be effective throughout the lifespan of the project and beyond. This may require periodic monitoring to ensure that the measures have been, and continue to be, successful. Monitoring requirements and scheduling should also be developed after contacting the department. Where possible, they should be developed as part of the regulatory approval process.

Offsets should account for both direct and indirect effects on the impacted boreal wetland. Indirect effects could include impacts downstream or impacts to social and cultural values. As such, the compensation ratio will typically be a minimum of at least 2:1 to fully account for all impacted wetland benefits.

It is acknowledged that while avoidance is most important, and should be the most common option, avoidance cannot always occur. While there are BMPs for minimizing impacts to boreal wetlands, we also recognize that there are many factors that will determine their effectiveness. In some cases, minimization will address all or most of the impacts when developing resource and access roads and crossings. In other cases, impacts may remain despite these efforts. If permanent impacts remain after minimization efforts, then additional restoration, reclamation, or compensation efforts are required.

Because no two projects are the same, offset requirements may vary for different industries, locations, and wetlands. As such, specific prescriptions will be determined by Manitoba Agriculture and Resource Development, and will vary and adapt over time as new knowledge and science emerges. However, key factors that will help inform offset requirements will include the magnitude (size) of the permanent impact and the amount of previous investments toward, and net benefits resulting from, avoidance and minimization.

Methods of Offsetting Impacts

Compensation can include restoring or reclaiming a degraded boreal wetland. Another option, though least desirable, could be offering financial compensation for permanently impacting a boreal wetland. Other methods of compensation may also be appropriate, and they should be discussed with Agriculture and Resource Development.

Restoration and reclamation, although different terms, have similar goals, which are to return an impacted wetland to a functioning wetland, and more specifically, return the wetland back to its natural state as much as possible. These terms should be viewed as a sliding scale of the amount of impact a wetland has undergone. Generally, wetlands that require restoration are those wetlands that have been partially degraded or moderately impacted. Wetlands that require reclamation are those that have been fully or largely degraded. As such, the methods to return functionality to a wetland will differ, depending on the level of impact.

Restoring Boreal Wetlands

This is the preferred method of offsetting. Ideally, boreal wetlands should be restored to the same wetland type and functionality they had before they were impacted through development (i.e., an impacted or degraded fen would ideally be restored to a fen wetland type). Restoration activities return the wetland to its original state. This can include removing barriers to hydrological connectivity, which will allow the boreal wetland to return to its pre-impacted state over time. Restoration activities should also occur as near to the impacted site as possible. If that is not possible, then restoration should occur within the same watershed or ecoregion. It is understood that full restoration back to the same wetland type may take time. In keeping with adaptive management principles and evidence-based approaches to restoration, trajectories that lead to the restoration of a wetland should be considered acceptable.

Reclaiming Boreal Wetlands

This is the second-most preferred method of compensation. Reclamation involves decommissioning or converting an impacted wetland to another state that helps to return some of a boreal wetland's function and benefits.

It is recognized that reclaimed boreal wetlands may not be able to be fully restored to their pre-impacted state. Instead, reclaimed boreal wetlands often return some wetland functions, but not all wetland functions. Boreal wetlands that are to be reclaimed are those wetlands that have been significantly impacted or where boreal wetlands are so sensitive that successful restoration is not possible.

As outlined in *Restoring Boreal Wetlands* (above), a reclaimed boreal wetland should be of a similar type to the wetland impacted (i.e., a marsh should be reclaimed if a marsh has been permanently impacted). As well, a boreal wetland should be reclaimed as near to the impacted site as possible. If that is not possible, then the reclaimed wetland should be within the same watershed or ecoregion.

It is also understood that reclamation may take time. In keeping with adaptive management principles and evidence-based approaches, trajectories that lead to the reclamation of a wetland should be considered acceptable.

Financial Compensation

This is the least preferred method of compensation. The cost of restoring or reclaiming boreal wetlands can be used to help estimate the financial compensation required for a permanently impacted boreal wetland. In discussions with Manitoba Agriculture and Resource Development, the amount of financial compensation required will vary, depending on the amount of permanent impacts that remain after minimization and restoration or reclamation efforts. The intention of financial compensation is that the funds would be held in trust and used by the department to restore or reclaim boreal wetlands in Manitoba in the near future.

Next Steps

Because no two projects are the same, specific prescriptions for restoration and reclamation will vary from site to site, and will change and adapt over time as new knowledge and science emerges. The goal of each of these methods is to return wetland functionality. This means that hydrological connectivity, biodiversity and habitat, and carbon storage potential have returned to the wetland. It is intended that this document will be revised as new knowledge is gained, so in future revisions, specific prescriptions can be incorporated into these guidelines.

