

Best Management Practice

Name of Best Management Practice	Highway Service Centre Engineering's Environmental Procedures for routine repair, maintenance and modification projects planned for 2014
Scope of Application:	<p>This Best Management Practice (BMP) outlines environmental management and mitigation measures for routine and repetitive highway repair, maintenance and modification work, including paving, clearing and grubbing, stripping, blasting, excavation and placement, culvert installation and replacement, concrete management, crushing, grading, topsoil placement and seeding. Application of this BMP to projects within this defined scope of work may be used to fulfill the environmental impact analysis requirements of <i>Parks Canada Interim Directive on Implementation of CEAA 2012</i>.</p>
Exceptions:	<p>Additional EIA work may need to be completed under the following circumstances:</p> <ul style="list-style-type: none"> • Work that would involve the alteration of riparian or aquatic habitat characteristics associated with fish bearing waterbodies; • The elongation of culverts; realigning water courses; dredging; or work within the high water mark of a fish bearing water body; • Work that would likely reduce aquatic or terrestrial wildlife habitat connectivity; • Work that extends outside of the existing right-of way width; • Work that is likely to affect an active bird nesting colony or a migration staging area; • Work that is likely to affect individual or residence or critical habitat of a listed Species at Risk on Schedule 1 of the <i>Species at Risk Act (SARA)</i>. • Work that is likely to impact on cultural resources or values; • In the context of the Crown's legal duty to consult with Aboriginal groups, where it contemplates conduct that might adversely impact any potential or established Aboriginal and Treaty rights; • Any other circumstance where the BMP does not address known environmental issues that are reasonably associated with the proposed work, or; circumstances where the potential environmental impacts of the proposed work are reasonably uncertain. <p>This BMP will generally not be modified to address situations where the environmental effects of a project are outside the scope of the potential effects that the BMP is designed to address. It may be determined that this BMP will be applied in whole, or in part, as mitigation for a proposed project. Additional EIA work will be determined at the</p>



	discretion of the Field Unit EIA Specialist.
Approved geographic area of application:	This BMP will be applied within the Lake Louise (northern Banff), Yoho and Kootenay National Parks of Canada.

Effects Assessment and Mitigation

Potential Key Effects are well understood and predictable. They include:

Water resources:

- Adverse modifications to surface drainage patterns
- Potential runoff, erosion, sedimentation, and altered drainage,
- Reduced water quality due to increased erosion, sedimentation, transportation of debris and contamination (i.e. from leaks and accidental spills, etc.)

Soil/Land resources:

- Change in slopes, landforms, and landscape
- Soil compaction and rutting
- Slope instability, due to increased soil exposure and improper excavation and storage
- Soil contamination

Air quality:

- Decreased ambient air quality (i.e. from dust, emissions, etc.)
- Increased ambient noise levels
- Increased levels of CO₂ and other pollutants
- Increased localized temperatures because of newly paving and equipment operation.

Flora and Fauna:

- Damage to and/or removal of vegetation in immediate or adjacent areas
- Introduction of invasive species
- Sensory disturbance causing displacement/habitat avoidance
- Wildlife habituation/attraction to artificial food sources
- Impeded/altered wildlife movement
- Damage to nests/disruption of nesting animals
- Mortality from project activities

Visitor Experience:

- Traffic Delay
- Visitor safety hazards
- Potential for negative visitor experience at the work site

General Specifications/Mitigation Measures:

In addition to the specifications/mitigation measures described below, the Contractor and sub-contractors are expected to comply with any park regulations, policies, guidelines, travel restrictions, area closures, established reservation systems or other directives issued by Parks Canada for the purpose of mitigating environmental effects or ensuring public/visitor safety.

The Contractor and sub-contractors are expected to act as stewards, set proper examples, educate workers on the importance of keeping areas pristine, monitor worker actions and ensure that minimal impact practices are implemented.

Specifications and Mitigation Measures associated with Highway Service Centre's Environmental Procedures are listed below:



1.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 MEASUREMENT PROCEDURES

- .1 The cost of environmental and aesthetic protection in accordance with this Section 01 35 43 – Environmental Procedures will not be measured separately for payment and will be considered incidental to the Work.

