

## 6 Supplementary Best Practices for General Operations

In addition to the specific highway maintenance activities described in the preceding pages, the Ministry's maintenance contractors may also undertake or accommodate other maintenance activities associated with general highway operations. The following BPs apply to several topic areas that are not specific to a particular maintenance activity.

As with the BPs developed for specific maintenance activities, these supplementary BPs provide a starting point to ensure work can be completed in a manner that is compliant with environmental legislation. Other documents and resources are available which have more detailed information and these are referenced and linked throughout the following sections. Appropriately qualified professionals may also provide additional advice.

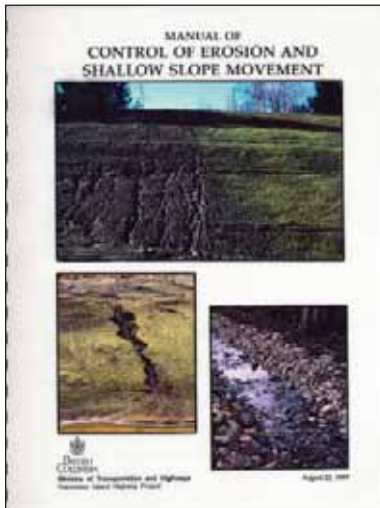
The implementation of these best practices support, in a broad manner, any guideline developed for individual activities.



## Erosion and Sediment Control

### 6.1 Erosion and Sediment Control

Many highway maintenance activities involve the disturbance of ground surfaces. These activities can cause erosion of soils and the release of sediment which must be managed.



#### Environmental Issues

Primary environmental issues relating to the management of erosion and sediment generated from highway maintenance activities are summarized in the following table. It should be noted that site-specific or activity-specific conditions (e.g., topography, weather) may present additional issues you will need to address in planning and undertaking your works.

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
Excavation	May introduce sediment or other deleterious substances to a watercourse through erosion and transport from areas of newly disturbed soils occurring in excavations and/or stockpiles	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).
	May release fine sediment and particulate matter to air	Control of fugitive dust to avoid air quality impacts in accordance with local bylaws.  Provincial environmental objectives include air quality criteria for the 10 micrometer particulate fraction (PM10) generated by aggregate dust—a 24-hour average PM10 less than 50 µg/m <sup>3</sup> (BC Ambient Air Quality Objectives).

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
<b>Fills</b>	May introduce sediment or other deleterious substances to a watercourse through erosion and transport from newly placed or disturbed soils	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).
	May release fine sediment and particulate matter to air	Control of fugitive dust to avoid air quality impacts in accordance with local bylaws.  Provincial environmental objectives include air quality criteria for the 10 micrometer particulate fraction (PM10) generated by aggregate dust—a 24-hour average PM10 less than 50 µg/m <sup>3</sup> (BC Ambient Air Quality Objectives).
<b>Grading</b>	May introduce sediment or other deleterious substances to a watercourse through erosion and transport from areas of newly disturbed soils	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).
	May release fine sediment and particulate matter to air	Control of fugitive dust to avoid air quality impacts in accordance with local bylaws.  Provincial environmental objectives include air quality criteria for the 10 micrometer particulate fraction (PM10) generated by aggregate dust—a 24-hour average PM10 less than 50 µg/m <sup>3</sup> (BC Ambient Air Quality Objectives).



### Environmental Best Practices

The following BPs are provided as guidelines to help you ensure your routine works are completed in compliance with the performance standards and environmental legislation. Please note that the BPs provided below generally apply to most work activities. However, BPs specific to certain activities are described in earlier sections of this document.

### Regulatory Agency Contact

- Identify any sensitive habitat areas, including wetted ditches and natural watercourses—streams, lakes and marine foreshores, found within your work area. Determine how much impact your required works will have on the identified areas and if any specialized erosion and sediment protection measures are required. Are you planning to re-grade a non-vegetated roadside drainage ditch that only conveys storm water? Are you required to remove debris jams from a permanently wetted fish-bearing watercourse that crosses the highway right-of-way? What type of equipment and materials are you planning to use to stabilize a large lakeside section of highway embankment that has been damaged by erosion? Are there any areas within your jurisdiction prone to regular debris accumulations or erosion issues? By asking these questions, you should be able to identify any planned works or areas that may be of concern to regulatory agencies.

