



# French Mill Brook Watershed Best Management Practices (BMPs): Forestry

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**1.0 Objective:** These Best Management Practices (BMPs) are to guide all forestry activities in the French Mill Brook Watershed Protected Water Area, to protect the quality and quantity of source water.

The Falmouth Watershed Committee may amend these Best Management Practices. It is the responsibility of the person(s) conducting Forestry Activities to ensure that they are operating under the guidance of the most current BMPs.

These Best Management Practices are a component of the Source Water Protection Plan for French Mill Brook Watershed. A Source Water Protection Plan is required under the Operating Approval for the Falmouth Water Treatment Facility.

## **2.0 Municipal, Provincial, and Federal Regulations**

All relevant Municipal, Provincial, and Federal Regulations apply to activities undertaken in the Protected Water Area (PWA).

## **3.0 Watershed**

Not more than 100 acres of the watershed area (Protected Water Area) may be clear cut per calendar year. Applications shall be processed on a first come, first served basis. Applications for forestry activities that are not granted approval based on this stipulation may be held over for the following year and operators must re-apply.

## **4.0 Forestry Approvals**

### **4.1 Applications for Forestry Approvals**

Applications for Forestry Activity Approvals submitted to the Water Works Operator must include the following information:

1. A cut plan including the following information:
  - a. map of the property showing area to be cut (both digital and hard copy preferred);
  - b. size of cut (acreage);
  - c. type of cut;
  - d. location of any existing and/or proposed access or haul roads, landings and skid trails;
  - e. location of any existing and/or proposed stream crossings (note that stream crossings also require notification or approval by the Nova Scotia Department of Environment and Labour (NSEL));
  - f. location of existing watercourses;
  - g. locations of special management areas (refer to item 6.0);
  - h. proposed monitoring schedule for checking vehicles and mechanical equipment for leaks, and general environmental monitoring (ruts/channels);
  - i. proposed monitoring schedule for water sampling and checking sediment traps, if requested by the Water Works Operator (refer to item 5.2.11);
2. Type of equipment to be used;
3. Anticipated start and completion dates for the operation; and
4. Any other information required by the Water Works Operator.

The Water Works Operator may send the application and/or draft approval to other agencies for comment prior to issuing the approval.

### **4.2 Forestry Approvals**

1. The Approval, or a copy, is to be kept on Site at all times and personnel directly involved in the Forestry operations are to be made aware of the terms and conditions which pertain to the Approval.
2. Upon completion of Forestry Activities, the "Completion of the Approved Work" form attached to the Approval shall be completed and returned to the Water Works Operator.
3. Appropriate spill kits shall be stored with vehicles or mechanical equipment associated with approved forestry operations.

## **5.0 All Forestry Operations**

All Forestry Activities that are undertaken in the Protected Water Area shall follow the Best Management Practices outlined in this document. Operators and landowners are encouraged to take further actions with regard to sustainable forestry practices and the protection of the quality and quantity of water.

### **5.1 Roads and Stream Crossings**

Refer to the *Best Management Practices for Roads and Stream Crossings* as developed by the Falmouth Watershed Committee.

### **5.2 Operations**

1. Avoid operating during excessively wet periods to avoid rutting, soil compaction, and erosion.
2. Machinery shall not be used in such a way as to create ruts which result in channelization of water and erosion.
3. Surface water runoff from roads, landings or skid trails shall not be channelled directly into watercourses, but filtered through a vegetated buffer area to minimize sediment entering directly into a watercourse.
4. Never allow machinery or debris into a watercourse, including washing vehicles or mechanical equipment within the Protected Water Area.
5. Inspect machinery for leaks before entering the Protected Water Area. Maintenance of vehicles or mechanical equipment is not to be conducted, except for emergency repair, within the Protected Water Area.
6. Use of vegetable based or food grade lubricants is preferred.
7. Bulk lubricants or fuel (quantities greater than 450L) shall not be stored within the Protected Water Area.
8. Lubricants or fuel stored or transported within the Protected Water must comply with existing regulations regarding 'approved' containers under the Transportation of Dangerous Goods (TDG) Regulations.
9. Vehicles are to be refuelled at least 20m away from any watercourse, wetland, or water body within the Protected Water Area.
10. Landings shall be located on level ground and away from streams.

11. The Forester will be responsible for any expenses incurred in carrying out environmental monitoring such as ensuring no rutting or channelization is occurring. Further environmental monitoring (i.e. water sampling, monitoring of sediment traps, etc.) if required by the Water Works Operator will also be the responsibility of the Forester or Approval Holder. Unless specified otherwise, all samples shall be collected, preserved and analyzed by qualified personnel, in accordance with recognized industry standards and procedures. All samples shall be analyzed by an accredited laboratory, unless specified otherwise, and sampling results shall be submitted within 30 days following the month of monitoring.

