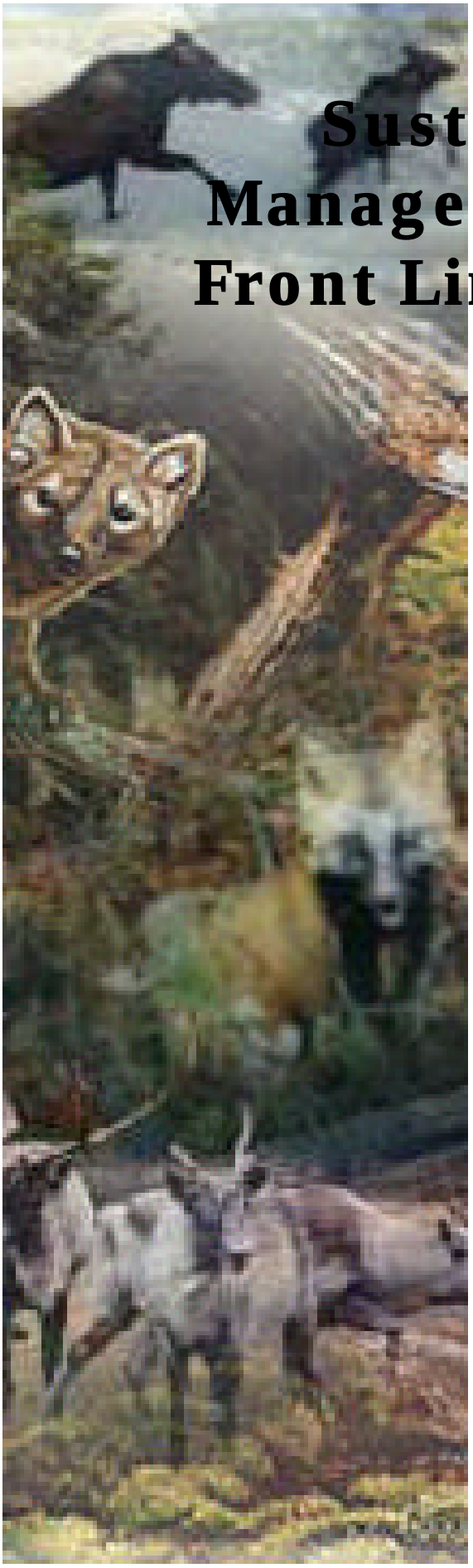

Sustainable Forest Management Training for Front Line Forest Workers

Participant's Workbook

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FOREST STEWARDSHIP TRAINING
Workbook

FOREST STEWARDSHIP TRAINING
Workbook

INTRODUCTION

Whether you are an employee of a forest company or an independent woods contractor, you recognize the need to manage the forest in a healthy way. You understand that proper management of the forests in our care is not only a moral obligation, it also makes economic and environmental sense. Our jobs today and the future opportunities for our children and our communities depend upon it.

We have come to this workshop:

- to share what we know about the forest environment
- to understand how we affect it - good and bad
- to look at company and government policies
- to ACT - in ways that will have the best effect on the environment

What is *sustainable forest management*?

The term ***sustainable forest management*** has been used a great deal in recent years - in our work plans and in our publications. The term is explained in different ways but a widely-accepted definition comes from the Canadian Council of Forest Ministers (CCFM):

> *Sustainable Forestry Management maintains and enhances the long-term health of forest ecosystems, while providing ecological, social, and cultural opportunities for the benefit of present and future generations.*

This simply means that, when we plan and carry out our activities in the forest, we look at the forest as a whole, considering the environmental, social and economic benefits it offers. We recognize that the forest consists not only of trees but of soils, streams, wildlife and even tiny insects, fungus and a range of plant life. When we plan, we consider the health and well-being of these many parts, both now and in the future. Sustainable forestry requires that we act as good forest stewards.

This workbook is a reference and a guide for the workshop.

OUR COMMITMENT

The commitment to *sustainable forest management* is widespread. The federal government and all governments across Canada are committed to it and, in 1990, Newfoundland and Labrador passed **The Forestry Act** based on this new approach. Sustainable forest management is supported by the forest industry, by independent companies, and by organizations including the Canadian Pulp and Paper Association, Newfoundland and Labrador Lumber Producer's Association and the Western Newfoundland Model Forest.

What is ISO and ISO 14000 Series?

Each company's commitment to sustainable forest management will play a key role internationally. Through the **International Organization for Standardization (ISO)**, more than 30 countries have taken part in developing standards to guide forest managers in applying **ISO 14001 Environmental Management System Standard** to the forest industry.

ISO 14001 Certification will show that forest companies are following internationally-recognized, environmental management systems and sustainable forest management practices. And, as a result, they are operating in environmentally-sound ways. Canada's current national standards are entirely consistent with ISO standards.

Those companies that meet these standards will have a more secure market for their products, and their employees will have sustained employment.

Sustainable forest management is part of our business. We are committed to helping every forest worker to understand his or her role in making sure that we work in environmentally-sound ways.

Criteria for Sustainable Forest Management:
The following criteria define the critical components of Sustainable Forest Management in Newfoundland and Labrador, and are based on a national framework approved by the Canadian Council of Forest Ministers:

1. Biodiversity
2. Healthy Forests
3. Soil and Water
4. Global Impacts
5. Benefits to Society
6. Public Involvement

Each of these is described and defined in further detail in the *Sustainable Forest Management: A Practical Guide to Using Criteria and Indicators in Newfoundland and Labrador*, published by the Western Newfoundland Model Forest.

SOME OTHER THINGS TO THINK ABOUT . . .

Sustainable forest management is **not** simply something we talk about around meeting tables. Each year ***Environmental Protection Guidelines for Ecologically Based Forest Resource Management*** are attached to a company's **Certificate of Managed Land** and are a condition of Crown commercial permits. These guidelines help to direct operations and they are legal obligations that must be followed.

And, there are some practical things to consider. If a worker or supervisor does not follow the regulations, some of the consequences can include:

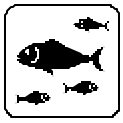
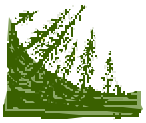
- **Fines**
  Improper handling of chemicals, spills, or allowing wood (in any form) to enter a waterbody are only some of the examples of actions that can result in serious fines.

- **Shut-down of operations**
  Failure to follow some regulations may result in an order to stop operations. For example, if any forestry operation directly or indirectly results in silt entering a water body, it must be dealt with immediately and reported to government officials within 24 hours or operations may be shut-down until the situation is corrected.

- **Disciplinary action**
  Violation of Company rules and/or government safety regulations, including those that govern sustainable forest management practices, may result in verbal or written warnings, suspension and/or discharge.

ENVIRONMENTAL CONCERNS

We hear a lot about “environment concerns” today - those we deal with in our homes, for example recycling or toxic lead paint, to larger problems like those about our fish stocks. As forest workers it is important to look at the environmental concerns that we face. For this workbook we have placed these in two large groups, **Human Health** and **The Environment.**

	HUMAN HEALTH
Human Health 	Workplace health and safety issues, especially short-term and long-term effects on workers that stem from: < exposure to toxic substances < contamination - through water supply, airborne or through overexposure < noise pollution < lifting heavy items < cutting trees < chainsaw activities and equipment operation
	THE ENVIRONMENT
Water Quality & Protection 	Through environmentally-sound forestry practices we strive to: < protect natural waterbodies and wetlands < protect water quality of waterbodies and groundwater < protect fish and other species that rely on local water sources
Land & Soil Protection 	< prevent erosion and soil loss < control land pollution caused by improper handling, storage or use of fuels, chemicals or waste (this includes soil and groundwater contamination) < control land pollution caused by waste disposal

Fish & Wildlife Protection 	< conserve and protect fish and wildlife < protect plant and animal species at risk (see **Logging for Wildlife**) < protect critical habitat (e.g. nesting areas, dens, feeding areas) for wildlife and leave buffer zones and safe corridors for movement
Forest Protection 	< conserve, preserve and use forest resources wisely < create policies to protect, conserve, preserve and restore the forest after forestry activities < manage appropriately for age, health and species of trees and for stand conversion < fire management < maintain biodiversity < integrated management of natural resources and ecosystems - use **Forest Ecosystem Classification**
Education and Research 	< provide public education about forest environmental issues < conduct research to understand the impact of human activities; and to evaluate new silvicultural, harvesting and management technologies < maintain positive public relations regarding issues < research, document and report on relevant forestry issues, news and educational activities
Multiple Use 	< Manage forests for a variety of uses including: < recreation - hiking trails, scenery, hunting, fishing < local use - berry picking, trapping, firewood, domestic cutting and other uses < tourism - provide “quality” experience

KEY ACTIONS

As an employee or independent woods contractor you should:

- **follow** all sound forestry procedures and regulations that meet government guidelines
- **know** the regulations that relate to your work
- **have** all required permits and approvals before you begin work
- **follow** plans
  But, if you have concerns, ask questions. You are on the ground and may see things that have been missed by others.
- **report** concerns to your supervisor
  If you see situations that may be damaging to the environment or that are not a good forest management practice report them to your supervisor immediately.

