



Jasper National Park Environmental Impact Analysis
Site Specific Mitigations
J14-001- Parks Canada 5th Bridge Bank Protection
January 13, 2014

Originally built in 1964, the 5th Bridge along Maligne River was closed in July 2012 as a result of erosion from high water to the bridge abutments. This bridge is part of a 6 bridge trail system that receives significant multi-season use. Parks Canada contracted Cascade Engineering to assess the bridge and in November 2012 their recommendation was to dismantle and reconstruct the bridge moving the north abutment back 2 to 4 meters from the existing position. The bridge was demolished in April 2013. A hydro technical assessment was conducted by Matrix Solutions Inc. in February of 2013 which was necessary to support the design associated with the construction of a bridge and bank protection. Associated Engineering Ltd. was awarded the contract for Design Services and Construction Supervision for Bank Protection and for the construction of a new bridge on the old site.

The bank stabilization project is anticipated to begin in the spring of 2014 during the in-stream work window of April 5-15, 2014. It is anticipated that this work will take 5 days to complete.

Scope of Work:

- Physical work would be confined to the north bank but access will likely be from the south bank. This work would include; stripping of topsoil, excavating land steps, placement of gravel on steps, compaction of gravel, placement of riprap, replacement of topsoil over the riprap and seeding of topsoil with approved native grass seed.
- Riprap would be placed on the north bank as shown in the attached draft plans (Figure 1). This material, available from the Marmot Pit, will be washed and stockpiled in the parking area until required.
- Based on the peak velocity calculated for this site, Class III rock riprap will be required as per Alberta Transportation design guidelines. Rock riprap armouring should be placed along the new bridge abutments, and river banks up to the top of bank level of 1037.5 m.
- In stream work will be required for initial shaping of the north bank and placement of the rock riprap.
- Minimal tree removal at the top of bank will be necessary to facilitate regarding and rock placement.
- In-stream work as outlined in the *Best Available methods for Common Leaseholder Activities, 1998 (page 101)* would be restricted to April 5th to April 15th



Photo 1. Original 5th Bridge. Photo taken February 15, 2013. This bridge was removed April 2013.