## Erosion and Sediment Control

- Meet with the appropriate regulatory agency contact, as listed in Section 8, to discuss site-specific environmental protection measures. Refer to Section 7 for information on the Memorandum of Understanding with MoE, and the recommended protocol for maintaining regular communications with regulatory agencies.

### Timing of Works

#### Erosion Prevention

- Plan proactively for erosion and sediment control. Prior to beginning work, anticipate what techniques will be needed by your maintenance activity and arrange for needed materials.
- Manage potential erosion before it becomes a problem. Sediment controls have a limited capacity to remove mobilized sediment and should be used to support well-planned and properly installed erosion controls.

#### Sediment Control

- Vegetative covers take time to establish; install them early in the growing season to support their growth.
- Installation of controls, like most works, is preferably undertaken during periods of dry weather (e.g., summer) as this allows easier control of sediment. Typically this is also a less sensitive period for fish and wildlife than other seasons. If unfavourable weather is the driver for the installation of additional controls, plan to use prefabricated and easily installed control structures to reduce the potential for sediment release from the controls themselves.
- If your erosion and sediment controls have the potential to interrupt fish passability (e.g., within seasonally wetted channels or crossings), you must schedule their use and removal to coincide with your region's instream work window. Contact your local MoE and DFO offices for further information on timing windows in your District.

### Site Management

#### Preservation of Vegetation

- Retain existing vegetation and ground cover where possible to limit areas of exposed soils which may be transported to watercourses through overland flow.
- Restrict vehicle or equipment access to paved or surfaced areas to minimize disruption of existing site vegetative cover.

#### Erosion Control

- To reduce erosion potential, convey surface runoff through swales or drainages designed to minimize flow velocity and erosion, while maximizing settling potential. Use trenched silt fences or earthen berms to direct surface runoff away from exposed soils.

- Completely cover temporary stockpiles or erodible material with polyethylene or tarps to control loss of material by rainfall impact.
  - Revegetate finished construction areas.

### **Sediment Control**

- Install silt fencing around stockpiles, at the top of banks of disturbed slopes and around areas of disturbance to reduce the potential for transportation of sediment to watercourses.
- Filter fabric bags may be temporarily installed inside catch basins, or other runoff collection structures to contain sediment transported from the work area.
- Where possible, collect runoff into a suitable sediment settling pond or trap prior to discharge off-site.
- Contain any sediment-laden water generated during your works in an isolated work cell. Use a pump to draw sediment-laden water out of the work cell and discharge it to a level vegetated area where sediment can settle as the water infiltrates the ground.

### **Re-vegetation**

- Re-vegetate exposed soils as quickly as possible, and use plant species that are native and/or adapted to the area to aid in site stabilization, long-term erosion and sediment control, and invasive plant control.
- Replace any vegetation removed within 15 m of the top of bank of a drainage course that has fish habitat values. Trees and shrubs used for re-vegetation should be species native to the area.
- Hydroseeding with mulch or dry seeding with a covering of straw or compost is an effective technique for quickly establishing a protective grass cover. Where seeding is impractical but surface protection is needed, consider straw mulching, erosion blankets, or other covering for interim surface erosion control.
- Refer to MoT's Standard Specification for Highway Construction 757 – Re-vegetation Seeding, which provides MoT's standard seed mixes and quality standards.

### **Monitoring and Maintenance**

- Check for signs of erosion (e.g., formation of rills and gullies, slumping, the presence of sediment-laden runoff water) on slopes and banks, particularly after storm events.
- Clean accumulated sediment from filter fabric bags and the base of silt fences.
- To continue to prevent the movement of sediment to nearby watercourses, ensure that all sediment control structures are installed, maintained and monitored until they are no longer needed.

## Erosion and Sediment Control

- Regularly collect loose material and sediment accumulating within your work area.