And in doing this, help to:

- **protect** forest resources - timber, wildlife, landscape, water, soil and biodiversity
- **support** the forest's health and long-term productivity
- **manage** the forest for multiple uses, values and benefits

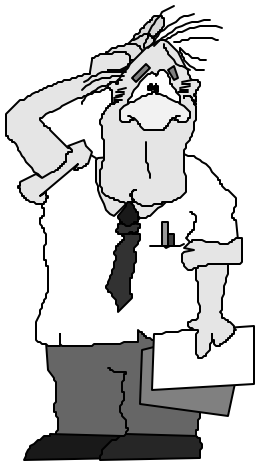
1. A FEW WORDS ABOUT PLANNING

"If I want to build a new fence, I build a new fence. I don't understand why we need so many plans. There seems to be a plan for everything."

- woods worker attending a planning workshop

WHY DO WE PLAN?

Managing a forest is complicated. So is managing a business. To do either of these, we need to understand many things and we need to plan for both the short-term (this year's harvest) and the long-term (a healthy forest and wood supply 80 years or more from now).



Some thoughts about plans:

- Plans are **tools**. They help you to:
  - identify your goals and to know where you are going
  - determine how you will get there in a logical, organized way
  - establish priorities, organize your work and decide where you will get the best returns

- Sustainable forest management is complex. We need to plan for:
  - forest health - now and in the future, including disease and pest management, forest renewal, wood supply, etc.
  - water resources and water supply
  - wildlife - protection of plant and animal species at risk
  - fish habitat
  - protection of areas of historic or cultural value
  - other values - trapping, recreation, tourism, and other commercial uses - both current and future

- Managers and other decision-makers need to have information in a form that allows them to make sound decisions. Plans do this. In addition they are important to the business of the forest industry.

For example, plans:

- < provide information about current and future wood supplies
- < help in planning operations, projecting mill production, pricing our product, determining the number of staff and contractors we employ and in planning our long-term development as a business

- C Plans help us to prepare for, and hopefully avoid a crisis.
  A plan or a procedure for dealing with an oil spill or carrying out a prescribed burn are all examples of important plans. These plans outline ways of avoiding problems but they also tell us what do in an emergency. By being prepared we can move into action, deal with the problem, and reduce the impacts.

And . . .

- C **preplanning is required for all forest operations - it is the law and part of our business.**

WHAT PLANS DO WE NEED?

There are lots of plans. Some are long-term, for example:

1. **20-Year Forest Development Plan**
   - C created by the **Newfoundland Forest Service** with input from industry, and other government agencies and others
   - C based on protection of natural ecosystems and sustainable forest management, it describes the government's forest management goals for next 20 years

2. **Management Plan Report** (Corner Brook Pulp and Paper Ltd. And Abitibi Consolidated have Sustainable Forest Management Plans)
   - C a company's 20-year plan, revised every five years and based on the government's **20-Year Forest Development Plan**
   - C sets out broad goals and objectives for a management district

Long-term plans are important to understanding the "big picture" and they help us to look to the future of Newfoundland's forests, not only 20 years ahead but for 80 years or more. But, there are other shorter plans that have a more direct impact on our operations:

3. Five Year Operating Plan

- a required planning document prepared for each **Management District**; submitted to the Newfoundland Forest Service for approval
- involves public consultations
- after the plan is approved by the Newfoundland Forest Service it is registered for review under the *Environmental Assessment* Act
- This plan outlines specific forestry activities -
  - Timber Supply Allocation
  - Fuelwood and Domestic Cutting
  - Silviculture
  - Forest Access Roads and Bridges
  - Protected Water Supply Areas (PWSAs)
  - Forest Protection (Fire, Insects & Disease, Landscape, Wildlife, Ecosystem Protection, Environmental Protection-General Guidelines)

Key to our operation is Annual Work Schedule

4. Annual Work Schedule

Prior to beginning any work:

- an **annual work schedule** must be prepared and approved by the Newfoundland Forest Service
- a **Certificate of Approval** must be obtained from the Department of Environment for specific activities such as road construction, commercial harvesting, silvicultural operations

The Annual Work Schedule

- required by the 1990 Forestry Act and submitted to the Newfoundland Forest Service every September
- provides details of planning for the coming year based on comments and recommendations appearing in the Five-Year Operating Plan
- upon approval, a **Certificate of Managed Land** is issued by the Minister of Forest Resources and Agrifoods

Other Plans

Other plans are required and prepared for specific forestry activities. These plans are sometimes included within the larger plans or they may stand on their own. Some of the planning that must take place includes:

Wood Supply Planning	Harvest Planning
Forest Access Road Planning	Silviculture Planning
Pesticide Application Planning	Planning for Prescribed Burns

LEARNING FROM OUR EXPERIENCE

Plans are guides and they change. Twenty year plans are usually reviewed and revised every five years. We also build some chances for change into our operating plans.

Why?

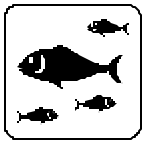
The forest changes, our business changes and we learn new information or we make new discoveries. For example, we monitor the rate of tree growth in both new and mature stands, and we keep an eye on forest health. Unexpected changes may mean that we have to change a planned harvest, plan for pesticide use or that we have to do supplemental planting. If you have worked in forestry for a number of years you will have experienced some of these changes.

We also know that plans can't be applied the same way to all forest types and conditions. That is why we may need to revise a plan once we are on-the-ground.

2. HARVESTING

CONCERNS

We all know logging has effects on the local environment. We look to minimize the negative effects by ensuring ***resiliency*** in the system.

	GOOD EFFECTS	BAD EFFECTS
 **Forests**	C the *boreal forest* is often made of large stands of same-age trees created by major disturbances such as fire, wind or insect damage. C clearing tracts of forest can mimic this natural pattern. C may allow the removal of insect-ridden, diseased or decaying trees	C alters the natural forest environment C too much coarse and woody debris removed can be a negative effect C some species require large areas of mature forest; careful planning is required
 **Water Quality & Protection**	C a *buffer* strip can prevent many negative impacts on water C improves access for recreational opportunities such as fishing, hiking, etc.	C the removal of large tracts of forests can affect the groundwater table, run-off and stream flow C heavy equipment can damage streambeds C silt (from erosion) may change stream; affect fish breeding
 **Land & Soil**	C gives the advanced balsam fir and black spruce *regeneration* light to start a new forest	C may cause erosion and soil loss C forestry operations can damage forest soils - e.g. packing it down or removing it for fill

 **Fish and Wildlife**	C species such as moose, snowshoe hare and grouse benefit from new growth after harvesting C provides food and shelter for wildlife	C negatively affects species that are: - adapted for older age forest (e.g. marten, boreal owls) - are adapted for interior forest or that need large tracts of undisturbed forest C may disrupt travel or migration routes for some species

HARVESTING
Field Observation Sheet

Effects on soil

How deep are the tracks from heavy equipment? Are there other signs of its effects on the forest?

What equipment is being used in the area? Signs that the machines have been chosen for a special reason (e.g. oversized tires for soft, wet soils?)

Are there signs of erosion? Where? How serious is it?

Where is it likely that soils have been compacted? How can this be reduced or eliminated?

Buffers & snag/chicos

Where are the no-cut buffer zones? What are they protecting? How wide are they (estimate)?

Are there snags in the cutblock? How many are there? How big are the trees that have been left behind?

Have other trees, shrubs or plants been left behind? Why?

Wood Use & Water Protection	Are there any signs of waste? Are there signs of <u>any</u> type of wood product (timber, sawdust, slash, etc.) in any waterbody or, in winter, resting on an area where it might be washed into the water during spring run-off?
The good stuff . . .	things you saw that you think are good practices, especially for the forest and the environment.

KEY ACTIONS

Cut timber to:

- harvest trees
- provide for wildlife habitat
- avoid waste

To do this . . .