Relevant Provincial Legislation

Authorization for road planning is granted to each applicant by Manitoba Agriculture and Resource Development. The department also approves each plan and issues licences under The Environment Act. Several forms of authorization regulate and guide road management planning, construction, maintenance and decommissioning. This includes:

- The Water Rights Act
- The Sustainable Watersheds Act
- The Water Protection Act
- The Peatlands Stewardship Act
- The Endangered Species and Ecosystems Act
- The Forest Act

Other legislation, such as section 7(1), 7(2), and 7.1(1) of The Crown Lands Act, allow for the inclusion of project-specific conditions on permits and licences when working on, or occupying, Crown land.



Photo Credit: Ducks Unlimited Canada

Appendix 1: Forest Management Licensee Road Classification System

FML Road Class	Season	Time (years)	ROW (metres)	Users	CONWS Class
CLASS 1					
FML # 3	All	20+	45m	All Users	Primary
FML # 2	All	20+	60m	"	"
CLASS 2					
FML # 3	All	20	30m	Access Throughout Forest	Secondary
FML # 2	All	3-20	50m	"	"
CLASS 3					
FML # 3	Seasonal	2-20	20m	Primarily Timber Harvesting	Tertiary
FML # 2	Seasonal	1-12	40m	"	"
CLASS 4					
FML # 3	Seasonal	5+	10-20m	Primarily Timber Harvesting	Tertiary
FML # 2	Seasonal (Winter)	1-12	40m	"	"
CLASS 5					
FML # 3	Winter	2	8-20m	Primarily Timber Harvesting	Winter
FML # 2	Winter Ice	Variable	60m	"	Winter

Appendix 2: Related Guidelines and Best Management Practices

Forest Management Guidelines for Terrestrial Buffers

Forest Management Guidelines for Riparian Management Areas

Manitoba Submission Guidelines for Twenty Year Forest Management Plans

Manitoba Submission Guidelines for Forest Management Operating Plans

Wildlife Guidelines for Forest Management in Manitoba

Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat

Guidelines in digital format are available on the Forestry Branch website at:

www.manitoba.ca/sd/forests_and_lands/forestry/index.html



Appendix 3: Provincial Legislation

The Forest Act F150

Part I

- 8(2) The minister may, subject to other relevant legislation, maintain or build roads, winter roads and stream improvements on Crown land, designate any of them as resource roads or improvements, regulate and set charges for their maintenance and assess and recover the cost of any damage to them as a debt owed to the Crown from the person responsible for the damage.

Part III

- 23(2) Every road and highway, the title to which is vested in the Crown, and that lies between parcels of land contained in a provincial forest, shall, for the purposes of forest administration, be deemed to be part of the provincial forest.

Forest Use and Management Regulation 227/88R

- 9 Any timber cut in the construction of a road or in the clearing of a skidway, landing, or camp site shall be paid for in accordance with the dues and charges payable under the licence, timber sale agreement, or permit.
- 73(1) An operator shall allow other authorized users of the forest to use such roads as he has constructed or may construct and maintain in connection with his operations; but any such authorized users of the forest shall pay to the operator such part of the costs of construction and maintenance of the road as may be mutually agreed upon.
- 73(2) Where the director considers it necessary for an authorized user of the forest to have access to any part thereof, and for any use therein which may from time to time arise in an area held by an operator, the operator shall allow the said access and required use, but the authorized user shall pay to the operator a reasonable amount for any estimated loss that may be caused to the operator by virtue of said access and use.
- 73(3) Where, under subsection (1) or subsection (2) the persons concerned fail to agree on the amount payable, the director, upon being notified of the failure, may direct, and the operator when so directed shall allow, the authorized user of the forest to use the road or said access and required use, as the case may be; and the amount payable and any other matter in dispute shall be settled by arbitration.
- 78 Where, owing to weather or other conditions, the hauling of timber or other product is likely to cause damage to a forest access road or a road within a provincial forest, the minister may cause a notice to be posted
- (a) closing any such road to traffic until the road, in his opinion, is fit for traffic; or
 - (b) imposing weight restrictions with respect to that road.

The Forest Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/f150e.php.

The Crown Lands Act C340

Lands Resource Roads Regulation 145/91

- 3(1) The minister may cause signs to be posted on or adjacent to resource roads prohibiting controlling or governing the operation of vehicles on those roads.
- 3(2) The minister may cause signs to be posted on or adjacent to a resource road closing the road to the operation of vehicles, and in the event may cause gates or barricades to be erected.

The Crown Lands Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/c340e.php.