### Key Information Sources

The documents and websites listed below are recommended resources for roadside vegetation management. They can provide examples of existing protocols and management strategies, as well as additional information on specific operational BPs (e.g., erosion and sediment control techniques).

#### MoT Technical Circulars:

MoT Technical Circulars are available at:

[http://www.th.gov.bc.ca/Publications/Circulars/Current\\_technical.asp](http://www.th.gov.bc.ca/Publications/Circulars/Current_technical.asp)

#### Locally Developed BPs

**(Provide any locally-developed BPs):**

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#### Other Resources:

**Protection of the Environment – Section 165 – 2008 Standard Specifications for Highway Construction.** 2008. BC Ministry of Transportation and Infrastructure.

[http://www.th.gov.bc.ca/Publications/const\\_maint/contract\\_serv/standard\\_specs/2009\\_Stand\\_Specs\\_Vol\\_1.pdf](http://www.th.gov.bc.ca/Publications/const_maint/contract_serv/standard_specs/2009_Stand_Specs_Vol_1.pdf)

**Revegetation Seeding – Section 757 – 2008 Standard Specifications for Highway Construction.** 2008. BC Ministry of Transportation and Infrastructure.

[http://www.th.gov.bc.ca/Publications/const\\_maint/contract\\_serv/standard\\_specs/2009\\_Stand\\_Specs\\_Vol\\_2.pdf](http://www.th.gov.bc.ca/Publications/const_maint/contract_serv/standard_specs/2009_Stand_Specs_Vol_2.pdf)

**Manual of Control of Erosion and Shallow Slope Movement.** August 1997. BC Ministry of Transportation.

[http://www.th.gov.bc.ca/Publications/eng\\_publications/environment/references/Man\\_Control\\_Erosion.pdf](http://www.th.gov.bc.ca/Publications/eng_publications/environment/references/Man_Control_Erosion.pdf)

**Standards and Best Practices For Instream Works.** March 2004. Ministry of Water, Land and Air Protection.

<http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf>

**Erosion and Sediment Control Guide for Roadway Projects.** 2005.

Transportation Association of Canada.

<http://www.transportationassociation.ca/english/information/services/tacnews/summer2005-17.htm>

**Erosion and Sediment Control Field Manual.** June 1999.  
California Regional Water Quality Control Board.  
<http://www.saratoga.ca.us/pdf/ErosionFieldManual.pdf>

**Aggregate Operators Best Management Practices Handbook for British Columbia**  
<http://www.empr.gov.bc.ca/Mining/MineralStatistics/MineralSectors/ConstructionAggregates/ReportsandPublications/Pages/AggregateOperators.aspx>

**Water Quality Best Management Practices Compendium Website.**  
Environmental Protection Division, Ministry of Environment.  
[http://www.env.gov.bc.ca/wat/wq/nps/BMP\\_Compendium/nps\\_bmp.htm](http://www.env.gov.bc.ca/wat/wq/nps/BMP_Compendium/nps_bmp.htm)

**Catalogue of Stormwater Best Management Practices.** September 2005.  
Idaho Department of Environmental Quality.  
[http://www.deq.state.id.us/water/data\\_reports/storm\\_water/catalog/index.cfm](http://www.deq.state.id.us/water/data_reports/storm_water/catalog/index.cfm)



**Checklist for Environmental Protection Requirements**

- Is your proposed work considered a “routine” maintenance activity? If not, approvals or permits may be required. Contact your local municipal, provincial, or federal regulatory agency staff.
- Has this project been discussed with local environmental regulatory staff? In addition to the BP information presented, other site-specific conditions may apply.
- Have site-specific environmental protection requirements been identified? List below:
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## Invasive Plant Management

### 6.2 Invasive Plant Management

The management of invasive plants during road construction and highway maintenance activities presents a significant challenge for the Ministry of Transportation and Infrastructure, its Maintenance Contractors, and adjacent land managers. Many highway operational activities carry the risk of potentially introducing or spreading invasive plants. The term invasive plant includes provincially listed noxious weeds as well as other introduced plant species with the potential to pose undesirable impacts on humans, animals, or ecosystems.