- **Plan and select harvest areas.** Look at:
  - regional forest patterns
  - the local site - access, forest type, age & health; soils, water
  - other values - wildlife, fish, recreation and aesthetics
  - protect environmentally sensitive areas (*wetlands*, nesting areas, wildlife food sources, etc.).

- **Use equipment and methods that do the least harm to the forest now and in the future.** Use methods:
  - that protect waterbodies, soils and wildlife
  - that do not create long-term damage and that help prepare for new forest growth
  - look for new ways to reduce environmental impacts and costs

- **Plan harvest schedule** to protect wildlife during critical times (e.g. migration, nesting, breeding)

- **Use all timber harvested**

- **Protect waterbodies**
  - do not drive heavy equipment, machinery or skid through waterbodies
  - do not allow woody material of any kind (trees, slash, sawdust, slabs, etc.) to enter any body of water

- **Leave no-cut buffer zones and snag trees** - leave buffers around waterbodies and other areas (nests, beaver habitat, etc.)

3. FOREST RENEWAL

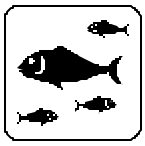
CONCERNS

You need only to see the dense crops of seedlings sprouting up along the forest edge to realize how quickly the boreal forest begins to renew itself after a fire or a cut. As forest workers, one of our goals is to see that the right conditions are created and that the forest can begin to regrow.

We help this natural regeneration by preparing the soil through *scarification* or by using *prescribed burns* or by using *herbicides* to keep down the competition. Many times in Newfoundland and Labrador we do not have to do anything because of our abundance of natural regeneration. Later we may thin the site, protecting it from disease or insects, or to increase tree growth and, ultimately, the yield.

In some cases, we may assist or replace natural regeneration by planting. Whenever possible, we use seedlings grown from locally collected seed of native species. Generally, we are using black spruce or white spruce in Newfoundland and Labrador.

	GOOD EFFECTS	BAD EFFECTS
 **Human Health & Safety**	• maintenance or improved life style C supplier of oxygen C the forest acts as a *carbon sink* C intrinsic value of having the forest	Health and safety concerns exist for many forest activities but the following may be linked to environmental illnesses: C improper handling or over-exposure to chemicals used in site preparation or tending C exposure to smoke and related hazards during prescribed burns

Forest 	C natural regeneration usually results in regrowth of same species C some species, ie. moose thrive in cut-over areas C other species regrow naturally - helps maintain natural mix or diversity C pre-commercial thinning improves health, allows crop trees to grow larger in diameter and increases value of the wood	C undesirable species may grow back C renewal activities may reduce diversity
 **Water Quality & Protection**	C reestablishes natural drainage and water retention patterns as forest regrows	C chemical treatments (insecticides, herbicides) may damage waterbodies, groundwater C scarification may cause erosion and soil runoff C may affect fish breeding
 **Land & Soil**	C regrowth helps to stabilize soils	C improper scarification may cause erosion and soil loss

FOREST RENEWAL
Field Observation Sheet

Natural Regeneration

When was this area cut?

How much of this area appears to regrowing naturally? (5%, 10% . . . etc).

Where is the regeneration happening (roadsides, disturbed areas, or ?) Is it spread evenly or is it in clumps?

If there are dense patches of seedlings - Choose a spot and measure off an area 1 m x 1 m (about the length of your arm from fingertip to shoulder). Count the number of seedlings in that area.

What plants do you see regrowing here? Which ones seem to be largest? Healthiest? In the greatest numbers?

Site Preparation

Has this site been prepared for planting using scarification? What impacts has it had?

Has the site been treated with herbicides during the past 3 years? What impacts has it had? How much regrowth is there?

What might you do to improve this site?

Site Tending

Has this stand been thinned? If so, how long ago?

How dense are the trees? Are there signs of any problems that might stem from either a too-dense stand or too-open stand?

The good stuff . . . things you saw that you think are good practices, especially for the forest and the environment.

KEY ACTIONS

Plan forest regrowth: using ecologically-sound reforestation techniques
to encourage a healthy new forest to grow
to encourage natural regeneration
to protect waterbodies, sensitive areas and wildlife

Aid natural regeneration:

- protect existing seedlings and young trees during forest operations
- direct seed to supplement regeneration on sites with shallow soil or limited seed sources

Plant, when required:

- to maintain diversity
- with seedlings grown from local seeds, whenever possible
- with larger seedlings which have a higher survival rate

Prepare sites:

- if using scarification:
  - select the method best-suited to site to minimize ground disturbance and erosion
  - keep 10 cavity/snag trees per hectare (average) or clump of trees on all sites, as long as safety is not an issue
  - avoid disturbing white pine regeneration

Tending and monitoring . . .

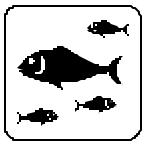
- use herbicides appropriately
  - limit use and follow approved procedures for handling and use
  - protect areas with rare/endangered plants
  - create buffer zones around all sensitive areas

- pre-commercial thinning
  - do not thin during critical periods for wildlife (birth and/or hatching)
  - thin areas with white pine according to instructions from the

4. ROADS, BRIDGES and ACCESS

CONCERNS

Roads and bridges are necessary but they can have both good and bad effects on the environment. Remember, permits and approvals must be acquired **before** road construction.

	GOOD EFFECTS	BAD EFFECTS
Water Quality & Protection 	C they keep heavy equipment out of waterbodies C they ensure logs are no longer floated in the waterbody	C heavy equipment can damage streambeds C silt (from erosion) may change stream; affect fish breeding
Land & Soil 		C cause erosion and soil loss C damage forest soils - packing down, removing for fill
Fish and Wildlife 	C better access for hunting, fishing and recreation - may benefit employment, tourism	C disturb wildlife by opening area to hunting, fishing and recreation C may block migration routes for some species (e.g. caribou) C provide easier access for predators

ROADS, BRIDGES and ACCESS
Field Observation Sheet

Effects on soil

Where is the road located? (e.g. How far is it from a waterbody or wetland? Does it follow the contour of the land?)

What is the grade on the road? For the ditches?

Are there signs of erosion? Where?

Effects on Water

Are there streams nearby? How does the road affect them? Does it cross a stream (larger than 1 m across) and, if so, what has been done to protect the streambed and the stream?

Wildlife

How does the road affect wildlife? (Are there signs of wildlife nearby? Are there signs of them using the road? Can it be crossed easily or does it create a barrier?)

The good stuff . . . things you saw that you think are good practices, especially for the forest and the environment.

KEY ACTIONS

Build forest roads to:

- provide safe travel routes with minimal disturbance to the forest

- protect wildlife -
  - avoid or protect sensitive wildlife areas
  - do not block wildlife migration routes

- prevent erosion and soil loss

- protect wetlands, streams and other waterbodies

Build bridges and water crossings to:

- protect water quality

- maintain stream flow

- allow movement of fish and to protect fish habitat

When considering sources of fill, such as borrow pits and quarries:

- limit number of sites
  - use existing sites first
  - open new sites only when necessary

- protect wetlands, streams and other waterbodies
  - do not remove fill from these areas
  - try to control sediment-laden runoff

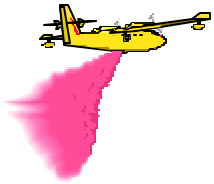
5. FOREST PROTECTION

CONCERNS

In Newfoundland and Labrador, the government is ultimately responsible for fire management and for controlling of forest pests (i.e. insects and disease). However, the forest industry and all forest workers must also play a role.

NOTE: In 1998, the province reported 192 forest fires which burned a total of 40,226 hectares . The majority of was burned in Labrador and was non-productive forest land.

