

# **Best Management Practices for Linear Developments Proposed Within the Peace Region**

## **I. Introduction**

The Ministry of Environment in Fort St. John, BC has developed the following set of Best Management Practices (BMP's) to guide proponents planning linear developments (i.e. roads, railways, power transmission lines, NEB pipelines etc) within the Peace Region, in an attempt to reduce the risk of adverse impacts from these types of works on terrestrial, riparian and aquatic ecosystems, and the assemblages of fish and wildlife species inhabiting these areas. In general, any proposed linear development project should be designed to meet safety, engineering and overall project management objectives, in an environmentally sound manner. Proponents planning linear developments are encouraged to review the document entitled "Guide to the British Columbia Environmental Assessment Review Process." This document is available on-line at <http://www.eao.gov.bc.ca/> and explains what types and sizes of projects require review under the British Columbia Environmental Assessment Act (BCEAA). Note however, certain projects may also trigger a review under the Canadian Environmental Assessment Act (CEAA). In those instances where a project requires review under both Acts, a Harmonization Agreement between the BC Provincial and Federal Government permits the BC review system to be used as the lead assessment process. Additional information about the CEAA can be obtained from the Canadian Environmental Assessment Office website at <http://www.ceaa.gc.ca/>. Please be advised that these BMP's do not supersede the requirements of the Wildlife Act, Forest Practices Code of British Columbia Act, Water Act or Regulation, Federal Fisheries Act or any other related legislation, nor does this document grant any approval under the aforementioned Provincial or Federal Assessment Acts. If proposed activities are thought not to comply with the upfront direction provided within this document, proponents must contact the Peace Region Ministry of Environment – Ecosystem Management Section at 787-3411, for further direction.

## **II. Best Management Practices**

### **A) Project Location and Access Planning**

*Habitat Management Objective:* Maintain habitat values through appropriate access planning and coordination of linear developments.

1. Evaluate the location of existing linear disturbances and the placement of future developments to coordinate planned linear disturbances. For those linear developments that parallel existing disturbances, take into account the size of total disturbed corridor width.
2. Place new linear developments within or adjacent to existing developments to minimize the direct loss of critical wildlife habitat, prevent fragmentation of the landscape and ultimately reduce the project footprint
3. Consider the anticipated use of the linear development and design the project to an acceptable, minimum standard that will accommodate any equipment/traffic to be used for future construction or maintenance activities.
4. Minimize the number of new access roads to the project site through comprehensive road planning.
5. Any existing roads and/or right of ways identifiable within the project area should be considered for use as access routes to the proposed construction site, unless the use of such roads and/or right of ways would cause or intensify erosion problems.
6. Minimize the number of stream crossings within the project area. If additional new access is required, choose stable stream crossing locations, preferably not in areas identified as having

critical or important fish habitat, as determined by a qualified fish biologist/ecologist, (unless open bottom structures are to be implemented as the crossing method).

## **B) Fish and Wildlife Considerations**

*Habitat Management Objective:* To ensure that terrestrial, riparian and aquatic habitat values and fish and wildlife populations are protected from the adverse impacts of linear developments, through the appropriate timing of operations and proper construction and maintenance of the development.