### **5.3 *Wildlife Corridors***

1. Leave wind firm trees.
2. Corridors left for wildlife should follow landform or stand boundaries to create irregular cut boundaries.

### **5.4 *Snags and Debris***

Snags and coarse woody debris shall be left on site after any harvesting activity to maintain site productivity and biodiversity values, in a manner similar to natural patterns as possible.

### **5.5 *Old Cuts***

If cutting next to an old cut, wait 10 years or until regeneration is at least 2m tall to avoid creating larger cuts, which ever comes first.

### **5.6 *Other***

Remove all garbage from the site and dispose of materials properly.

## 6.0 Special Management Areas

These include, but are not limited to:

- buffer zones
- watercourses and wetlands
- areas with significant wildlife habitat
- soft or wet ground – unstable soil structure
- areas where slopes exceed 20%

### 6.1 Buffer Zones

Buffer zones are areas along each side of a water course or wetland which leaves enough vegetation for wetland, watercourse, and water body protection.

1. No clear cutting shall be conducted within 65m of a wetland, watercourse, or water body within the Protected Water Area.
2. Despite item 6.1.1, only selective cutting is permitted within the 65m buffer zone provided the Water Works Operator has been notified of the commencement date of activity and approval has been granted.
3. The Water Works Operator may require a cut plan for cutting within the 65m buffer zone depending on the intensity and location of the proposed cut (refer to item 4.1 for items that may be requested). A site visit(s) may be conducted by the Water Works Operator.
4. Buffer Zone edges should follow landform or stand boundaries to create irregular cut boundaries (maintaining the minimum 65m buffer zone).
5. Forest processing waste, such as saw dust and wood chips, is not to be piled or accumulated within 650m of the bank of French Mill Brook reservoir or within 65m of the bank of a watercourse, water body, or wetland.
6. Refer to the *Wildlife Habitat and Watercourses Protection Regulations* for additional information on activities that may or may not be permitted in a buffer zone.

## **6.2 Areas where Slopes Exceed 20%**

Within the 65m buffer zone, land that has an average slope greater than 20%, the forestry operator shall increase the width of the buffer zone by 1m for each additional 2% of slope to a maximum width of 100m.

## **7.0 Definitions**

(For French Mill Brook Watershed Protected Water Area only)

**Clear cut -** The harvesting of all merchantable trees from a piece of land more than 2 acres in size (those operations that require forestry approval). This land will be considered to be in this state for 10-16 years or until regeneration reaches an average height of 2m, whichever ever comes first. (Variations include strip cutting and patch cutting)

## **Sources of Information**

Belt, K. and R. Campbell. *Best Management Practices – Soil & Water Conservation*.

Davis, L. (compiled by for the Falmouth Watershed Committee). 2002. *Forestry Restrictions Discussion Paper*.

FRC – Forest Resource Consultants. 2004. *Forest Management Framework Plan for the French Mill Brook Watershed Protected Water Area*.

Nova Forest Alliance. 2002. *Contractors & Operators Best Management Practices Manual*.

Nova Scotia Department of Natural Resources. 2002. *Habitat and Watercourses Protection Regulations*.

**OFFICE USE ONLY:**

Date Received: \_\_\_\_\_

Approved:  Yes  No

Date Approved: \_\_\_\_\_

**FORESTRY ACTIVITY APPLICATION FORM**  
**FRENCH MILL BROOK WATERSHED**

Name: \_\_\_\_\_

Address, Phone & Fax Numbers, Email: \_\_\_\_\_

Anticipated Start Date: \_\_\_\_\_ Anticipated Completion Date: \_\_\_\_\_

Location of Cut: \_\_\_\_\_

Map Series: \_\_\_\_\_ PID#: \_\_\_\_\_

Size of Cut (i.e. acres, hectares, cords): \_\_\_\_\_

Type of Cut: \_\_\_\_\_

Are there any water courses within the proposed cut area or within 65m of the proposed cut area?  YES  NO

Does the cut area include land with a slope greater than 20%? :  YES  NO

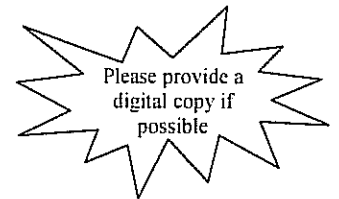
Type of Equipment to be used: \_\_\_\_\_

Monitoring schedule for checking vehicles and mechanical equipment for leaks; and general environmental monitoring (ruts, channels):

**MAP of Proposed Cut Location (Attach additional pages as required):**

*Please include proposed or existing:*

- roads
- landings
- skid trails
- water courses, wetlands
- stream crossings
- special management areas, etc.