The Wildlife Act W130

- 3(1) Unless otherwise provided by this Act or the regulations, the designation of an area for the better management, conservation or enhancement of the wildlife resource of the province in accordance with section 2 does not limit or affect the uses and activities that may be undertaken in the area, and the minister may make such regulations as the minister considers appropriate:
- (a) respecting the use, control and management of an area;
 - (b) authorizing, regulating or prohibiting and use, activity or thing in an area;
 - (c) authorizing the construction, operation and maintenance of any building, structure or thing in a wildlife management area.

General Hunting Regulation 351/87

- 2.1(2) The minister may cause signs to be posted on Crown lands prohibiting hunting, the discharge of a firearm or bow or the possession of a loaded firearm on or within 300 metres of a resource road, timber operation, forest harvested area or mine that is located on Crown lands.

The Wildlife Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/w130e.php.

The Provincial Parks Act P20

- 27(1) The director may, by posting signs or other suitable means
- (a) open or close all or part of a provincial park; or
 - (b) restrict travel on or close any road or trail in a provincial park that is not under control of the Minister of Highways and Transportation.

The Provincial Parks Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/p020e.php.

The Wildfires Act W128

In order to protect land, property or public safety during the wildfire season, the minister may order an area to be closed to entry or travel for a specified period of time, and shall make reasonable efforts to have the public notified immediately of the order.

The Wildfires Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/w128e.php.

The Endangered Species Act E111

- 10(1) No person shall
- (a) kill, injure, possess, disturb or interfere with an endangered species, a threatened species, or an extirpated species that has been reintroduced;
 - (b) destroy, disturb or interfere with the habitat of an endangered species, a threatened species or an extirpated species that has been reintroduced; or
 - (c) damage, destroy, obstruct or remove a natural resource on which an endangered species, a threatened species or an extirpated species that has been reintroduced depends for its life and propagation.

The Endangered Species Act can be found at: web2.gov.mb.ca/laws/statutes/ccsm/e111e.php.



Appendix 4: Federal Legislation

Fisheries and Oceans Canada Manitoba Contact Information

Tammy Wruth
Fish Habitat Biologist | Biologiste, Habitat du poisson
Dauphin Office - Manitoba District | Bureau de Dauphin - District du Manitoba
Prairies Area | Secteur des Prairies
Central and Arctic Region | Région du Centre et de l'Arctique
Fisheries and Oceans Canada | Pêches et Océans Canada
101 1st Avenue NW | 101 1ere Avenue N-O
Dauphin, MB R7N 1G8 | Dauphin MB R7N 1G8

Telephone/Téléphone: 204-622-4068
Facsimile/Télécopieur: 204-622-4066
Email/Courriel: Tammy.Wruth@dfo-mpo.gc.ca
Government of Canada | Gouvernement du Canada

Habitat Management Regional Office
Manager, Habitat Management Division
Fisheries and Oceans Canada
Freshwater Institute
501 University Crescent
Winnipeg, MB
R3T 2N6

Telephone: 204-983-5164
Fax: 204-983-4180
For more information, go to the Fisheries and Oceans Canada website at:
www.dfo-mpo.gc.ca/index-eng.htm

Navigable Waters Protection Program Contact Information

Regional Manager
Navigable Waters protection Program - Prairie and Northern Region
Transport Canada
Canada Place
1100-9700 Jasper Avenue
Edmonton, AB
T5J 4E6

Phone: 780-495-8215
Fax: 780-495-8607
Email: nwp-pen.pn@tc.gc.ca

Appendix 5: Examples of Environment Act Licences

FML # 2

Licence No.: 2302 ER

CANADIAN KRAFT PAPERS INDUSTRIES LTD.: "the Licensee"

www.manitoba.ca/sd/eal/archive/1997/licences/2302er.pdf

FML # 3

Licence No. 2191 E

Issue Date: May 27, 1996

Varied: December 10, 1996, for the period 1996 - 2005

LOUISIANA-PACIFIC CANADA LTD.: "the Licensee"

www.manitoba.ca/sd/eal/archive/1996/licences/2191e.pdf



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Tembec Industries Inc. 2001. Operating and renewal plan 2002 Forest Management Licence 01, IWSA East, IWSA West. Tembec Forest Resource Management Pine Falls Operations.

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Glossary of Terms

Aquatic Habitat - Aquatic habitat are ecosystems that contain plants and animals that require water to be present for at least part of the year. This includes lotic (moving) and lentic (non-flowing) systems, such as rivers, streams, lakes, ponds and wetlands.

Avoiding boreal wetlands means that the impacts of a resource or access road or crossing on wetland benefits is negligible. If impacts to wetland benefits are not negligible, then minimization is required.