#### Environmental Issues

Primary environmental issues relating to the management of invasive plants and noxious weeds are summarized in the following table. It should be noted that site-specific conditions might present additional issues you will need to address in planning and undertaking your works.

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
<b>Shoulder Gravelling</b> (See Section 5.2)	May contribute to the spread of noxious weeds by modifying roadside growing conditions, displacing native plants, or transporting invasive plant material	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).
<b>Shoulder Maintenance</b> (See Section 5.2)	May contribute to the spread of noxious weeds by displacing or disturbing native vegetation, transporting plant material and seeds	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).
<b>Debris Removal</b> (See Section 5.4)	May contribute to the spread of noxious weeds if the removed material is improperly handled	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
Ditch and Watercourse Maintenance (See Section 5.5)	May contribute to the spread of noxious weeds by displacing native vegetation or through improper disposal of invasive plant material	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).
Shore, Bank and Watercourse Maintenance (See Section 5.7)	May contribute to the spread of noxious weeds by displacing native vegetation or through improper disposal of invasive plant material	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).
Shore, Bank and Watercourse Maintenance (See Section 5.7)	May displace native vegetation	No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).
	May contribute to the spread of noxious weeds if the removed material is improperly handled May adversely affect animal and public health, e.g., skin burns from Hog Weed	No dispersal of noxious weeds or their seeds ( <i>Weed Control Act</i> , Weed Control Regulation).
	May introduce deleterious substances to a watercourse when chemicals or biocontrol management methods are implemented	No use, handling, release, transport, storage, or disposal of a pesticide in a manner that causes or is likely to cause an unreasonable adverse effect ( <i>Integrated Pest Management Act</i> and Regulations). No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)). No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).



**Environmental Best Practices**

The following BPs are provided as guidelines to help you ensure your routine works are completed in compliance with the performance standards and environmental legislation. Please note that the general BPs provided apply for most work activities within this category; if BPs specific to the activity are available they are also noted below.

**Regulatory Agency Contact**

- Meet with the appropriate regulatory agency contact, as listed in Section 8, to discuss site-specific environmental protection measures. Refer to Section 7 for information on the Memorandum of Understanding with MoE and the recommended protocol for maintaining regular communications with regulatory agencies.
- For invasive plant control work this will involve meeting with the local invasive plant coordinator and/or weed control contractors to review proposed vegetation control work.

## Invasive Plant Management

- Ensure all chemical control of noxious weeds/invasive plants is done under a valid Pest Management Plan and/or Permit from MoE.
- Contractors should coordinate manual/mechanical controls with other agencies carrying out herbicide work on invasive plants.

### Timing of Works

- Be aware that vegetation clearing can negatively impact nesting birds in spring and early summer. Inspect your work area for any occupied bird nests, eggs, or nests of species protected under the *Wildlife Act* and *Migratory Bird Convention Act* during this period.
- When works require renegotiation activities, act quickly to establish a native plant cover that will aid in excluding invasive plants from disturbed sites.
- Plan control activities prior to flowering and seed-set stages of plant growth.

### Material Handling

- Use clean fill material free of invasive plant seeds.
- For re-vegetation activities, select locally adapted, non-invasive plant species.
- Prior to removing invasive plant species refer to methods outlined in the T.I.P.S. publications created by the Invasive Plant Council of British Columbia.
- If Adopt-a-Highway groups, or other crews, are used for invasive plant removal programs, ensure they receive proper training on requirements for actual plant removal and safety for operations
- Ensure that noxious weed/invasive plant removal or control methods that chemically or physically modify habitat are in accordance with the *Integrated Pest Management Act & Regulations*, Section 9 of the *Water Act*, and Section 35(1) of the *Fisheries Act*.
- Ensure all noxious weed/invasive plant materials are disposed of in accordance with the *Weed Control Act* Regulations and any local area protocols. When transporting noxious weeds/invasive plant or their seeds, use a covered container.