1.3 SUBMITTALS

- .1 The Contractor shall describe environmental mitigation measures he will implement to ensure that all work is in compliance with this Section 01 35 43 – Environmental Procedures. **This is a generic document where only the clauses directly applicable to the work apply.**

1.4 NATIONAL PARK ACT AND REGULATIONS

- .1 The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 The Prime Contractor and sub-contractors shall obtain a business license from Parks Canada.
- .3 All Contractors' vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from the Departmental Representative, or the Environmental Surveillance Officer (ESO).

1.5 PARKS CANADA INTERIM DIRECTIVE ON IMPLEMENTATION OF THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA, 2012)

- .1 The work is executed in accordance with Parks Canada Interim Directive On Implementation of the *Canadian Environmental Assessment Act* (CEAA, 2012).
- .2 Failure to comply with or observe environmental protection measures as identified in these environmental procedures may result in the work being suspended pending rectification of the problems.
- .3 No permit, approval or authorization has been given by DFO in accordance with the *Fisheries Act* and TC in accordance with the *Navigable Water Protection Act*. No negative impacts to fish or fish habitat will be permitted.

1.6 START-UP AND ENVIRONMENTAL BRIEFING

- .1 All staff employed at the work site will be subject to an approximately half hour briefing regarding their individual and collective responsibility to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. Employees must attend this briefing before beginning their work at the site. It is recognized new employees may join the Contractors' work force after the initial round of "environmental briefing". In that case and as required, subsequent "environmental briefings" can be presented as numbers warrant, by arrangement with the ESO through the Departmental Representative. Also, some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the "environmental briefing" will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the



work force at the site.

- .2 Parks Canada will have an ESO attending the site to monitor the project activities for conformance with these specifications. The ESO or alternate designated Parks Canada staff member will present the “environmental briefing”. The ESO’s main duties are to monitor the progress of the construction on an on-going basis to ensure compliance with environmental protection measures, and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.

1.7 WORK SITE ACCESS AND PARKING

- .1 The Contractor shall review both short and long term construction access requirements with the Departmental Representative, both at start-up and on an ongoing basis. In consultation with the Departmental Representative, the Contractor shall formulate an agreement for worker transportation to and from the work sites and where workers shall park their private vehicles.
- .2 Generally, work that is likely to affect an active bird nesting colony or a migration staging area requires the close oversight of the ESO and the Departmental Representative.
- .3 Generally, personal vehicles shall be parked at least 10 metres distance from any watercourse.
- .4 The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers’ vehicles or machinery and shall instruct workers so that the “footprint” of the project is kept within defined boundaries.

1.8 PROTECTION OF WORK LIMITS

- .1 The Contractor shall ensure that workers and equipment do not trespass outside the project limits to the satisfaction of the Departmental Representative and the ESO.
- .2 Work that extends outside of the existing right-of-way width requires approval of the ESO and the Departmental Representative.
- .3 A new lay down area (an area used for the staging and storing of construction related equipment or material) requires approval of the ESO and the Departmental Representative.

1.9 EROSION CONTROL

- .1 Erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the work site are a critical element of the project and shall be implemented by the Contractor.
- .2 If necessary, on-site sediment control measures shall be constructed and functional prior to initiating activities associated with the asphalt plant and the paving. The Contractor shall prepare an Erosion Control Plan to the satisfaction of the Departmental Representative and the ESO.
- .3 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively they are to be repaired. The Departmental Representative and ESO also will monitor erosion control performance.
- .4 The site will be secured against erosion during any periods of project inactivity or shutdown.

1.10 POLLUTION CONTROL



- .1 The Contractor shall prevent any deleterious and objectionable materials from entering streams, rivers, wetlands, water bodies or watercourses that would result in damage to aquatic and riparian habitat. Generally, hazardous or toxic products shall be stored no closer than 100 metres from water.
- .2 A Spill Response Plan will be prepared by the Contractor and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and the ESO and in accordance with all applicable federal and provincial legislation. The Plan shall include a list of products and materials to be used or brought to the work site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
- .3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Generally, hazardous or toxic products shall be stored no closer than 100 metres from streams, wetlands, water bodies or waterways.
- .4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative and the ESO before start-up. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- .5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work by methods that are approved by the Departmental Representative or ESO.
- .6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The ESO and Departmental Representative prior to project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.
- .7 Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The Departmental Representative and the ESO shall be notified immediately of any spill. In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up.
- .8 The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions), shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the expected standard and to the satisfaction of the Departmental Representative and ESO.