# French Mill Brook Watershed Best Management Practices (BMPs): Roads & Stream Crossings

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**1.0 Objective:** These Best Management Practices (BMPs) are to guide road and stream crossing construction and/or maintenance activities in the French Mill Brook Watershed Protected Water Area, to protect the quality and quantity of source water.

The Falmouth Watershed Committee may amend these Best Management Practices. It is the responsibility of the person(s) conducting Road and Stream Crossing Construction and/or Maintenance Activities to ensure that they are operating under the guidance of the most current BMPs.

These Best Management Practices are a component of the Source Water Protection Plan for French Mill Brook Watershed. A Source Water Protection Plan is required under the Operating Approval for the Falmouth Water Treatment Facility.

## 2.0 Municipal, Provincial, and Federal Regulations

All relevant Municipal, Provincial, and Federal Regulations apply to activities undertaken in the Protected Water Area (PWA).

Approval is required for any road intersecting a Department of Transportation and Public Works road from the Department of Transportation and Public Works.

Road  
BMPs

## 3.0 Watershed

Road construction has been shown to be a major cause of soil erosion and stream siltation. Road construction and maintenance is also a concern for landowners in terms of property access. Therefore, the Falmouth Watershed Committee and the Water Works Operator encourages the use of existing roads.



## **4.0 Road Construction Approvals**

### ***4.1 Applications for Road Construction Approvals***

Applications for Road Construction Approvals submitted to the Water Works Operator must include the following information:

1. A map of the property showing (both digital and hard copy preferred):
  - a. location of any existing and/or proposed roads
  - b. location of any existing and/or proposed stream crossings (note that stream crossings also require notification of and/or approval by the Nova Scotia Department of Environment and Labour (NSEL));
  - c. location of existing watercourses;
  - d. locations of special management areas (refer to item 6.0);
  - e. proposed monitoring schedule for checking vehicles and mechanical equipment for leaks, and general environmental monitoring (ruts/channels);
  - f. proposed monitoring schedule for water sampling and checking sediment traps, if requested by the Water Works Operator (refer to item 5.1.21);
2. Type of equipment to be used;
3. Anticipated start and completion dates for the operation; and
4. Any other information required by the Water Works Operator.

The Water Works Operator may send the application and or draft approval to other agencies for comment prior to issuing the approval.

### ***4.2 Road Construction Approvals***

1. The Approval, or a copy, is to be kept on Site at all times and personnel directly involved in the construction operations are to be made aware of the terms and conditions which pertain to the Approval.
2. Upon completion of the Road Construction Activities, the "Completion of the Approved Work" form attached to the Approval shall be completed and returned to the Water Works Operator.
3. Appropriate spill kits shall be stored with vehicles or mechanical equipment associated with approved road construction operations.

## **5.0 All Road and Stream Crossing Construction and/or Maintenance Operations**

All Road and Stream Crossing Construction and/or Maintenance Activities that are undertaken in the Protected Water Area shall follow Best Management Practices.

Operators and landowners are encouraged to take further actions with regard to sustainable construction and maintenance practices and the protection of the quality and quantity of water.

### **5.1 Operations**

1. Roads shall be constructed on stable ground and in a manner to prevent water collection on the road bed or to cross it except through a culvert or under a bridge.
2. Roads shall be constructed a minimum of 20m away from watercourses; except at stream crossings where the road shall intersect at right angles.
3. No chemicals are to be used in dust control.
4. Where possible and as much as possible, roads are to be planned to make use of existing roadways and to minimize the number of stream crossings required.
5. Take off ditches shall be used at least 30m before a stream crossing to allow sediment to filter out before the water enters a watercourse.
6. Avoid operating during excessively wet periods to avoid rutting, soil compaction, and erosion.
7. During road construction, no more than 1900 square metres of roadway subgrade shall be exposed at any time in the Protected Water Area.
8. Machinery shall not be used in such a way as to create ruts which result in channelization of water and erosion.
9. Erosion control methods shall be used when conducting road or stream crossing construction or maintenance.
10. Surface water runoff from roads, landings or skid trails shall not be channelled directly into watercourses, but filtered through a vegetated buffer area to minimize sediment entering directly into a watercourse.
11. Never allow machinery or debris into a watercourse, including washing vehicles or mechanical equipment within the Protected Water Area.