### Equipment Use

- Avoid parking or staging equipment in areas of invasive plant infestations.
- Wash or brush down vehicles or equipment used in the removal of noxious weed/invasive plants to ensure they are free of noxious weeds/invasive plants and seed-containing material as they leave the work area. As a basic rule, remove and bag invasive plant seeds and plant parts from equipment. Dispose of all waste at a landfill or other designated site.

- When mowing, start vegetation control activities in “weed-free” areas and end in infested areas to minimize the risk of transporting seeds or plant materials.



### Key Information Sources

The documents and websites listed below are recommended resources for invasive plant management. They can provide examples of existing protocols and management strategies, as well as additional information on specific operational BPs.

#### **MoT Technical Circulars:**

There are no relevant Technical Circulars authored to-date for this activity.

All Technical Circulars are available at:

[http://www.th.gov.bc.ca/Publications/Circulars/Current\\_technical.asp](http://www.th.gov.bc.ca/Publications/Circulars/Current_technical.asp)

#### **Locally Developed BPs**

**(Provide any locally-developed BPs):**

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#### **Other Resources:**

**T.I.P.S.: Targeted Invasive Plant Solutions.** Invasive Plant Council of British Columbia. 2007.

<http://www.invasiveplantcouncilbc.ca/resources/targeted-invasive-plant-solutions-tips>

**Invasive Plant Strategy for British Columbia.** Undated. Invasive Plant Council of BC.

[www.invasiveplantcouncilbc.ca/publications/invasive-plant-strategy.pdf](http://www.invasiveplantcouncilbc.ca/publications/invasive-plant-strategy.pdf)

**Riparian Management Area Guidebook.** Forest Practices Code. Ministry of Forests. 1995.

<http://www.for.gov.bc.ca/tasb/legregs/fpc/fpcguide/riparian/Rip-toc.htm>

**BC Weed Control Act: Noxious Weeds in BC Website.** Pest Management, Ministry of Agriculture and Lands.

<http://www.al.gov.bc.ca/cropprot/noxious.htm>

**“Dangerous Travelers” Invasive Plant Control Video**

<http://www.fs.fed.us/invasivespecies/prevention/dangeroustravelers.shtml>

**Roadside Vegetation Management Website.** US Department of Transportation, Federal Highway Administration

<http://www.fhwa.dot.gov/environment/vegmgmt/>

## Invasive Plant Management

**Adopt-a-Highway Program.** BC Ministry of Transportation and Infrastructure

[http://www.th.gov.bc.ca/adopt-a-hwy/adopt-a-hwy\\_home.htm](http://www.th.gov.bc.ca/adopt-a-hwy/adopt-a-hwy_home.htm)



### Checklist for Environmental Protection Requirements

- Is your proposed work considered a “routine” maintenance activity? If not, approvals or permits may be required. Contact your local municipal, provincial, or federal regulatory agency staff.
- Has this project been discussed with local environmental regulatory staff? In addition to the BP information presented, other site-specific conditions may apply.
- Have site-specific environmental protection requirements been identified? List below:
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### 6.3 Use of Potentially Harmful Substances

Highway maintenance activities frequently require the use of materials or substances that may be considered harmful to both humans and the environment. Wood preservatives, pesticides, road salts, and dust palliatives are examples of compounds that carry exposure warnings requiring workers to use personal protective equipment and make efforts to minimize their personal exposure because of risks to human health. Such substances also have the potential to harm plants, animals, and other organisms and to degrade soil, air, or water quality in a variety of ways. Toxic effects to some organisms like fish and other aquatic life may occur with only small exposures. In other cases, the effect may be more chronic with harmful substances enduring for long periods in sediment and soil.



#### Environmental Issues

Primary environmental issues relating to the use of potentially harmful substances are summarized in the following table. It should be noted that site-specific conditions might present additional issues you will need to address in planning and undertaking your works.

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
Working with Harmful Substances – General	May introduce deleterious substances to a stream or roadside watercourse through runoff	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)). Disposal of all waste materials in accordance with the <i>Act</i> and reporting of any hazardous materials ( <i>Environmental Management Act</i> )
	May damage roadside riparian vegetation or other significant habitats depending on method of application	No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).