1.11 EQUIPMENT MAINTENANCE, FUELLING AND OPERATION

- .1 The Contractor shall ensure that all soil, seeds and any debris attached to equipment or machinery to be used on the project site shall be removed (e.g. power washing) outside the National Parks before delivery to the work site.
- .2 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fuelling closer than 100 metres from streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.
- .3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than



100 metres from streams, wetlands, water bodies or waterways. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and immediate attention to the fuelling operation.

- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed in 1.12.4 of Pollution Control above.
- .5 Equipment used on the project shall be fuelled with E10, and low sulphur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.
- .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc anywhere within National Parks.
- .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
- .8 Fuel containers and lubricant products shall be stored only in secure locations specified by the Departmental Representative. Fuel tanks or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight in National Parks. Alternatively, the Contractor may hire a security person employed to prevent vandalism. The Contractor is to ensure that workers are briefed on proper 'daisy-chain' use of locks to ensure no other contractor or Parks Canada Highways Service Centre staff are locked out.

1.12

OPERATION OF EQUIPMENT

- .1 Equipment movements shall be restricted to the 'footprint' of the work area. The work limits shall be identified by stake and ribbon or other methods approved by the Departmental Representative. Unless authorized by the Departmental Representative, activities beyond the work limits are not permitted. No machinery will enter, work in or cross over streams, rivers, wetlands, water bodies or watercourses, nor damage aquatic and riparian habitat or trees and plant communities. Some of the project activities shall require working close to creeks and other watercourses or water bodies. In these instances, the Contractor is to describe measures to be employed to ensure fugitive materials (e.g. rocks, soil, branches) and especially deleterious substances (e.g. chemicals) do not enter any watercourses, to the satisfaction of the Departmental Representative and ESO.
- .2 The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or topsoil) in the trees bordering the right-of-way or into watercourses or water bodies.
- .3 When, in the opinion of Parks Canada, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Departmental Representative and ESO.
- .4 Restrict vehicle movements to work limits.
- .5 Workers private vehicles are to remain within the construction footprint.

1.13

FIRE PREVENTION AND CONTROL

- .1 A fire extinguisher shall be carried and available for use on each machine and at locations within the plant in the event of fire. Basic fire fighting equipment recommended (e.g. a



water truck; minimum 500 Imperial gallons with 500 feet of fire hose and a pump capable of producing 45 psi water pressure at the nozzle, three shovels, two pulaskis, and two five gallon backpack pumps) shall be maintained at the construction site at a location known and easily accessible to all the Contractors' staff. Contractor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".

- .2 Water may be obtained at the one of the Parks Canada compounds, if available. The Contractor may apply for a Restricted Activity Permit to withdraw water from source(s) near the site(s). Approval from Parks Canada is required prior to any water withdrawal and may or may not be granted depending on flows and/or species at risk.
- .3 A water truck may be necessary and will depend on the timing of the contract (e.g. – not required during winter or snow covered conditions).
- .4 Equipment shall be operated in a manner and with all original manufacturer's safety devices to prevent ignition of flammable materials in the area.
- .5 Care shall be taken while smoking on the work site to ensure that the accidental ignition of any flammable material is prevented. Fires or burning of waste materials is not permitted.
- .6 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The ESO and the Departmental Representative shall be notified of any fire immediately. Fires or burning of waste materials is not permitted.

1.14 WILDLIFE

- .1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.
- .2 Avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if bears, cougars, wolves, elk or moose display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.
- .3 Notify the ESO and Departmental Representative immediately about dens, litters, nests, carcasses (road kills), bear activity or encounters on or around the site or crew accommodation. Other wildlife-related encounters are to be reported within 24 hours.