<table>
<tr><th></th><th>GOOD EFFECTS</th><th>BAD EFFECTS</th></tr>
<tr><td rowspan="2">Fire and Fire Management
  </td><td>Fire:
C a natural event for the boreal forest
C creates the conditions for regenerating the forest (e.g. creates large openings, destroys stands of aged/unhealthy trees, prepares soils)
C the regeneration of black spruce is enhanced by fire</td><td>Fire:
C consumes twice as much forest as is harvested each year (this includes both Newfoundland AND Labrador)
C may eliminate a preferred species for harvesting or may change the age and species mix of a forest
C poses a threat to human communities
C may have negative affects on fish and wildlife</td></tr>
<tr><td>Fire suppression:
C protects forests
C protects nearby human communities</td><td>Fire suppression:
C may disrupt the natural cycle of the forest
< stands enter extreme old age and decay
< build up of materials may create fire hazard</td></tr>
</table>

	GOOD EFFECTS	BAD EFFECTS
Insect, Pest and Disease Control 	**Insects and disease:** C many insects are a natural part of the forest ecosystem < provide food for insect-eating birds (e.g. songbirds, woodpeckers, etc.) and other wildlife < part of decay process -break down wood fiber, creates nest cavities and provides soil nutrients C fungus and other forest diseases are part of the natural ecosystem and help in the recycling of nutrients	**Insects and disease:** C insect infestations kill large tracts of forest in Newfoundland. In the past 30 years, insects have affected all mature softwood species (e.g. Spruce Budworm, Hemlock Looper, Balsam Fir Sawfly) C insects can cause reduced growth, stunted trees, loss of branches C forest diseases (e.g. fungus, viruses) reduce quality of wood and cause loss of wood fiber
	Controlling insects and disease: C may protect overall forest health - both short-term and long-term C improves growth and health of individual trees C improves quality of harvested timber	**Controlling insects and disease:** C improper use and handling of *pesticides* or overuse or use of improper pesticides may: < have negative effects on forest health < can affect fish and wildlife < can affect water quality < have serious short-term and/or long-term effects on human health

NOTE ABOUT FIELD OBSERVATIONS:

This section links closely with the type of observations outlined in Sections 3, 6 and 7. It does not have its own observation sheet but can be tied in with the observations made in each of these sections.

KEY ACTIONS

FIRE CONTROL:

- prevent forest fires

- **plan for fire suppression**
  - be aware of the Emergency Response Plan for fire fighting
  - make sure that the required fire fighting equipment is on hand, in good repair and that you know how to use it

- when doing **prescribed burns,** plan and exercise care:
  - prepare a prescribed burn plan detailing how the burn is to be conducted, fire escape measures, safe weather conditions and identifying any non-timber resources in the area and any sensitive or ecologically significant terrain requiring protection

INSECT, PEST and DISEASE CONTROL:

- **harvesting**
  - schedule early harvesting of insect-infested or disease-ridden stands
  - harvest stands before they become over-mature
  - completely remove all infected trees within the harvested stand
  - use timber promptly to prevent sap rot losses

- use **pesticides** appropriately
  - limit use
  - follow approved procedures for storage, handling and use
  - create buffer zones around all sensitive areas
  - follow guidelines for the protection of waterbodies and Protected Water Supply Areas
  - follow guidelines for the protection of fish and wildlife

- observe and report insect and disease damage promptly to the Newfoundland Forest Service

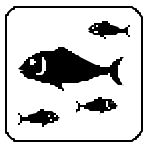
6. FUEL, CHEMICALS and WASTE - STORAGE and HANDLING

We need to manage all of our operations in ways that reduce bad effects on the forest and our communities. This includes the safe and proper handling of fuels, chemicals and waste, as well as the conscientious handling of waste and litter.

CONCERNS

Human Health

- exposure or overexposure to certain chemicals (including pesticides, gasoline and oil) may be toxic and can affect health
- breathing chemicals and airborne particles (e.g. such as those carried in smoke from a prescribed burn) can lead to respiratory problems
- water contaminated with human waste and related bacteria may cause health problems
- noise pollution from improper safety practices can cause permanent hearing damage



Water Quality and Protection

- spills or improper handling of chemicals, fuels and related substances may cause:
  - short- or long-term pollution of natural waterbodies
  - damage to the aquatic habitat and wildlife dependent on that water source
  - contamination of groundwater
  - indirect contamination of current or future drinking supply

Land and Soil

- may contaminate soils and affect the long-term health of the forest

Wildlife

- chemicals (including fuels) may have toxic effects on individual wildlife or may build up through the system affecting species such as birds of prey
- oil and other substances may interfere with the health of fish, ducks and other species by coating them with a thick layer that interferes with breathing, flight or overall health
- improper handling of waste can affect wildlife - certain human foods, plastic bags, etc. can be fatal

FUEL, CHEMICALS and WASTE

Field Observation Sheet

At a real or "proposed" fuel or pesticide storage site . . .	What are the good things about this location? Are there things that you think might be a problem? (e.g. How close is the nearest waterbody nearby? Are there signs of wildlife in the area? Other?)
In fuel or chemical storage areas	What safety procedures appear to be in place for handling substances or for dealing with spills or similar emergencies? (e.g. Are substances labelled? Are there caution signs? Are emergency plans posted? Other?)
Generally	Are there any signs that fuel, oil or other chemicals are being handled improperly? And, if so, what would you do to change it?
Waste Management	What sort of waste management practices are in place - In work areas? In the camp?
Other Observations:	What's good? What's a concern?

KEY ACTIONS

Handle fuel, chemicals and waste to:

- minimize threats to human health
- protect waterbodies and aquatic species, such as fish
- prevent contamination of groundwater or water supply
- protect wildlife
- avoid long-term contamination of soil and damage to forest health

To do this:

- **Store, handle, and transport all substances**:
  - according to guidelines

- **Protect waterbodies by:**
  - locating storage sites away from waterbodies
  - refuelling, servicing and washing heavy equipment away from from waterbodies
  - limiting the amount of fuel stored near waterbody
  - storing according to guidelines, including constructing dykes
  - follow Guidelines for Forest Operations in Protected Water Supplies in Protected Water Supply Areas

- **Plan responses for spills and other emergencies:**
  - make sure all staff understand the emergency procedures (e.g. spills, crash of aircraft carrying pesticides, exposure of staff to pesticides or other chemicals, etc.)
  - make sure spill kits are in place and fully stocked and that emergency procedures and phone numbers are posted

- **Waste and garbage disposal:**
  - use approved waste disposal sites
  - dispose of waste oil, contaminated soil or snow and other materials in manner outlined in regulations
  - dispose of camp waste in ways that do not attract or harm wildlife

7. EMPLOYEE HEALTH and SAFETY

Many of our training programs, from **W**orkplace **H**azardous **M**aterials **I**nformation **S**ystem (WHMIS), to training for equipment and chainsaw operators, deal with health and safety concerns. Some courses, for example, the Pesticide Applicators Course, deal closely with the handling of materials that can be hazardous to the environment and that can cause environmental health risks to workers.

As forest workers, we are all responsible for our own health and safety, and for the health and safety of our co-workers. This section deals specifically with environmental issues in forest operations that relate to human health and safety.

CONCERNS

Previous sections have outlined some of the human health concerns relating to specific areas. Some of the more serious human health concerns relating to environmental issues include:

- toxicity or health effects from exposure or overexposure to certain chemicals (including pesticides, gasoline and oil)

- respiratory damage and related illnesses from breathing chemicals and airborne particles (e.g. such as those carried in smoke from a prescribed burn)

- health problems from water contaminated with human waste and related bacteria

- hearing damage (partial or complete, sometimes permanent) stemming from noise pollution and improper safety practices

EMPLOYEE HEALTH and SAFETY
Field Observation Sheet

Hazardous Materials

Some Examples:

fuel	degreasers	turpentine
oil	pesticides	solvents
transmission fluid	herbicides	detergents
antifreeze	salts & de-icers	bleach
acids	aerosols	cleaners
engine coolants	paints	drain & toilet cleaners
brake fluid	varnishes	disinfectants
tires	paint thinners	

Is there an inventory of hazardous materials?

Is safety information on containers? Are materials WHMIS labelled? How are workers informed of hazards?

Is there designated and secure storage for hazardous materials?

How are hazardous materials disposed of? Is this information posted anywhere?

Does the company have a policy on alternatives to hazardous materials?

Safety Equipment In a fuel, pesticide or similar storage area check for safety equipment.

What personal protective equipment is available?	What purpose does it serve?	Is it used by the workers?

Handling Spills and Accidents What procedures are in place to protect workers in the event of a spill, plane crash with pesticides on board, or similar accident?

Important:
For specific health and safety procedures or environmental guidelines please refer to the appropriate reference documents.

KEY ACTIONS

- **know** and **follow** all recommended procedures for the safe handling, transport and use of hazardous substances. This includes following:
  - instructions as outlined in the company manuals
  - all written precautions for the handling and applications of pesticides and herbicides
  - all procedures outlined in the Storage and Handling of Gasoline and Associated Products Regulations
  - Department of Health, Public Health Act and other regulations

- Make sure that the **personal protective equipment** required for each job (e.g. goggles, respirators, protective clothing, etc.):
  - is available to each person who requires it
  - meets specifications and is in good repair
  - AND that it is used.