## Use of Potentially Harmful Substances

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
Using Treated Wood Products	If used below the high water mark of a watercourse it may release preservatives toxic to fish.	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)). Reporting of any polluting substance spills ( <i>Environmental Management Act</i> , Section 79(5)) and disposal of all waste materials in accordance with the Act ( <i>Environmental Management Act</i> , Waste Disposal Regulation).
Noxious Weed / Invasive Plant Control (See Section 5.10)	May introduce deleterious substances to a watercourse when chemical management methods are implemented	No use, handling, release, transport, storage, or disposal of a pesticide in a manner that causes or is likely to cause an unreasonable adverse effect ( <i>Integrated Pest Management Act</i> and Regulations). No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)). No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).
Application of Winter Aggregate and De-icing (Salt) Compounds (See Section 5.9)	May introduce deleterious substances to a watercourse through application or improper materials containment	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).
	May damage vegetation, soil, surface or groundwater quality through potential salt leaching	Disposal of all waste materials in accordance with the Act and reporting of any hazardous materials ( <i>Environmental Management Act</i> ).
Dust Control (See Section 5.3)	May damage roadside riparian vegetation or other significant habitats through the over-spraying of de-icing compounds	No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).
	May introduce sediment or other deleterious substances through runoff or by direct application of dust control chemicals to watercourses at crossings	No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).
	May damage roadside riparian vegetation or other significant habitats through the over-spraying of road shoulders	No harmful alteration, disruption or destruction of fish habitat without authorization ( <i>Fisheries Act</i> , Section 35(1)).
	May contaminate surface waters, groundwater, and soils through improper storage or disposal of dust control palliatives	Reporting of any polluting substance spills ( <i>Environmental Management Act</i> , Section 79(5)) and disposal of all waste materials in accordance with the Act ( <i>Environmental Management Act</i> , Waste Disposal Regulation). No release of any substance that could be deleterious (toxic) to fish or fish habitat ( <i>Fisheries Act</i> , Sections 34(1) and 36(3)).

Work Activity	Potential Environmental Impacts	Performance Standards and Legal Requirements
<p style="text-align: center;"><b>Rest Area Maintenance</b> (See Section 5.11)</p>	<p>May introduce chlorinating compounds (used to treat potable water), wood preservatives, cleaning products, etc., to soil or water</p>	<p>Reporting of any polluting substance spills (<i>Environmental Management Act</i>, Section 79(5)) and disposal of all waste materials in accordance with the <i>Act</i> (<i>Environmental Management Act</i>, Waste Disposal Regulation).</p> <p>No release of any substance that could be deleterious (toxic) to fish or fish habitat (<i>Fisheries Act</i>, Sections 34(1) and 36(3)).</p>



### Environmental Best Practices

The following BPs are provided as guidelines to help you ensure your routine works are completed in compliance with the performance standards and environmental legislation. Please note that the general BPs provided apply for most work activities within this category; if BPs specific to the activity are available they are also noted below.

#### Regulatory Agency Contact

- Prior to using potentially harmful substances as part of your management activities, identify any sensitive habitat areas, including wetted ditches and natural watercourses (streams, lakes and marine foreshores), found within your work area that may be of concern to regulatory agencies.
- Meet with the appropriate regulatory agency contact, as listed in Section 8, to discuss site-specific environmental protection measures. Refer to Section 7 for information on the Memorandum of Understanding with MoE and the recommended protocol for maintaining regular communications with regulatory agencies.

#### Material Selection

- Consider the use of alternative substances in environmentally sensitive areas (i.e., near watercourses).

#### Materials Storage

- Store hazardous materials in accordance with applicable regulations and ensure that deleterious substances are handled with care.
- Ensure that hazardous materials use, storage and disposal is in accordance with the information contained in their Material Safety Data Sheets.
- Store potentially harmful substances such as wood preservatives, pesticides, and road salts on impermeable surfaces to prevent their release to soils and groundwater.

#### Emergency Spills

Keep a spill containment kit readily accessible on-site in the event of a release of a deleterious substance into the environment.