1.15 RELICS AND ANTIQUITIES

- .1 Artifacts, relics, antiquities and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and similar objects found on the work site shall be reported to the ESO or the Departmental Representative immediately. The Contractor and workers shall stop immediately in the location where historical or archaeological artifact is observed at any time and shall only proceed upon instructions.
- .2 All historical or archaeological objects found in National Parks are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the ESO or the Departmental Representative.

1.16 WASTE MATERIALS STORAGE AND REMOVAL

- .1 The Contractor and workers shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .2 All wastes originating from construction, trade, hazardous and domestic sources, shall



not be mixed, but will be kept separate.

- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the work site or elsewhere in National Parks. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill site located outside the park. Construction waste storage containers, provided by the Contractor, shall be emptied by the Contractor when 90% full. Waste containers will have lids, and waste loads shall be covered while being transported.
- .4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- .5 All efforts to prevent wildlife from obtaining food, garbage or other domestic wastes shall be made by the Contractor and contract staff while undertaking their work in National Parks. Such wildlife attractants shall not be stored at the work site overnight. Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal of food scraps, food wrappers, pop cans or other attractive products to bear proof containers is mandatory. It is incumbent on the Contractor to notify Parks Canada and make specific arrangements to have garbage collected by Parks Canada when using existing Parks Canada receptacles.
- .6 The Contractor and workers shall immediately report any circumstances related to food/garbage (e.g. overflowing container or strong smell) and wildlife to the ESO or the Departmental Representative.
- .7 Sanitary facilities, such as a portable container toilet, shall be provided by the Contractor and maintained in a clean condition.

1.17

MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 The Contractor shall ensure trespass outside the project limits does not occur, to the satisfaction of the Departmental Representative and the ESO.
- .2 A Contractor's office, equipment parking, and storage area will be permitted at a location approved by the Departmental Representative or the ESO.
- .3 No Camp will be allowed within National Parks.
- .4 The Contractor shall provide toilets and maintain them in a clean and sanitary condition at the camp. These facilities shall not be used for the disposal of anything but human body wastes.
- .5 The National Park Act regulations prohibit anyone working within National Parks from using public campground facilities.
- .6 Removal and storage of snow shall be arranged with the ESO and the Departmental Representative.
- .7 The Contractor shall control blowing dust and debris generated from the work site by means such as covering or wetting down dry materials and rubbish. Dust control measures for temporary access roads may also have to be initiated.
- .8 Security services at the work site may be desirable or necessary during the contract, especially during quiet times. Fuel tanks or other potentially deleterious substance containers must be secured by the Contractor to ensure they are tamperproof and cannot be drained by vandals at his own cost.
- .9 Pets shall not be brought to or maintained at the construction site.
- .10 Should the Contractor require/request a water source, the Departmental Representative, in consultation with the ESO may give direction as to a location to be used. Specific intake measures are required when water is approved to be withdrawn from open watercourses.



Part 1 Products

- .1 Not Used.

Part 2 Execution

3.1 ASPHALT PLANT OPERATION AND PAVING

- .1 Trucks for hauling asphalt mixture shall have tight, clean, smooth metal beds that have been sprayed with a minimum amount of water based releasing agent to prevent the mixture from adhering and causing waste asphalt. The vehicle covers shall be securely fastened. Excess truck box lubricants such as light oil, detergent or lime solutions shall not be allowed to contaminate the mix, and shall be disposed of in an environmentally acceptable manner. Truck box lubricant application shall be carried out in a containment berm.
- .2 Asphalt plant operation must comply with all environmental pollution control regulations applicable in the plant area.
- .3 The Contractor shall be responsible for the purchase and the safe delivery/storage/handling of asphalt cement and emulsions to the asphalt plant site. Excess hot mix or reject asphalt shall be temporarily stored as directed by the Departmental Representative, and removed from the Park, prior to completion of the contract a later date. All costs for removal and disposal shall be the responsibility of the Contractor and no separate payment shall be made.
- .4 Ground asphalt material shall be removed, recycled, or properly stored at a location approved by the Departmental Representative or the ESO.
- .5 The Contractor shall ensure that there is enough room between the stockpiles and the asphalt plant for a loader in the event of a spill at the asphalt plant. A containment berm with an associated liner made of occlusive material (e.g. plastic of a thickness approved by the Departmental Representative) and covered with absorbent sand or clay shall be installed under the asphalt storage tank to ensure containment of 110% of the tank's capacity.
- .6 The Contractor may wish to protect containment/catchment areas and drip trays at the asphalt plant from rainfall since, if contaminated, all of the collected water will have to be disposed of at the expense of the Contractor at an approved disposal facility.
- .7 Sites from which materials have been removed shall be restored to a neat and presentable condition upon the completion of the work.