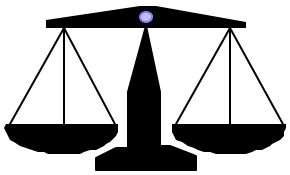
- Make sure that all **recommended emergency equipment** (e.g. eye wash, emergency showers, First Aid equipment):
  - is available
  - meets specifications and is in good repair
  - is where employees can find it, and they know how to use it

- **Plan** for employee health and safety needs in all emergencies, including with spills and other environmental concerns. These plans should include:
  - an Emergency Response Plan and established Emergency Response Marshalling Points.
  - make sure that human health hazards and appropriate safety precautions are outlined in the plans for responding to spills and other environmental emergencies.

8. SUPPORT SERVICES

CONCERNS

Support services such as logging camps and communication systems are a critical part of Abitibi-Consolidated Inc. forestry operations.



It is very important that any construction of logging camps or related activities meet guidelines and regulations listed in the Standard Operating Procedures developed by Abitibi-Consolidated Inc. All environmental rules and regulations must be followed during the constructions, use and abandonment of the site.

Camp Construction and Maintenance

You must consider many factors when selecting a site for a logging camp. You must consider both yourselves as well as the surrounding environment, e.g. the wildlife that is also living there. You must build the site with as little damage as possible to the landscape and the wildlife habitat.

Communications

Communications is a very important part of Support Services. It is the communications system which helps you keep in touch with your supervisors, emergency service workers, equipment operators and co-workers. A communications system is especially important for safety reasons. If there is an emergency such as a plane crash or an accident with a machine, you **must** be able to communicate with the emergency service people quickly and clearly. If there are equipment problems, you must be able to contact the appropriate repair people. As well, it is important that you are able to contact the various government agencies to discuss regulations and guidelines.

NOTE:

Currently there is nothing written in the Standard Operating Procedures with regards to the construction of **garages**. However, it is important to keep up-to-date on all of the information that is added to the SOPs with regards to this construction.

SUPPORT SERVICES
Field Observation Sheet

Camp Construction Can you point out anywhere that may be suitable for a candidate site?

Do you think that your current method of disposal is suitable? Are fuel and oil tanks in the proper place? What about garbage?

Communications Are you familiar with which channel should be used and when? (Local vs. Repeater?)

What zones are covered in your area?

The good stuff... things you saw that you think are good practices, especially for the forest and the environment.

SUPPORT SERVICES
SUMMARY OF STANDARD OPERATING PROCEDURES

It is important to remember that **before** any work is to be started, you must check guidelines and regulations to make sure that these tasks are done with the least amount of complications for both the environment and yourselves.

CAMP CONSTRUCTION AND MAINTENANCE

- make sure to get **all** permits and approvals **before** construction

- **Site**
  - before a final site is selected, you must consider other locations
  - sandy soils are preferred, wherever possible
  - a site must be cleared of trees and organic materials, down to the mineral soil and levelled. If needed, gravel can be added.
  - try to avoid areas of concern (e.g. wildlife) by keeping camp sites as small as possible.

- **Disposal of waste and garbage**
  - make sure to find a good site for the disposal of human waste and garbage. This must be approved by the Department of Forest Resources and Agrifoods and the Department of Environment.
  - sites should be kept clean and garbage free
  - **All** fuel and oil tanks must be stored above ground (check with guidelines)

- make sure that there is enough lighting for safe after-dark working area

COMMUNICATIONS

- make sure that you are very familiar with how to use the communications equipment

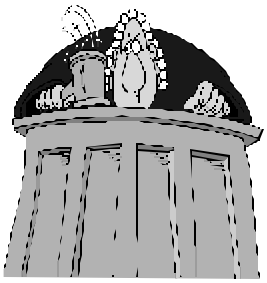
- try to use the local channels whenever possible (1,3 &5). If you are trying to reach further in a zone, you can use repeater channels (2,4 &6).

9. SUMMARY OF ENVIRONMENTAL PROTECTION GUIDELINES AND REGULATIONS

There are many aspects to managing our forests and we know that all our activities must be carried out in responsible ways. There are a number of documents that outline recommended practices:

- **General Guidelines** are produced by the government to cover all forestry activities (e.g. harvesting, road construction, etc.)

  These guidelines are based on our current understanding of the best, ecologically-sound forestry practices. The guidelines are reviewed each year and may change as new information is obtained or to include new or better forestry practices.



  These **government regulations** are legally binding and must be followed. They are conditions of the industry's annual Crown commercial permits for timber operations in Newfoundland.

- **Standard Operating Procedures (SOPs)** are written to guide operations and these SOPs include the government regulations.

That's right. Each forest region is different, as are individual forest stands, the terrain you are working in and many other conditions.

The government and company guidelines allow companies to adjust forest practices to meet these needs. That's why both planning and feedback from on-the-ground staff is important. If changes are needed, trained staff plan them with the help and approval of the Newfoundland Forest Service.

LIST OF CURRENT PUBLICATIONS

Government Publications:

Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1997. Newfoundland Forest Service
Company's Certificate of Managed Land

The Forestry Act, 1990.
New strategy based on ecosystem management using ecological principles.

Guidelines for Forest Operations within Protected Water Supplies

Forest Guidelines for the Protection of Fish Habitat in Newfoundland and Labrador

Occupational Health and Safety Regulations

Regeneration Stocking Standards and Regeneration Assessment Procedures for Newfoundland and Labrador, 1997 version. Newfoundland Forest Service

Storage and Handling of Gasoline and Associated Products Regulations, 1982. Department of Lands and Environment Act.

20-year Forest Development Plan, 1996 -2000. Newfoundland Forest Service

Criteria and Indicators of Sustainable Forest Management in Canada, 1997 (Progress to Date)

Company Standard Operation Procedures:

Forest Management Planning and Operating Practices (FMPOPs), November 1998. Corner Brook Pulp and Paper Ltd.

Abitibi-Consolidated Inc. Newfoundland. Woodlands Standard Operating Procedures (December 1998)

Abitibi-Consolidated Inc. Newfoundland. Woodlands Forest Environmental Management System

New Woodlands Standard Operating Procedures Manual, Corner Brook Pulp and Paper Ltd.

Other Publications:

"Criteria and Indicators of Sustainable Forest Management: A Practical Guide to Using Criteria and Indicators in Newfoundland and Labrador," April 1999, Martin von Mirbach

"Logging for Wildlife: Endangered Species in Forested Ecosystems: A Workshop for Forest Workers," Canadian Forestry Association

Remember: Guidelines may change and it is important to follow the most recent ones.

APPENDIX 1
SUMMARY OF GUIDELINES

NOTE:

These are a summary of the guidelines and NOT the actual certificate. Please refer to the actual certificate of Managed Lands for specific requirements

HARVESTING

SUMMARY OF GUIDELINES

The following is only a summary of some of the practices relating to harvesting and related operations. Terms appearing in *italics* are defined briefly in the Glossary. See your Company's and the Newfoundland Forest Service's current **Standard Operating Procedures (SOP)** manual for details, as well as the Certificate of Managed Lands.

HARVEST AREAS

- Harvest *cutblocks* should:
  - be irregular in shape
  - leave non-merchantable timber in blocks or scattered green trees suitable for future snags
  - where safe, leave behind large diameter trees as green trees and snags for wildlife *habitat* and as future source of coarse, woody debris
  - allow small amounts of *slash* to be left behind as habitat for small animals
  - allow paths of vegetation between uncut forest stands to link forest habitat (this includes existing forest, "fringe wood" in wet areas, scrub forest and buffers)
- Harvesting areas should follow natural boundaries of stands and terrain. You should consider the location of water bodies, sensitive terrain, the potential for residual stands, difficult landscapes, and caring for environmentally sensitive areas such as salmon spawning areas, caribou calving areas, etc.
- Harvest areas will be modified to protect environmentally sensitive areas
- Harvest operations should not take place near historic sites
- A minimum 50 m no-cut buffer is to be left between operations and approved cabin development area

WILDLIFE CONSIDERATIONS

All forest planning and harvesting operations must take into consideration the specific needs of certain wildlife species.