1. Plan construction activities for those times of the year when the potential risk of adverse impacts on wildlife and fish populations is negligible.
2. Disruptive, intrusive operations must be avoided during those times of the year when wildlife are under significant environmental and physiological stress such as lambing/kidding/calving season and periods of winter range use. To determine periods when exploration and development activities are considered to have the least impact to wildlife species of primary management concern, please consult the *Peace Region Selected Terrestrial and Aquatic Wildlife Least-Risk Windows* document, which is available at:  
[ftp://ftp.prg.env.gov.bc.ca/pub/outgoing/Peace\\_Region\\_Wildlife\\_Values/Industrial\\_Sectors/Best\\_Management\\_Practices/Least%20Risk%20Windows%20June%2013'08.pdf](ftp://ftp.prg.env.gov.bc.ca/pub/outgoing/Peace_Region_Wildlife_Values/Industrial_Sectors/Best_Management_Practices/Least%20Risk%20Windows%20June%2013'08.pdf).  
If other species of concern have been identified in a given project area and are not found within the aforementioned document, then the Ministry of Environment – Ecosystem Management Section must be consulted, to discuss the applicability of a timing window and confirm permissible operational timeframes.
3. Avoid concentrations of wildlife, areas of high value wildlife habitat and/or rare plant communities, when determining locations and routes for linear developments. A biologist or ecologist specialized in the discipline of concerns must be retained to identify and assess such areas of concern.
4. In the event that concentrations of wildlife species are present in the proposed construction area, consider re-scheduling construction and maintenance activities until such time when the numbers of animals present are reduced or absent from the worksite.
5. Avoid completely, the alteration of habitats of endangered species (as per the Wildlife Act and Species at Risk Act), due to the limited range they inhabit.
6. In areas of continuous high value habitat, consider not developing the project or determine an alternative routing, if feasible.
7. When removing vegetation from right of ways, workspaces etc., featheredge the cut to ensure that line of site and cover (both security and thermal protection) issues are addressed.
8. Any significant game trails indicating recent use, as determined by a professional wildlife biologist/ecologist, must be left unobstructed for animal traffic.
9. In those areas where a proposed linear development is adjacent to an existing clearing, consider leaving treed buffer strips as cover and access corridors for wildlife.
10. Access corridors, as predetermined by a qualified wildlife biologist/ecologist, must be identified across right of ways and maintained by the proponent during construction activities for wildlife.
11. Any linear developments that intersect another point of access (i.e. a road, trail, seismic line etc.) should be doglegged to further mitigate line of sight issues.
12. During construction, prevent human disturbance and ecosystem impacts on sensitive areas adjacent to projects by using temporary fencing or flag off area to restrict travel to construction zones, right of ways and workspaces.
13. Consider and implement on site mitigation and/or off site compensation. A variety of habitat enhancement techniques could meet such mitigation/compensation requirements including prescribed burning, additional seeding, planting, fertilization, and forest thinning etc.

14. Refer to the document entitled “Fish and Fish Habitat Protection Best Management Practices for Bridge, Ditch and Road Maintenance Activities within the Peace Region.” Section II. “Project Development Considerations for the Protection of Fish & Fish Habitat,” outlines the Best Management Practices for work in and about streams. Additional information pertaining to in-stream works can be obtained from the “Conservation Measures and Timing Windows for Peace Region Fish Stream Crossings (MWLAP, 2002)” and the Forest Practices Code of British Columbia Guidebook “Fish Stream Crossing Guidebook,” which is available on-line at <http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/FishStreamCrossing/FSCGdBk.pdf>.

## **C) Construction and Reclamation Practices**

### **i) Vegetation Removal**

*Habitat Management Objective:* Maintain habitat values and reduce the potential for deleterious impacts on watercourses through vegetation retention during construction and maintenance of the linear development.

1. Restrict vegetation removal to that necessary to meet access needs and maintain slope stability.
2. Minimize the clearing right of ways and temporary workspaces.
3. If feasible, route linear disturbances through dry non-forested areas where minimal vegetative impacts will be incurred.
4. Retain as much existing riparian and upslope vegetation as possible, when working near watercourses, to reduce the erosion potential.
5. Avoid the unnecessary removal or trimming of woody vegetation. If woody species must be removed, ensure that the herbaceous plant layer remains intact.
6. Use alternative methods of vegetation removal to minimize the adverse impacts on ground cover plant species (i.e. high blade, hand cutting).
7. Avoid completely the stripping and grubbing of those sites identified as having erodible soils.

### **ii) Erosion Control and Environmental Management**

*Habitat Management Objective:* Reduce the potential for deleterious impacts to terrestrial and aquatic ecosystems through site stability/suitability assessment and erosion control planning during construction and maintenance of the linear development.

1. Design for project implementation, a surface water management plan that adequately addresses drainage and water runoff issues to prevent erosional impacts and water quality problems during and after linear development construction.
2. A sediment and erosion control plan must be designed for project implementation.
3. If pre-planning activities reveal that acid generating rock formations will be exposed during construction, ensure that an acid rock drainage-monitoring program is in place for the project, to ensure the protection of aquatic resources in the area.
4. Review available site information and if necessary, consult with professionals to identify regions of concern such as slide prone areas, concave slope and areas with erodible soils.
5. Avoid the placement of linear developments in these aforementioned areas of instability and any excessively wet areas.
6. Fit the linear disturbance to the topography and soil conditions of the site. Consider locating linear developments on natural benches and along natural contours.