3.3 MATERIAL LOADING, HAULING, PLACEMENT AND GRADE BUILDING

- .1 During grade construction conducted close to any watercourse, water body or wetland methods shall be employed to ensure materials are not pushed, fall or are eroded into the water or wetlands. Generally, work within a 30 metre buffer from the high water mark of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.
- .2 No grade building shall occur outside of the designated area or within 1 metre of the drip line of existing forest. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location. Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location



3.4 PAVEMENT MARKING AND GUARDRAIL PLACEMENT

- .3 Pavement marking shall be undertaken pursuant to standard methods applied in National Parks for control of paint products, both in transport and handling. The Contractor shall present a description of methods to be employed for transporting and controlling paint and hazardous products, application of paint, cleaning of equipment, containment and disposal of waste paint and cleaning products, etc. the satisfaction of the Departmental Representative. Where concrete barriers or guard rails are temporarily removed, for highway improvements, temporary glow posts shall be installed, at 20 m intervals on straight sections and at 10.0 m intervals on curves and shall remain in place until permanent barrier system has been installed. Payment for removal, installation and temporary glow posts to be paid under Lump Sum Item 3 b) Prime Cost Sum: Items other than Bituminous Materials.

3.5 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

- .1 The Contractor shall prepare an Erosion and Sedimentation Management Plan for the components of this contract that are undertaken in proximity to watercourses, wetlands or riparian environments. This plan shall be to the satisfaction of the Departmental Representative and ESO. If sediment ponds are required, they shall be designed to settle all sediment particles 0.02 mm or larger. The ponds shall also be designed to handle 1:5 year storm events, with overflow spill capacity for 1:10 year storm events and emergency spillway capacity for 1:100 year storm events.
- .2 An important desired end result is to allow no release into watercourses of sediments in levels that are deleterious to fish or that would harmfully alter, disrupt, or destroy fish habitat. Similarly there is to be no sediment release into areas of vegetation growth or sensitive areas of sediments in levels that would adversely alter growing or hydraulic conditions. The target is 0 mg/L of TSS over background levels. The threshold is a maximum instantaneous increase of 25 mg/L over background levels when background levels are <250 mg/L, or a maximum instantaneous increase of 10% over background levels when background levels are >250 mg/L. This threshold shall not be exceeded.

3.6 CLEARING AND GRUBBING

- .1 The Contractor shall ensure that the substrate or riparian area of streams, rivers or watercourses, whether open water or frozen over shall not be disturbed by tracked, wheeled or self-propelled equipment, (e.g. a skidder or truck). The ESO or Departmental Representative will provide direction in the case of work occurring near any wetland area or watercourses.
- .2 The Contractor shall take all measures to ensure that trees do not fall into streams, rivers, wetlands or water bodies or outside the clearing limits as marked by colored flagging. Generally, work within a 30 metre buffer from the high water mark of watercourses, water bodies or wetlands requires the close oversight of the ESO or the Departmental Representative.
- .3 Trees inadvertently felled into streams, rivers, watercourses or outside the clearing limits shall be removed by means (e.g. winch) so as not to damage the substrate or any standing trees left outside the clearing limits. Machinery shall not go outside the clearing limits, or into streams, rivers, watercourses or water bodies to remove felled trees.
- .4 Logs and other salvage materials are to be conveyed to and placed at the storage site without spread of debris or damage to other standing trees or landscape resources outside the marked clearing or storage limits. They shall not be skidded through wetlands, waterways or water bodies.
- .5 During the grubbing component, stumps, roots, imbedded logs and other non-soil debris