Berm - A berm is an artificial ridge or embankment used to stop vehicle traffic or to block line of sight.

Best Management Practices (BMPs) means the planning and operating practices that when implemented, minimize impacts to boreal wetlands or offset the impacts to boreal wetlands when minimization is not possible.

Block - A block is a geographic area of trees scheduled for harvest or other treatment (e.g., cut block, spray block) (Dunster 1996).

Bog - Bogs are peatlands that have deep deposits (more than 40 centimetres) of poorly decomposed organic material (referred to as peat). They are elevated above the surrounding terrain and receive water and most nutrients from precipitation. Bogs are the most nutrient-poor wetlands in the western boreal forest. Cushion-forming sphagnum mosses are common, along with heath shrubs. Trees may be absent. If present, they form open-canopied forests of low, stunted trees (National Wetland Working Group 1997).

Boreal Zone is the broad, circumpolar vegetation zone of high northern latitudes. It is covered principally with forests and other wooded land, consisting of cold-tolerant tree species primarily within the genera *Abies*, *Larix*, *Picea* or *Pinus*, but also *Populus* and *Betula*. The zone also includes lakes, rivers and wetlands, and naturally treeless areas such as alpine areas on mountains, heathlands in areas influenced by oceanic climatic conditions, and some grasslands in drier areas. (*The extent of the North American boreal zone. Brandt, J.P. 2009.*)

Borrow pit - A borrow pit is a small quarry or excavation that provides material for use in road construction.

Crown-Aboriginal Consultation - The Manitoba government recognizes it has a duty to consult in a meaningful way with First Nations and Indigenous communities when a proposed provincial law, regulation, decision or action may infringe upon or adversely affect the exercise of a treaty or Aboriginal right of Indigenous communities. Consultation is a process of two-way communication in which the advice and opinions of the consulted party are sought prior to government action, to ensure that both parties are better informed and have attempted to avoid infringing on a right. If infringement on a right is unavoidable, mitigation measures should have been agreed upon, including measures to accommodate the infringement of the right. For more information on Crown-Aboriginal consultation, see the *Interim Provincial Policy for Crown Consultations with First Nations, Métis Communities and Other Indigenous Communities* at: www.manitoba.ca/ana/pdf/interim_aboriginal_consultation_policy_and_guidelines.pdf

Ephemeral stream - This is a stream that flows briefly, only in direct response to precipitation in the immediate locality, and has a channel that is at all times above the water table (Dunster 1996).

Fen - Fens are peatlands with deep organic (peat) deposits (more than 40 centimetres) influenced by slow, lateral water movement. Water sources have been in contact with nutrient-rich surface or groundwater, making fens more productive and biologically diverse than bogs. Fens can be treed, shrubby or open. Often referred to as muskeg, fens are the most extensive wetlands in the western boreal forest.

Forest Management Licence (FML) - An FML is an area-based agreement, granted under The Forest Act, between the province and a company that provides a long-term fibre supply to a wood-using industry. In exchange for the company accepts many forest management responsibilities, including planning, allocating, supervising and administering both timber depletions and forest renewal activities.

Forest Practices - These are activities conducted during all stages of forest management, such as surveys, harvesting, road construction and silviculture.

Guidebook - A guidebook is a collection of policies, guidelines, procedures and standards related to a specific forest practice.

Guideline - Guidelines are alternative procedures or standards that can be applied to satisfy the principle upon which the guidelines are based. Specific guidelines are enforceable when identified on operating permits or work permits.

Hydrological connectivity is the natural flow of water between wetlands, or between wetlands and uplands, which if impacted, will change the flow of water.

Integrated Resource Management Team (IRMT) - IRMT is a regional management team organized to review natural resource issues. It is made up of members of Manitoba Sustainable Development for each region.
Intermittent stream - This is a stream in contact with the groundwater table. It flows only at certain times of the year, such as when the groundwater table is high or when it receives water from springs or some surface source such as melting snow. It ceases to flow above the streambed when losses from evaporation or seepage exceed the available stream flow (Dunster 1996).

Lake - A lake is a sizable water body, generally greater than two metres in depth, surrounded by land and fed by rivers, springs or local precipitation (Environment Canada 2004). A lake has three zones:

- littoral zone, which is a sloped area that is close to land
- open water zone, where sunlight is abundant
- deep water zone, where little sunlight can reach

A lake may be deposited with minerals and sediment, and gradually, the lake becomes a wetland, such as a swamp or marsh. Because of this process of succession, it can be difficult to assign a water body to a particular class (Wetzel 2001).

Landings - Landings are places where logs are yarded and stored, pending loading and transport to a processing facility.