Bald eagle or osprey nest

- # no forest, harvesting or logging activity within 800 m during nesting season (March 15 - July 31)
- # no forest, harvesting or logging activity within 200 m at other times

Beaver

- # all hardwoods within 30 m of water body occupied by a beaver are to be left standing

Bears

- # will be removed from forest camps in a non-destructive manner. Contact Wildlife Division for advice
- # denning sites should be protected during winter denning season; Wildlife Division will identify den sites

Caribou

- # harvesting is not permitted in caribou calving areas from May 15 - June 15
- # June 15 - July 31: harvesting is not permitted in post-calving areas
- # calving/post-calving areas will be identified by Wildlife Division
- # lichen forest must be maintained for caribou in areas where caribou use arboreal lichen during summer and/or winter and terrestrial lichens during the summer; forest activities in lichen areas will be designed in consultation with the Environmental Biologist, Wildlife Division

Furbearers

- # develop habitat requirements for furbearers during preparation of timber management plans in consultation with Environmental Biologist, Wildlife Division

Moose

- # consult Environmental Biologist, Wildlife Division prior to any forestry activities within 1 km of known moose winter areas; Wildlife Division will identify moose wintering areas

Pine Marten

- timber harvesting within areas occupied by Pine marten must accommodate Pine Marten habitat before operations start

Plants

- rare or unique plants are to be protected from forestry activity; a starting inventory during the preparation of management and operating plans will note if rare/unique plants are present in the area

Raptors (Birds of Prey - hawks, owls, osprey, eagles)

- raptors nest locations must be reported to the Wildlife Division of the Newfoundland Forest Service
- needs for some species (e.g. boreal owl, American kestrel and sharp shinned hawk) will be met by measures for other wildlife including leaving wildlife trees (green and snags) and blocks of mature forest
- if nesting raptors are encountered during logging operations, a protective buffer of 800 m will be retained around the nest until the young are fully fledged

Snowshoe Hare

If Snowshoe hares are identified as the primary species for an area:

- harvest cutblocks size shall not exceed 25 hectares
- special consideration will be given to maintaining security cover next to the cutblock (stands ages 10 - 30 years are best).
- if pre-commercial thinning occurs, special consideration will be given to maintaining unthinned areas near or within thinned areas

Waterfowl

- for known waterfowl staging areas, establish a minimum 30 m buffer from water's edge, with at least 20 m of forest; waterfowl staging areas will be identified by the Canadian Wildlife Service

ALSO:

- modify harvesting schedule during migration of wildlife (e.g. caribou) and during temporary wildlife concentrations (e.g. waterfowl staging)
- establish appropriate habitat requirements for songbirds and other wildlife in consultation with the Environmental Biologist, Wildlife Division of the Newfoundland

Forest Service

- # Workers are not to harass wildlife in camp areas or elsewhere (e.g. cutting areas)

- # Camps and support areas are not to be located within known significant wildlife areas. These areas will be identified by Wildlife Division

HARVESTING OPERATIONS

Pre-planning is required for operations on steep slopes, unstable soils and wet sites. Consider alternate methods and equipment for harvesting these areas such as:

- # manual or labour intensive methods, tracked skidders, high flotation tires, cable yarders

Skid trails

- # do not make a skid trail within 20 m of a waterbody
- # do not skid timber through a waterbody

If you need to build skid trails:

- # keep soil disturbance to a minimum
- # try to lessen the impacts on waterbodies
  - C try to keep erosion and sedimentation to a minimum, avoid restricting stream flow, and ensure fish passage
  - C use culverts and/or log bridges depending on conditions
  - C use erosion control measures while skid trail is in use (e.g. diversion ditches for water run-off, laying down brush mats)

Landings

- # do NOT construct a landing within 20 m of a waterbody
- # make sure ditches move run-off away from the landing and streams

Structures

- # structures must be created to cross over any waterbody to prevent equipment or any woody material from entering the waterbody

Land and Soil Disturbance

- # excessive bulldozing is discouraged. Remember, only 10% of an operating area can be disturbed

- # if, due to special circumstances, more than 10% *disturbance of the operating area* is required, the operator *must rehabilitate the area* to reduce the disturbance to the 10 % maximum
- # heavy equipment and machinery is prohibited in any waterbody without a Certificate of Approval from the Department of the Environment and contacting the Department of Fisheries and Oceans (DFO) Area Habitat Coordinator

HARVESTED TIMBER

Complete use of merchantable trees is required

Woody material of any kind (trees, slash, sawdust, slabs, etc.) is not permitted to enter any waterbody. Woody material on ice within the high water floodplain of any waterbody is prohibited

Create “no harvest buffer ” zones around waterbodies (identified on a 1:50,000 topographic map). See Guidelines for details

Within specific areas of the Province, no-cut buffers around waterbodies are necessary for wildlife
  - # see “Wildlife Protection” section
  - # see the timber management plan and guidelines for details

Government staff has the authority to request buffers on smaller waterbodies

FOREST RENEWAL
SUMMARY OF GUIDELINES

The following is only a summary of some of the practices relating to forest renewal. Terms appearing in *italics* are defined briefly in the Glossary. See your Company's and the Newfoundland Forest Service's current **Standard Operating Procedures (SOP)** manual for details, as well as the Certificate of Managed Lands.

Try to protect seedlings and young trees during forest operations whenever possible

SITE PREPARATION AND SCARIFICATION

Select scarification methods best suited for preparing the area for planting and minimizing ground disturbance

Scarification must be minimized around Protected Water Supply Areas (PWSA). If there is erosion or sedimentation, scarification must stop and corrective measures taken.

Make sure windrows are placed where slash cannot be washed into streams by peak flooding conditions

To minimize erosion, do not direct scarification equipment straight downslope

Keep 10 cavity/snag trees per hectare (average) or clump of trees on all sites, as long as safety is not an issue

Avoid disturbing white pine regeneration

PRESCRIBED BURNING

Prepare a prescribed burn plan including:

- # how to carry out the burn
- # fire escape measures
- # weather conditions required for burn to proceed
- # any non-timber resources in the area

- # sensitive or ecologically significant terrain

PLANTING

plant with an understanding of the natural forest and to maintain diversity

keep trees damp; do not plant dried out or damaged trees

keep seedlings out of direct sun/wind before planting. Store them in a shaded site.

SITE TENDING

Use herbicides appropriately

- # limit use and follow approved procedures for handling and use
- # protect areas with rare or endangered plants by excluding them from herbicide treatments
- # create buffer zones around all sensitive areas
- # see Section 5: Forest Protection in this manual, for additional information

Pre-commercial thinning

- # do NOT carry out pre-commercial thinning in important wildlife areas during periods of birth and/or hatching. These areas and times will be identified by Wildlife Division
- # thin areas with white pine according to instructions form the Newfoundland Forest Service
- # do NOT fell trees into waterbodies
- # leave behind berry producing shrubs (food sources for wildlife and for berry picking)

ROADS, BRIDGES and ACCESS
SUMMARY OF GUIDELINES

The following is only a summary of some of the practices relating to roads, bridges and access. Terms appearing in *italics* are defined briefly in the Glossary. See your Company's and the Newfoundland Forest Service's current **Standard Operating Procedures**.

AVOID building roads and opening borrow pits:

Near streams and/or ponds
On wetlands, deltas and floodplain/fluvial wetlands
On land with high potential for eroding
On sensitive wildlife areas and sensitive fish areas
Also: historically significant sites, and existing reserves (including parks, wilderness areas, ecological reserves and rare/endangered plant sites/habitats)

FOREST ROADS

Locations selected by the Company must appear in the *Annual Work Schedule* and be approved by Newfoundland Forest Service. Locations on *Crown Land* must be approved by the Director of Ecosystem Management
Must follow Standards and Specifications for road type (described in your Company's Standard Operating Procedures manual)
Cannot be built in any buffer zone without the approval of the Newfoundland Forest Service
DO NOT obstruct wildlife migration routes
If road construction is planned near waterfowl breeding, moulting or staging areas, consult the Canadian Wildlife Service
DO NOT bulldoze standing merchantable timber
Prevent water pooling and provide for the water movement **away** from the road and right of way through proper road construction (use of proper materials and equipment; minimum 3% crown; installing cross drain culvert; strategic location of deflection berms)

DITCHES

- Keep at same gradient as road
- install ditches on uphill sides of road to intercept seepage and run-off (in side hill and similar areas)
- Construct ditches and side wall slopes per road class specification

BRIDGES AND WATER CROSSING

- The location and type of all waterbody crossings must be submitted to:
  Department of Environment and Labour
  Department of Fisheries and Oceans

- To reduce erosion and sedimentation, waterbody crossing shall:

  - have stable approaches
  - be at right angles to the waterbody
  - be located where channels are well-defined, unobstructed and straight
  - be at a narrow point along the waterbody
  - allow room for direct, gentle approaches

FILL, BORROW PITS AND QUARRIES

- Must be located 50 m from the nearest waterbody
- **DO NOT** remove gravel or fill from any body of water or floodplain
- Use existing borrow areas wherever practical
- Open new borrow pits **only** when necessary and, where possible, identify its location prior to construction filter fabric berms, sedimentation ponds or other measures if your activities are likely to cause a lot of sedimentation filled run-off into nearby waterbodies

REHABILITATE

- Exhausted borrow pits
- Forest access roads
- Areas of excessive disturbance must be rehabilitated in the manners described in the Standard Operating Procedures manual

FOREST PROTECTION
SUMMARY OF GUIDELINES

The following is only a summary of some of the practices relating to forest protection. Terms appearing in *italics* are defined briefly in the Glossary. See your Company's and the Newfoundland Forest Service's current **Standard Operating Procedures**.