	shall be pulled and shaken free of loose soil and rocks before transport to designated pit
.6	No slash clearing, pickup or grubbing shall occur outside of the designated area or within 1 metre of the drip line of existing forest.
.7	Existing areas of vegetation disturbed as a result of this contract shall be rehabilitated using approved topsoil from the park and a native grass seed mix as specified in Section 32 92 22 – Seeding.
.11	Generally, work that is likely to affect an active bird nesting colony or a migration staging area requires the close oversight of the ESO and the Departmental Representative.
3.7	STRIPPING
.1	A contingency plan for control of dust generated from the construction site shall be prepared, with materials availability arranged in the event of their need. In the event of a work program shutdown during inclement weather (e.g. winter conditions unfavourable for construction) erosion control of bared soils or excavated materials stockpiles will be required..
.2	Stripping close to the any watercourse, water body or wetland shall employ methods to ensure materials are not pushed, fall or are eroded into the water or wetlands. Generally, work within a 30 metre buffer from the high water mark of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.
.3	No stripping shall occur outside of the designated area or within 1 metre of the drip line of existing forest.
.4	Stripped soil (including fine forest litter) materials shall be placed and stored at locations and in amounts and form as instructed by the Departmental Representative, for later reclamation use on graded slopes. Stripping piles may require erosion control, sedimentation protection or stabilization, depending on the location and anticipated duration of storage. At the Departmental Representatives direction, the Contractor shall prepare a plan for management of each stripping pile.
.12	Generally, work that is likely to affect an active bird nesting colony or a migration staging area requires the close oversight of the ESO and the Departmental Representative.
3.8	BLASTING
.1	The Departmental Representative will identify a magazine location for explosives should a factory site or “ready-to-use” explosives storage site be required.
.2	The sweep of the blast area shall include looking for wildlife that may be in the area. If any are found, they shall be hazed out of the area by the ESO or a Park Warden.
.3	The Contractor shall ensure that all work activities meet or exceed the standards outlined in DFO’s “Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters”; Canadian Technical Report of Fisheries and Aquatic Sciences 2107 as amended from time to time.
.4	The Contractor shall, whenever explosives are used, use the Provincial and Workers’ Compensation Laws and Regulations, and all respective agencies having jurisdiction over them, such as DFO.
.5	Steps shall be taken to minimize fly-rock and dust. Vegetation outside of the designated area shall not be damaged or destroyed.
.6	In order to stabilize slopes of the cut, these shall be scaled of all loose material. Ditches shall be formed and cleaned upon the completion of the blasting, and the natural drainage shall be restored as specified by the contract or as directed by the Departmental



Representative.

- .7 The Contractor shall describe the proposed type and quantities of explosives to be used on the project, to the satisfaction of the Departmental Representative and the ESO. Some blasting products – such as those very high in nitrogen, may have some limitations imposed for environmental protection purposes.
- .8 Generally, work that is likely to affect an active bird nesting colony or a migration staging area requires the close oversight of the ESO and the Departmental Representative.

3.9

EXCAVATING AND PLACEMENT

- .1 Excavation will be undertaken according to the approved Grading Plan for the ROW, and approved Development Plans for the designated pits.
- .2 Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.
- .3 All sediment control measures shall be implemented by the Contractor prior to the commencement of the work in the vicinity of rivers, water bodies, watercourses, and wetlands.
- .4 Special precautions may have to be taken during excavation in the vicinity of intermittent or active drainage channels.
- .5 If sediments enter a river / stream during any excavation nearby or at its banks, the Contractor shall ensure that sediment levels in the waters of the river or creeks do not exceed specified limits and meet the “desired end result” limits outlined.
- .6 Placement of rip rap and backfill at creeks shall be undertaken without contacting the watercourse or wetted margins of the stream, unless approved by the Departmental Representative.
- .7 Fisheries protection windows shall be observed for the fish creeks, and any other watercourse in this contract and will guide the timing of the work so that stream disturbance is prevented.
- .8 If a pump-out sump to dewater excavation sites will be required, the Contractor shall detail how the dewatering shall be undertaken, to the satisfaction of the Departmental Representative and the ESO. Special attention is to be given to the environmental sensitivity of the discharge area, freezing conditions operation, overflow avoidance, decanting and settlement pond reclamation. Water containing suspended materials shall not be pumped into watercourses, drainage systems or on to land, except with the permission of the Departmental Representative and the ESO.