Marsh - Marshes are mineral wetlands with shallow organic deposits (less than 40 centimetres). Water levels fluctuate seasonally. Water sources are precipitation and associated run-off, groundwater and stream inflow. Marshes are characterized by an emergent vegetation of reeds, rushes or sedges (National Wetland Working Group 1997). In the western boreal forest, marshes are often found as a transition between open water and shorelines.

Mitigate - This refers to actions taken during the planning, design, construction and operation of works and undertakings to alleviate potential adverse effects on the land base.

Navigable Water - Navigable waters generally include all bodies of water useable by any type of floating vessel for transportation, recreation or commerce.

*Note: Frequency of navigation may not be a factor in determining a navigable waterway. If it has the potential to be navigated, it will be determined navigable.

Operating Area - A contiguous area upon which forest development activities are planned. Impacts of proposed harvesting activities on various resource concerns (e.g., ecological diversity, habitat management, and access and water management) are assessed based on the entire operating area.

Operating Block - This is a specific area within the operating area planned for harvest, usually in one season.

Perennial or Permanent Stream - This is a stream that flows continuously throughout the year (Dunster 1996).

Permanent Impacts are long-lasting, negative changes to boreal wetland functions, including changes to biodiversity, hydrological connectivity, and greenhouse gas emission functions.

Policy - A policy is a deliberately chosen course of action. In this document, policy refers to governing principles and corresponding procedures and standards of the Manitoba government.

Procedures - These are steps or a series of steps taken to put a policy or guideline into practice.

Resource - A resource is anything that is useful for something (e.g., animal, vegetable, mineral), or an abstract concept, such as aesthetics.

Resource and access roads and crossings include primary, secondary, tertiary, and winter roads and crossings.

Resource Value - This refers to a recognized and desired resource, existing or potential, including environmental, commercial, recreational, social or cultural function or uses.

Right-of-Way (ROW) - A ROW is the cleared area along a road alignment, which contains the roadbed, ditches, road slopes and back slopes.

River - Rivers are natural drainage channels for surface waters, primarily from runoff and base flow. Runoff is that part of precipitation that flows toward the rivers or streams on the ground surface or within the soil (subsurface runoff or interflow). Base flow is the part of stream flow that enters the stream channel from groundwater. A river's watershed or drainage basin—the area supplying it with water—is separated from the watersheds of neighbouring rivers by higher lands called drainage divides (Environment Canada 2004).

Road Decommissioning - This is intended to deter any vehicle travel on a road and may involve returning the road to vegetation.

SARA (Species at Risk Act) - In 2003, the Species at Risk Act was proclaimed. The act protects wildlife species at risk in Canada. Within the act, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was established as an independent body of experts responsible for identifying and assessing species considered to be at risk. This is the first step towards protecting species at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the minister of the environment's official response to the assessment results. Species that have been designated by COSEWIC may then qualify for legal protection and recovery under SARA.

Shallow Open Water - This refers to open water wetlands that have water depths less than two metres, but are too deep for emergent marsh vegetation to establish. These wetlands look like small lakes, although floating-leaves and submerged aquatic vegetation are common.

Stakeholder - A stakeholder is any person who feels their interests will be affected by the outcome of a decision making process. These interests do not have to be of a financial nature, but may include a whole range of human values, such as the need for natural justice, religious value, ecological principles and a longing for environmental protection (Dunster 1996).

Standards - These are descriptions of targets or goals used to measure the success of procedures. They may be general or specific.

Swamp - A swamp is a diverse group of wetlands with soils that is predominantly mineral based, although peat may be present in some settings. Swamps typically have hummocky ground that may contain pools of standing water or slow moving waters that occur seasonally or persist for long periods. The vegetation may consist of dense coniferous or deciduous forest, or tall shrub thickets (National Wetland Working Group 1997), often associated as shoreline areas of streams, lakes and floodplains.

Wetlands include bogs, fens, swamps, marshes, and ponded or open shallow water. Wetlands have the water table at, near, or above the surface, or it can be land that is saturated long enough to promote such features as wet-altered soils and water-tolerant vegetation (National Wetlands Working Group 1988). Wetlands are broadly grouped into organic wetlands (peatlands) that have organic soil depths greater than 40 centimetres, and mineral wetlands that have organic soil depths less than 40 centimetres.

Wetland benefits are the benefits that derive from wetland functions, such as ecological goods and services, or other economic and cultural values.

Wetland functions are the natural properties and processes (such as hydrological connectivity, biodiversity and habitat, and carbon storage potential) of wetland ecosystems.



Photo Credit: Jeope Wolfe