FIRE CONTROL

Prevent forest fires

- # follow recommended procedures for reducing fire hazards. Be aware of both equipment problems (e.g. chainsaw use and refueling) as well as human error (e.g. careless smoking)
- # follow proper procedures for reporting fire and make sure you know the phone numbers for key company fire management personnel and Newfoundland Forest Service personnel including forest fire duty officers
- # firefighting is a cooperative effort and information regarding fire situations should be communicated effectively to other companies and contractors in the area

Plan for fire suppression

- # be aware of all fire preparedness plans and/or emergency response plans for fire fighting
- # make sure that the required personal protective equipment is on hand, in good repair and that you know how to use it

Prescribed Burning

prepare a prescribed burn plan detailing:

- # how the burn is to be conducted
- # fire escape measures
- # weather conditions required for burn to proceed
- # any non-timber resources in the area
- # sensitive or ecologically significant terrain

PESTICIDES

A pesticide application license must be obtained from the Department of Environment. This license will determine planning and operational requirements

Storage, handling and transportation of pesticides

- # Store in a safe place and secure manner, check labels for any special storage requirements
- # Permanent storage must be at least 300 m away from any waterbody, temporary storage must be at least 100 m from any waterbody
- # Store in original containers
- # Post easily seen signs in storage area “Danger: Chemical Storage Area. Authorized Personnel Only”

- # **Pesticide mixing and loading sites must**:
  - C be designed to contain spills, dyked and covered with a airtight material
  - C shall NOT have drains

- # The required **personal protective equipment** (e.g. goggles, respirators, protective clothing, etc.):
  - C must be available to each person who requires it
  - C ensure that it meets specifications and is in good repair
  - C ensure that it is used

- # **DO NOT** dispose of or rinse pesticide containers in or near streams or ponds as residual spray in these containers may be toxic to fish

- # **Pesticide Application Planning**

  - # identify sensitive areas requiring protection from spraying; show on project map
  - # where possible, spray block boundaries should follow identifiable features (roads, tree lines, stream and lake shores)
  - # before the spraying date, check with the proper regulatory agencies to find out how to dispose of empty drums, wash rinse, etc.
  - # prepare an action plan in the event of accidents. Outline steps that must be taken if there is a spill, aircraft crash, exposure of staff to pesticide, etc. Telephone numbers of key personnel and emergency centres will be distributed to all supervisors and displayed at operational sites
  - # notify the public in area of spray program in advance of spray operation
  - # post signs on all access routes to treatment area identifying spray operation
  - # provide security for mixing/loading site, including 24 hour surveillance

Weather

- # spray only when wind speed and air temperature are within specifications in the pesticide license
- # The weather monitor must keep spray operations supervisor informed of weather conditions. Weather readings will be made before spraying starts and at set intervals during the flights

Buffer Zones

- # keep areas with rare/endangered plants outside of herbicide treatments
- # for herbicides, create buffer zones of at least 44 m around all sensitive areas (measured from a nearest edge of treatment area to nearest edge of a sensitive area boundary)
- # for insecticides, follow buffers identified on license but, generally, allow the following:

	CHEMICAL	Bt
Human Habitation	1.6 km	800 m
Water Supply Intakes	1.6 km	0 km
Open Water - Lakes > 40 h	400 m	0 km
- Major Rivers	400 m	0 km

FUEL, CHEMICALS and WASTE STORAGE and HANDLING
SUMMARY OF GUIDELINES

The following is only a summary of some of the practices relating to fuel, chemical and waste storage and handling. Terms appearing in *italics* are defined briefly in the Glossary. See your Company's and the Newfoundland Forest Service's current **Standard Operating Procedures**.

STORAGE AND HANDLING - GAS, OIL AND LUBRICANTS

Gasoline or lubricant depots must be placed 100 m away from the nearest body of water

All fuel-storage tanks (including GEEP tanks) must be:

  # registered with the Department of Government Services and Lands
  # installed in accordance with the Storage and Handling of Gasoline and Associated Products Regulations
  # and, fuel storage within Protected Water Supply Areas must follow the Guidelines for Forest Operations within Protected Water Supply Areas

Above-ground storage tanks shall be surrounded by a dyke
  # the dyked area will contain not less than 110% of the capacity of the tank
  # the base and walls of the dyke shall have an airtight lining of clay, concrete, solid masonry or other material designed, constructed and maintained to be liquid tight to a permeability of 25 L/m2/d
  # there shall be a method to eliminate water accumulations inside the dyke

All self-dyked GEEP tanks must be located at a minimum distance of 500 m from any major waterbody

Bulk fuel storage should be away from Protected Water Supply Area

  # in least sensitive area
  # approved by Water Resources Management Division, Department of Environment and Labour

A maximum of seven days fuel supply can be stored within Protected Water Supply Areas

No heavy equipment or machinery is to be refueled, serviced or washed within 30 m of a waterbody and within 100 m of a Protected Water Supply Area

Waste oil or other equipment lubricants will not be drained onto the ground or into water courses. **Used or waste oil** shall be collected either in a tank or a closed container

SPILLS - FUEL AND OIL

For an oil or gas spill of more than 70 litres, the operator must try to

  # contain the spill
  # clean up the spill after reporting the spill to the appropriate authorities: **Government Services Centre, Spill Report Line (709) 772-2083 or 1-800-563-2444**

The forest operating plan must identify an Operations Manager who is responsible for coordinating cleanup efforts in the event of a fuel or oil spill

A fuel or oil spill kit must be kept on site to aid cleanup. It must include:

  # absorbent pads, loose absorbent materials such as peat, speedy-dry or sawdust
  # a container, such as an empty drum, for recovering fuel or oil.

  If there is a bulk storage facility, the spill kit must contain additional clean-up equipment. (See current guidelines and procedures manuals for details).

STORAGE AND HANDLING OF PESTICIDES AND OTHER CHEMICALS

Be careful when you are handling and using all pesticides and chemicals

Within Protected Water Supply Areas:

  # storage of any type of pesticide, chemical or other hazardous material is prohibited
  # chemicals are to be used only under the approval of the Water Resources Division

DO NOT dispose of or rinse pesticide containers in or near streams or ponds. Spray in these containers may be toxic to fish
Prepare a plan to guide personnel on the correct action in case there is an accident when handling pesticides. Outline what they must do if there is a spill, airplane crash,

exposure of staff to pesticide, etc. Telephone numbers of key personnel and emergency centres will be distributed to all supervisors and displayed at operational sites.

For further regulations, see Section 5: Forest Protection

WASTE AND GARBAGE DISPOSAL

NOTE: It is critical that we each make every effort to control the disposal of waste material and garbage, e.g. gas and oil from chain saws. It is for both our health and safety and for that of the environment.

All waste disposal sites require a Certificate of Approval from the Minister of Government Services

Garbage is to be disposed of at an approved garbage disposal site. All garbage must be contained so that it does not attract wildlife.

In camps:

- # all sumps carrying effluent from a kitchen or washroom facility must be properly treated on a daily basis in compliance with the Department of Health Regulations
- # sewage disposal must be carried out in compliance with the Public Health Act

Within Protected Water Supply Areas:

- # wherever possible, toilet facilities must be provided in all work areas
- # garbage cans must be located in work areas; garbage is to be collected regularly and disposed of at an approved waste disposal site outside the protected area

all waste materials and waste oil must be collected in containers and removed to an approved site at least once a week

Contaminated soil or snow must be disposed of at an approved waste disposal site

For pesticides - determine disposal requirements for empty drums, wash rinses, etc. in consultation with appropriate regulatory agencies and well in advance of actual spraying date

All equipment is to be removed from the operating area once operations are complete

APPENDIX 2
GLOSSARY OF TERMS

GLOSSARY OF TERMS

Annual Work Schedule This annual operating plan is submitted to the Newfoundland Forest Service for review and approval each September in advance of harvesting planned for the coming year. Specific detail for each Management District is included with respect to wood supply, access development, planned harvesting and renewal activities.