12. Pipe arches and other such stream crossings (i.e. open-bottomed box culverts) which retain the streambed in its natural form should be used for stream crossings to minimize sedimentation resulting from damage to the streambed and the disturbance of soils.
13. The owner, operator or person responsible for a road or cross culvert is also responsible to maintain or repair it.
14. Maintenance, repair or removal of stream crossings, including bridges, requires separate approval from the Nova Scotia Department of Environment and Labour and notification to the Water Works Operator.
15. Inspect machinery for leaks before entering the Protected Water Area. Maintenance of vehicles or mechanical equipment is not to be conducted, except for emergency repair, within the Protected Water Area.
16. Use of vegetable based or food grade lubricants is preferred.
17. Bulk lubricants or fuel (quantities greater than 450L) shall not to be stored within the Protected Water Area.
18. Lubricants or fuel stored or transported within the Protected Water must comply with existing regulations regarding 'approved' containers under the Transportation of Dangerous Goods (TDG) Regulations.
19. Vehicles are to be refuelled at least 20m away from any watercourse, wetland, or water body within the Protected Water Area.
20. Landings shall be located on level ground and away from streams.
21. The individual responsible for the construction and/or maintenance activities will be responsible for any expenses incurred in carrying out environmental monitoring such as ensuring no rutting or channelization is occurring. Further environmental monitoring (i.e. water sampling, monitoring of sediment traps, etc.) if required by the Water Works Operator, will also be the responsibility of that individual or Approval Holder. Unless specified otherwise, all samples shall be collected, preserved and analyzed by qualified personnel, in accordance with recognized industry standards and procedures. All samples shall be analyzed by an accredited laboratory, unless specified otherwise, and sampling results shall be submitted within 30 days following the month of monitoring.

## **5.2 *Harvesting***

Tree harvesting that is conducted in conjunction with road or stream crossing construction and/or maintenance shall follow the Forestry BMPs as decided upon by the Falmouth Watershed Committee.

### 5.3 Other

Remove all garbage from the site and dispose of materials properly.

## 6.0 Special Management Areas

These include, but are not limited to:

- buffer zones
- watercourses and wetlands
- areas with significant wildlife habitat
- soft or wet ground – unstable soil structure
- areas where slopes exceed 20%

## 7.0 Definitions

*(NS Department of Transportation and Public Works)*

- Highways** – The whole right-of-way which is reserved for use in constructing the roadway and its equipment.
- Roadbed** – That portion of the road way extending from shoulder line to shoulder line, in other words, the sub-grade and shoulders considered as a unit.
- Roadway** – The portion of the Highway included between the outside lines of gutters, or side ditches, including all the appertaining structures, and all slopes, ditches, channels, waterways, etc., necessary to proper drainage and protection
- Subbase** – Granular materials placed immediately above the subgrade.
- Subgrade** – All approved material between the bottom of the excavation and the top of the completed embankment grade prior to the placement of gravels. (as taken from the Nova Scotia Department of Transportation and Public Works' *Highway Construction and Maintenance Standard Specification*)

## **8.0 Additional Practices**

Additional Best Management Practices are laid out in the following documents by the Department of Natural Resources:

1. Woodlot Roads Stream Crossings. (Glen C. Brathwaite 1992)
2. Building Woodland Roads. (Nova Scotia Forest Practices 2)
3. Forest Access Road Planning

### **Sources of Information**

Brathwaite, G.C. 1992. *Woodlot Roads Stream Crossings*.

Davis, L. (compiled by for the Falmouth Watershed Committee). 2002. *Forestry Restrictions Discussion Paper*.

Nova Forest Alliance. 2002. *Contractors & Operators Best Management Practices Manual*.

Nova Scotia Department of Natural Resources. 2002. *Habitat and Watercourses Protection Regulations*.

Nova Scotia Department of Natural Resources. *Nova Scotia Forest Practices 2: Building Woodland Roads*.

Nova Scotia Department of Transportation and Public Works. 1998. *Highway Construction and Maintenance Standard Specification*.

**OFFICE USE ONLY:**

Date Received: \_\_\_\_\_

Approved:  Yes  No

Date Approved: \_\_\_\_\_

**ROAD CONSTRUCTION APPLICATION FORM  
FRENCH MILL BROOK WATERSHED**

Name: \_\_\_\_\_

Address, Phone & Fax Numbers, Email: \_\_\_\_\_  
\_\_\_\_\_

Anticipated Start Date: \_\_\_\_\_ Anticipated Completion Date: \_\_\_\_\_

Location of Road: \_\_\_\_\_

Map Series: \_\_\_\_\_ PID#: \_\_\_\_\_

Are there any water courses within 20m of the proposed road?

\_\_\_\_\_ YES \_\_\_\_\_ NO

Number of Stream Crossings Required: \_\_\_\_\_

Estimated Length of Proposed Road (m or km): \_\_\_\_\_

Does the proposed road location include land with a slope greater than 20%? :

\_\_\_\_\_ YES \_\_\_\_\_ NO

Type of Equipment to be used: \_\_\_\_\_  
\_\_\_\_\_

Monitoring schedule for checking vehicles and mechanical equipment for leaks; and  
general environmental monitoring (ruts, channels):  
\_\_\_\_\_  
\_\_\_\_\_

**MAP of Proposed Road Location (Attach additional pages as required):**

*Please include proposed or existing:*

- roads
- landings
- skid trails
- water courses, wetlands
- stream crossings
- special management areas, etc.