Generally, work that is likely to affect an active bird nesting colony or a migration staging area requires the close oversight of the ESO and the Departmental Representative.

3.10

CULVERT INSTALLATION

- .1 All culverts shall be installed using best management practices for working in or near water that will result in a minimum amount of sedimentation and damage to the riparian area of the watercourse. The Contractor shall prepare a plan for the installation of each culvert, a minimum one (1) week prior to doing the work for approval by the Departmental Representative and ESO.
- .2 The culverts shall be installed using best management practices for placement, including consideration of aquatic ecology.
- .3 It is preferable to install the culvert during periods of low discharge (e.g. during the fall). The use of sediment control measures may be necessary to ensure that excessive amounts



of sediments do not enter creeks.

- .4 It may be necessary to exclude fish from the immediate construction site while the culvert is being installed. If this practice is necessary, fish shall be salvaged from within the exclusion area, and construction should be carried out expediently to minimize the time spent working in the drainage.

3.11 CONCRETE MANAGEMENT

- .1 Wet and uncured concrete is an acutely toxic substance for an aquatic environment. Extra care not to introduce these materials into the environment is required. The Contractor is to prepare a Plan which addresses concrete plant location, operation, and reclamation where required, to the satisfaction of the Departmental Representative and the ESO. This plan shall include the following concrete management elements:

Concrete mixer truck washout must be contained in an approved facility with wash products moved back to the concrete batching yard for disposal.

Rolling concrete mixers with surplus concrete in amounts less than one cubic metre of wet concrete may waste this concrete in the grade right-of-way as directed by the Departmental Representative and well away from and in areas that drain well away from watercourses. Surplus amounts in excess of one cubic metre are to be returned to the batching yard.

Water contaminated in the placing of cement and curing of concrete shall be contained and removed from the site to an approved disposal facility.

The concrete batching plant must be operated pursuant to applicable dust, air emission, and water quality control regulations.

Waste, solidified concrete from rolling concrete mixers in amounts less than 1 cubic meter and waste solidified concrete from construction pour, shall be buried in the grade within 48 hours of the pour, subject to approval and direction from the Departmental Representative.

3.12 CRUSHING

- .1 The Contractor shall be prepared for potential spills of fuels, lubricants or hydraulic fluid from the crusher using containment berms with associated occlusive liner of adequate thickness to ensure that these materials do not penetrate underlying soil materials down to the water table and into streams, running water or wetlands. In the event of a spill, the Contractor shall ensure timely and effective spill response.
- .2 The Contractor shall provide drip and spill containment for the crusher, cone, generators and other components where spills may occur (e.g. plastic lined dirt berms, collection/drip trays, double-walled fuel tanks). Spill response in a timely and effective manner in the event of a spill is mandatory. The measure chosen by the Contractor shall ensure containment of 110% of the capacity of the fuel tank, crankcase, etc.
- .3 Excavation, hauling and placing materials associated with a crushing operation shall be conducted within the approved footprint of the total crushing operation. Crushed materials shall be placed at the designated storage site as identified by the Departmental Representative without spillage or travelling outside the limits of this location. Any material inadvertently falling outside the work limits is to be moved promptly to within the storage limits. Repair of damage outside the work limits will be at the complete expense of the Contractor.
- .4 Generally, work that is likely to affect an active bird nesting colony or a migration staging



area requires the close oversight of the ESO and the Departmental Representative.

3.13

FINE GRADING, TOPSOIL PLACEMENT, AND SEEDING

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This contract involves the final shaping of cut slopes, fills and landscapes disturbed in the construction of the Works. These slopes will be covered by stripped soil and chip compost materials and seeded. Environmental concerns related to these activities largely focus on erosion prevention and sediment control. The Contractor is to present a plan for placement, spreading, and stabilization of reclamation materials that controls erosion and prevents sedimentation, to the satisfaction of the Departmental Representative and ESO

Kootenay/Yoho/Lake Louise Field Unit Superintendent Approval

Name:	Melanie Kwong	Date:	2014/05/08
Signature:	Melanie Kwong		