Biodiversity The total variability of life on Earth, including the diversity of genes, species and ecosystems.

Boreal Forest A boreal forest occupies the greatest part of the forested area of Canada, stretching from Newfoundland to the Rocky Mountains. This forest is primarily made up of stands of softwood tree species with mixtures of some of the hardwood species, such as trembling aspen and white birch, as well as areas of open and treed muskeg and bog.

Buffer A strip of land where disturbances are not allowed, or are closely monitored, to preserve aesthetic and other qualities adjacent to roads, trails, waterways and recreation sites.

Carbon Sink The storage of carbon somewhere other than in the atmosphere. Carbon may be stored as parts of living organisms (e.g. wood from living trees, shrubs or plants) or a dead organic material (e.g. products made of wood, fallen trees, organic soils, peat, fossil fuels)

Complete utilization of harvested trees Generally, harvesting trees to a top diameter of 8 cm and stumps to a height of 30 cm. The District Manager can modify stump height requirement for snow conditions.

Crown Land In Canada, this is any land deemed to be the property of the

Crown. Provincial Crown land is any land owned and under the administration of the Newfoundland and Labrador Provincial Government, which can include municipal lands. Federal Crown land includes national parks and national historic parks and sites and in general, all public lands held by the several departments of the federal government for various purposes connected with federal administration.

Cutblock The term which is used to describe a forest area with defined boundaries in which specific forest stands or parts thereof have been designated to be harvested.

Environmental Assessment A process designed to contribute important and current environmental information to the decision-making process of forest management and other resource projects and programs.

Five-Year Operating Plan This planning document, required by the Newfoundland Forest Service, is submitted for each Management District. While not as detailed as the Annual Work Schedule, it identifies where, when and how forest management activities will occur in each District.

Forest Renewal A term used to describe any project or all projects collectively that are aimed at establishing a new forest stand on a site following a disturbance.

Habitat (wildlife) The environment in which a population or individual lives; includes not only the place where a species is found, but also the particular characteristics of the place(e.g. climate or availability of suitable food and shelter) that make it especially well suited to meet the life-cycle of that species.

Herbicide This is a chemical substance used to control competing vegetation. The application of the herbicide glyphosate (trade name Vision ®) on established areas of softwood forest renewal to inhibit growth of competing vegetation, may be used as part of an overall forest renewal program.

Monoculture A large area of trees of the same species which are closely related genetically.

Pesticide A chemical which kills pests such as insects, tree diseases

	and noxious fungi.
Prescribed Burn	The application of fire, usually under existing stands and under specific conditions of weather and fuel moisture, in order to control vegetation to meet goals of silviculture or hazard reduction.
Protected Water Supply Area (PWSA)	Provide the public with an adequate quantity of good quality water on a permanent basis.
Regeneration	The renewal of a forest stand following disturbance. Natural regeneration occurs from roots, stems or seeds that are already present or are brought in by wind or animals. Other forms of regeneration involve direct seeding or planting.
Resiliency	The ability of an ecosystem to recover from disturbances caused by natural and human-induced means.
Sedementation	The action or process by which patter settles to the bottom of a body of water.
Silviculture	The theory and practice of controlling the establishment, composition, growth and quality of forest stands; can include basic silviculture (e.g. planting and seeding), intensive silviculture (e.g. site rehabilitation, spacing and fertilization) and the harvesting of trees on managed forest lands.
Slash(ing)	In terms of logging methods, slashing is the activity whereby treelength timber is cut and shortened into shortwood logs. In terms of the forest renewal process, slash is the term used to describe the limbs, tops and any other unmerchantable timber residue remaining in the cutover after logging operations are completed.
Watershed	The topographic boundary, usually a height of land, that marks the dividing line from which surface streams flow in two different directions, forming major drainage patterns.

Wetland	Land that is seasonally or permanently covered by shallow water, or land where the water table is close to or at the surface.
Work Permit/Approval	Application for a work permit or approval must be submitted to the applicable Government department (i.e. Environment and Lands, Fisheries and Oceans, Newfoundland Forest Service) and approved before beginning each planned operation. The work approval, which follows after the submission and approval of a Forest Management Plan and an Annual Work Schedule, is utilized to outline site specific details and all required mitigation pertaining to each operation.

APPENDIX 3
WORKSHOP OPTIONS

EXAMPLE 1

Day 1	*Day 2*
(I) Introduction and ground rules for the workshop Slide Show for SFM for Front Line Workers (include overheads for **Logging for Wildlife)**	**(I)** Review topic areas and discuss good and bad practices Small group discussions from **Logging for**

Logging for Wildlife – What is the value of wildlife; what puts wildlife at risk; What species are at risk in your area?	**Wildlife** – How do we protect habitat and help wildlife at risk; what can you do to help out? **(O)** Leave for field tour; visit as many sites as possible
LUNCH	***LUNCH***
(I) Presentation on: ▫ SOP's; ▫ Guidelines ▫ ISO alphabet soup ▫ Commitment to the Environment ▫ Planning Small group selection of topic areas: 1,2,3,4,5,6 (as identified in Participant's Handbook) Case study activity – what's good; what's bad, etc. Share results of case study activity	**(O)** Continue field tour, using **Participant's Handbook** for notes and activities **(I or O)** Evaluation

EXAMPLE 2

DAY 1	*DAY 2*
(I) Logging for Wildlife Program	**(I)** Case Study discussion – share results of small group work **(O)** Field Tour, visiting as many sites as

	possible
LUNCH	***LUNCH***
(I) Introduce SFM program Slide Show for SFM Training Program for Front Line Workers Large group discussion: ❑ SOP's ❑ Environmental Guidelines ❑ ISO alphabet soup ❑ Commitment to the Environment ❑ Planning	**(O)** Field tour continues
COFFEE	
(I) Small group selection of topic areas 1,2,3,4,5,6 **(I)** Case study activity – what's good, what's bad, etc. Share results of case study	**(I or O)** Evaluation

EXAMPLE 3

DAY 1	***DAY 2***	***DAY 3 (or more)***
(I) Logging for Wildlife Program	**(I)** Case study activity – what's good, what's bad, etc. Share results of case study	**(O)** Continue field activities as your progress through each topic area

	(O) Topic by topic field tour	
LUNCH	***LUNCH***	***LUNCH***
(O) Field Tour to include field component of the Logging for Wildlife Program (O or I) Small group selection of topic areas 1,2,3,4,5,6	**(O)** Field tour continues	**(I or O)** Evaluation

EXAMPLE 4

DAY 1	***DAY 2***	***Day 3 (or more)***
(I) Logging for Wildlife Program	**(I)** Recap and debrief the two topic areas from last day Select two more topic areas; discuss in small groups what's good, what's bad, etc.	**(O)** Finish topic areas during field tours
LUNCH	***LUNCH***	***LUNCH***

Slide show on SFM Training Program for Front Line Workers – associated small group discussions Have large group select two topic areas – discuss forest operations activities Field Tour to address two topic areas and the Logging for Wildlife field component	**(O)** Field Tour to address two additional topic areas	**(I or O)** Evaluation

EXAMPLE 5

DAY 1	*DAY 2*	*DAY 3 (if necessary)*
(I) Introduce SFM program Slide Show for SFM Training Program for Front Line Workers Large group discussion: ❑ SOP's ❑ Environmental Guidelines ❑ ISO alphabet soup ❑ Commitment to the Environment	**(I)** Logging for Wildlife	

❑ Planning Why should we care? Review topic areas – small groups discussion (what is good, what is bad, etc.)		
LUNCH	***LUNCH***	
(O) Field tour to see as many topic areas as possible, using Participant's Handbook for reference	**(O)** Field tour continues for topic areas **(I or O)** Evaluation	

EXAMPLE 6

Day 1	***Day 2***
(I) Introduction to SFM Program Slide show for SFM Training Program for Front Line Workers Presentation and discussion on: • Commitment to the Environment • FMPOP's • Environmental Guidelines • Planning • Certification (ISO alphabet soup)	**(I)** Review Day one – commitment, FMPOP's, main topics, Why we should care, etc. **(O)** Field tour to see examples of topics using Participant's Handbook for reference

Why should we care? Small group discussions on topic areas (What is good, what is bad, etc.)	
LUNCH	***LUNCH***
(I) Logging for Wildlife	(O) Continue field tour on topic areas Evaluation