7. Evaluate the time of year (seasonality) when project construction activities are to be initiated. Construction activities proposed on highly erodible soils must be constructed during the dry summer months.
8. Ensure that appropriate erosion and sediment control structures are in place prior to the commencement of construction activities. Additional information regarding sediment and erosion control can be obtained from the documents entitled “Fish-Stream Crossing Guidebook” and “Land Development Guidelines for the Protection of Aquatic Habitat,” which are available on-line at <http://www.for.gov.bc.ca/tasb/legsregs/fpc/FPCGUIDE/FishStreamCrossing/FSCGdBk.pdf> and [http://www-heb.pac.dfo-mpo.gc.ca/publications/pdf/guidelines/ldg\\_e.pdf](http://www-heb.pac.dfo-mpo.gc.ca/publications/pdf/guidelines/ldg_e.pdf).
9. Routinely inspect and maintain as necessary, installed erosion and sediment control structures, especially during times of seasonal melt or increased precipitation.
10. Minimize earthmoving activities when soils appear excessively wet.
11. In the event that surface runoff is encountered, use vegetated ditches and constructed wetlands as filters, so that sediment and other contaminants are allowed to filter out prior to the re-entry into the watercourse.
12. Ensure that all on site supervisors and contractors performing construction/maintenance activities are familiar/experienced with working in areas of highly erodible/fine soils, unstable terrain or in proximity to watercourse to reduce the potential deleterious impacts.

### **iii) Reclamation**

*Habitat Management Objective:* Ensure habitat values are protected through appropriate site remediation and maintenance activities.

1. During construction, salvage and conserve all topsoil for reclamation purposes.
2. For those project areas that have been exposed to mineral soil, must be re-countered and re-seeded/planted, utilizing all available techniques to stabilize the site and facilitate its return to a vegetated state.
3. Re-vegetate slopes with native and agronomic species where possible, to stabilize the site and prevent the invasion of weed species.
4. Ensure that certified seed mixes are utilized for reclamation purposes, to reduce the risk of weed invasion and exotic introductions.
5. When re-seeding areas where the potential exists for collisions between motorized vehicles and wildlife, avoid the use of legumes (nitrogen fixing plants) species in the seed mix. Legumes are the preferred food source for many ungulates (and other wildlife species), so using a seed mix void of these plants, may reduce the risk of animals being drawn to right of ways in search of this food type.
6. On right of ways avoid unnecessary removal or trimming of woody vegetation to increase ground cover and forage, minimize disruption to desirable plant species, maintain natural diversity and decrease the likelihood of exotics out competing native vegetation.
7. An integrated approach of manual, chemical, mechanical and preventative means should be used for weed and pest control.
8. Avoid the use of pesticides/herbicides and other chemicals that may impair ecosystem function.
9. Herbicide should be applied based on manufacturer and Regulatory Agency contract specifications to ensure that these materials do not enter streams after application and that staging areas are not in close proximity to watercourses.
10. During herbicide application, in the event of precipitation, all activities must cease immediately, as there is an increased risk of chemical transport via surface runoff to watercourses.
11. Herbicide and pesticides must be used during the optimum time for control of the target species.

12. To ensure successful plant cover re-establishment and site stabilization, proponents must initiate and conduct monitoring of reclaimed sites.

## **Additional Sources of Information**

*Numerous documents were reviewed for the formulation of this BMP. Additional sources of information, excluding those already identified within the text of this document include:*

Best Management Practices (BMP's) for Forestry in Montana.

<http://www.dnrc.state.mt.us/forestry/ServiceForestryPrograms/BMPs.pdf>

Ministry of Environment, Lands and Parks, Environment – Habitat Branch. 2000. Expanded Kootney Region Interim Wildlife Guidelines for Commercial Backcountry Recreation in British Columbia. Victoria, British Columbia.

Ministry of Water, Land and Air Protection – Ecosystem Management Section. 2002. Conservation Measures and Timing Windows For Peace Region Fish Stream Crossings. Fort St. John, BC.

Osiris Wildlife Consulting. 2001. Guidelines for Evaluating, Avoiding and Mitigating Impacts of Major Development Projects on Wildlife in British Columbia (DRAFT).