

11. MITIGATION MEASURES

The bridge site is in the same place as the original bridge. Minor adjustments to the alignment, abutments and span design will allow the bridge to be rebuilt and will reduce project impact. Ultimately, keeping the project footprint as small as possible will further reduce potential effects. It is expected that all staff and contractors will understand and comply with all National Parks regulations within the Park. Pre-work briefings/meetings are recommended to address environmental sensitivities within the project area, such as erosion and sedimentation, wildlife interaction and equipment spills, leaks and cleanup.

It is recommended that an Environmental Protection Plan (EPP) be prepared by the project Contractor in accordance with mitigation measures outlined in this report as well as DFO's *Measures to Avoid Harm to Fish and Fish Habitat* (Attachment 2) and the Parks Canada Directive on Impact Assessment 2015 (Attachment 3). To ensure mitigation of potential adverse effects identified, the EPP shall be available to all staff during project activities and will include:

- An access plan that outlines the proposed access route(s), types of equipment to be used for various phases and locations/sizes of lay-down areas in order to prevent/minimize disturbance to vegetation and soils. This will include details on how the work limits will be marked out and what procedures will be employed to ensure trespass outside these limits does not occur and to ensure that the environment is not impacted or damaged by works or construction equipment beyond the work limits;
- A site isolation plan that outlines the details of the containment systems proposed for use in preventing any debris from entering Five Mile Creek during break-up and removal of the old bridge structure and abutments from the creek bed, during construction/installation of the new bridge and during grading of the creek banks.
- An Erosion and Sediment Control Plan to the satisfaction of the Departmental Representative and Environmental Surveillance Officer (ESO). The plan shall detail appropriate work methods, best practices for working around water and proposed erosion control methods. Parks Canada's desired end result is to allow no release of sediments into any water body in levels that are deleterious to fish or fish habitat;
- An Emergency Response Plan that outlines procedures to follow in the case of a spill or other type of emergency (wildlife encounter, fire, equipment malfunction/failure), including appropriate spill kit requirements and spill and emergency response contacts. The Spill Response Plan will detail the containment and storage, security, handling, use and disposal of all hazardous materials, including 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 EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment, including but not limited to, sealer, grout, cement, concrete finishing agents and adhesives;
- A snow clearing and removal plan, if required; and
- Provisions to reduce human-wildlife interactions, including a waste management plan.

All staff employed at the construction site shall be instructed by the ESO during an Environmental

Briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices.

Surface Water Quality

- Conduct in-stream work (i.e. removal of old abutments and bridge structure from creek bed) during fish timing windows (i.e. May 1 to May 15 and/or August 15 to 31) and/or in the dry (i.e. when water levels have dropped below these areas) when possible. If in-stream work is required at any time, a worksite isolation and water quality monitoring plan must be submitted to Parks Canada for review by the Environmental Assessment and Aquatics departments prior to in-stream work commencing. The contractor is responsible for implementing this plan.
- A containment system must be in place during break-up and removal of the old abutments and bridge superstructure to catch all debris.
- All demolition, construction debris and other waste materials will be disposed of at an approved landfill facility outside of the park.
- The Contractor will provide drip and spill containment for portable generators and equipment used or parked overnight on site, as permitted by the ESO. Mechanized equipment will be stored 30m from watercourses with an impermeable containment.
- Vegetation removal will be minimized as much as possible, especially in riparian areas.
- Install effective erosion and sediment control measures before starting work to prevent the entry of sediment into the watercourse. Erosion and sediment control measures shall be inspected regularly during the course of construction and repairs shall be made necessary.
- The site will be secured against erosion during any periods of construction inactivity or shutdown.

Stream Hydrology

- The new bridge will be aligned perpendicular as possible to the creek flow and has been designed to address creek and channel processes at the 1:100 year flood return.
- Construction nearest the creek (for abutments) is anticipated to start during late fall/early winter when creek levels are expected to be lowest.

Fish and Fish Habitat

- See measures identified above under Surface Water Quality.
- Removal of natural woody debris, rocks, sand or other materials from the banks and shoreline of the river will be minimized as much as possible. If material has to be moved it should be placed on dry portions of the streambed downstream of the bridge site.
- All work for the bridge is to occur in a manner that minimizes disturbances to the banks of the watercourse except where specifically intended.
- Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
- Machinery is to be washed, refueled and serviced and fuel is to be stored at least 30 m away from the creek to prevent any deleterious substance from entering the water.

- A Spill Response Plan will be prepared as part of the EPP 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 in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment, including but not limited to sealer, grout, cement, concrete finishing agents, adhesives and sand blasting agents.
- In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and cleanup.
- 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's EPP shall address concrete plant location, operation and reclamation where required, to the satisfaction of the Departmental Representative and the ESO.
- Water contaminated in the placing of cement and curing of concrete shall be contained and removed from the site to an approved disposal facility.

Vegetation and Soils

- Equipment and materials lay down areas will use existing trails, roads and hard surfaces wherever possible to avoid disturbance to native vegetation, especially riparian vegetation.
- Vegetation removal will be kept to a minimum. All vegetation to be removed will be flagged and reviewed by the ESO prior to removal.
- The contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site has been removed (i.e. power washing) outside of Banff National Park before delivery to the work site to limit the introduction of non-native or invasive vegetation species.
- Fill brought into the site for use on the trail approach to the bridge will be clean and free of weeds/weed seeds.
- Disturbed areas will be monitored for weeds for three growing seasons following completion of the project and weed control and additional vegetation restoration measures will be applied as necessary, in consultation with Parks Canada vegetation specialists.

Wildlife and Wildlife Habitat

- 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.
- 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 that 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.

- 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. If the ESO or Departmental Representative are not available, Banff Dispatch will be contacted at (403) 762-1470.

Cultural Resources

- Staging and construction traffic (both mechanical and foot) on the east bank should be confined to the Fireside picnic area.
- If staff observe any significant cultural resources while they are working they should stop work in the immediate area and report it to the ESO or the Departmental Representative immediately. The Contractor and workers shall wait for instructions before proceeding with their work. Significant resources in this context include historical structural features, concentrations of turn of the century bottles or cans, or pre-contact resources such as concentrations of butchered animal bone, hearths or artefacts.
- All historical or archeological objects found in Banff National Park are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any artifacts found and request direction from the ESO or the Departmental Representative.

Visitor Experience

- A construction traffic safety management plan shall be incorporated into the EPP to address contractor and public safety around the site.