#### Emergency Contacts

MoE's Environmental Emergency Management Program can be contacted through the BC Provincial Emergency Program (PEP) at 1-800-663-3456

## Use of Potentially Harmful Substances

- Minimize loss at storage piles. Keep storage piles of materials containing potentially harmful substances (road salt) well covered and dry to prevent chemical release through leaching and storm water runoff.
- Have a spill response plan in place and spill kits on site.

### Equipment Use

- Ensure equipment is selected and operated to accurately apply potentially harmful substances.
- Mix any hazardous materials to be used in a contained area to reduce the risk of contaminating soils or surface waters adjacent to the road surface.
- Clean tools and equipment off-site to prevent the release of wash water that may contain potentially harmful substances.
- Use caution during loading of trucks and transport of substances to minimize loss of materials.



### Key Information Sources

The documents and websites listed below are recommended resources for winter road maintenance. They can provide examples of existing protocols and management strategies, as well as additional information on specific operational BPs.

### MoT Technical Circulars:

Use of Hog Fuel for Road Construction Purposes T-17/06

Dust Abatement Chemicals T-5/94

These and all other MoT Technical Circulars are available at:

[http://www.th.gov.bc.ca/Publications/Circulars/Current\\_technical.asp](http://www.th.gov.bc.ca/Publications/Circulars/Current_technical.asp)

### Locally Developed BPs

**(Provide any locally-developed BPs):**

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### Other Resources:

**Recognized Products List.** Ministry of Transportation.

[http://www.th.gov.bc.ca/publications/eng\\_publications/geotech/rpl.htm](http://www.th.gov.bc.ca/publications/eng_publications/geotech/rpl.htm)

**Best Management Practices to Mitigate Road Dust from Winter Traction.**

Environmental Protection Division, Ministry of Environment. March 2005.

[http://www.env.gov.bc.ca/air/airquality/pdfs/roaddustbmp\\_june05.pdf](http://www.env.gov.bc.ca/air/airquality/pdfs/roaddustbmp_june05.pdf)

**Water Quality Best Management Practices Compendium Website.**

Environmental Protection Division, Ministry of Environment.

[http://www.env.gov.bc.ca/wat/wq/nps/BMP\\_Compndium/nps\\_bmp.htm](http://www.env.gov.bc.ca/wat/wq/nps/BMP_Compndium/nps_bmp.htm)

## Use of Potentially Harmful Substances

**Roadsalt and Winter Maintenance for British Columbia Municipalities, Best Management Practices to Protect Water Quality.** Warrington, P.D. December 1998

<http://www.env.gov.bc.ca/wat/wq/bmps/roadsalt.html>

**Environmental Impacts of Road Salts.** Environment Canada Science and Environment Bulletin. January/February 2002.

[http://www.ec.gc.ca/science/sandejan02/article3\\_e.html](http://www.ec.gc.ca/science/sandejan02/article3_e.html)

**Dust Palliative Selection and Application Guide.** Nov. 1999. Bolander, Peter and Alan Yamada. San Dimas Technology and Development Centre.

[http://www.ecy.wa.gov/programs/air/pdfs/Dust\\_Palliative.pdf](http://www.ecy.wa.gov/programs/air/pdfs/Dust_Palliative.pdf)

**Pesticide Wise Environmental Fate.** BC Ministry of Agriculture and Lands. 2007. [http://www.al.gov.bc.ca/pesticides/c\\_2.htm](http://www.al.gov.bc.ca/pesticides/c_2.htm)

**Guidelines to Protect Fish and Fish Habitat From Treated Wood Used in Aquatic Environments in the Pacific Region.**

<http://www.wwpinstitute.org/pdffiles/treatedwoodguidelines.pdf>



### Checklist for Environmental Protection Requirements

- Is your proposed work considered a “routine” maintenance activity? If not, approvals or permits may be required. Contact your local municipal, provincial, or federal regulatory agency staff.
- Has this project been discussed with local environmental regulatory staff? In addition to the BP information presented, other site-specific conditions may apply.
- Have site-specific environmental protection requirements been identified? List below:
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_