Photo 2. South bank of project

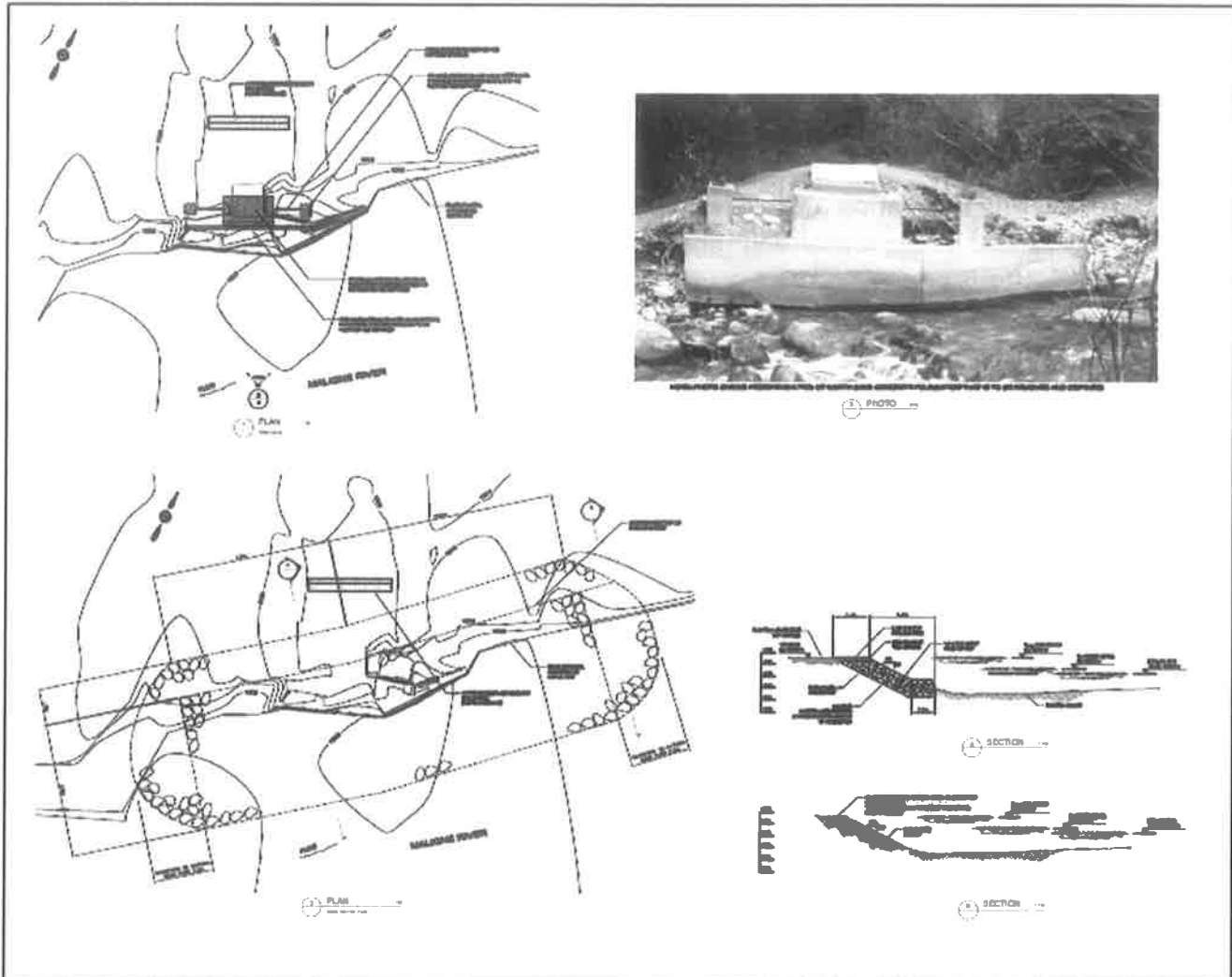


Photo 3. North bank of project





Figure 1. Draft Plans for Bank Protection on North bank of Maligne River, 5th bridge site



1. Relevant Best Management Practices

Parks Canada has determined that this project will be assessed through the Best Management Practices (BMPs) pathway under the *Parks Canada Interim Directive on Implementation of the Canadian Environmental Assessment Act 2012* and the *Guide to the Parks Canada Environmental Impact Analysis Process under CEAA 2012* (the guide) will be followed.

The following Best Management Practices apply to this project:

- *Routine Projects at Front Country Facilities in Jasper National Park (Dec 2011)*
- *Fisheries and Oceans Operational Statement for Temporary Stream Crossing, Version 1.0 (attachment 1).*
- *Best Available Methods for Common Leaseholder Activities (Axys, 1998)*
- *Contract Specifications; Demolition for Minor Works, Associated Engineering (2014).*



2. Project Specific Mitigation Measures

Aquatics

- i. Fish species found in the Maligne River below the canyon include Bull Trout, Brook Trout, Rainbow Trout, Rocky Mountain Whitefish and Burbot. The in-stream work as outlined in the *Best Available Methods for Common Leaseholder Activities* (Page 101) is: April 5 - April 15

Soils and Vegetation

- i. Avoid mixing topsoil and subsoil. Topsoil should be salvaged for restoration efforts on site.
- ii. All equipment will clean of mud and vegetative debris prior to use on this project.
- i. If vegetation needs to be removed, brush flush with ground and use a barrier to prevent ground/root disturbance within 30m of HWM.
- ii. No grading of the bank – choose the location that provides access without disturbing the stream bank

3. General Mitigations

- i. Please contact the Environmental Surveillance Officer (ESO) - Jurgen Deagle (780-883-0698) two weeks prior to commencement of work. The ESO will schedule an on-site start up meeting, arrange site surveillance, and will issue Special Activity Permits.
- ii. External rock used for riprap must be washed prior to use.
- iii. Equipment can be carried in with larger equipment for one crossing (there and back). No equipment will be authorized to work in-stream.
- iv. As an alternate, equipment can access the North bank of Maligne River from the 6th Bridge day use.
- v. Hydraulic fluids will be vegetable oil based.
- vi. Stockpile sites for equipment and materials must use unvegetated/hardened surfaces (parking lot and trail).
- vii. The proponent is responsible for site security and public safety at all times.
- viii. All vehicle re-fuelling will take place at licensed facilities (gas station) or on hardened surfaces (roadways or parking lots). No refuelling within 100m of HWM on Maligne River.
- ix. A spill kit capable of handling 110% of the total fuels on-site will be available at each worksite and all staff trained in its use. Parks Canada dispatch (780-852-6155) or ESO (780-883-0794) will be notified immediately of any fuel spills or leaks.
- x. Noise and air pollution from equipment on-site will be kept to a minimum by shutting off equipment when not in use.



- xi. All workers must have the required protective equipment for the job and be trained in accordance with the provisions included in the *Alberta Occupational Health and Safety Act* and *Worker's Compensation Board*.
- xii. If work to be carried by an outside Contractor or Sub-contractor, they must have a valid Parks Canada business license.
- xiii. Parks Canada does not permit works camps in Jasper National Park. Approved accommodation can be sought within the Town of Jasper or outside Jasper National Park.
- xiv. All garbage must be stored and handled in compliance with the National Park Garbage Regulations. Burning or burial of waste is not permitted.
- xv. The ESO may require other mitigations in response to any unforeseen environmental impacts.
- xvi. Work shall stop immediately if cultural resource materials are uncovered at any time and shall only recommence upon the instruction of a cultural resource expert.

4. Permit(s) Required/Action:

Please request the following Special Activity Permits from the Parks Canada ESO, Jurgen Deagle (780-883-0794):

- i. remove, deface, damage, or destroy flora or natural objects,
- ii. off highway vehicle use

Please obtain the following documentation from Parks Canada's A/Business Liaison Officer, Kelly Deagle, (780.852.6151):

- i. Business licenses for contractors and sub-contractors

- Yes, the project is likely to cause significant adverse environmental effects.
- No, the project is not likely to cause significant adverse environmental effects.

Environmental Impact Analysis Author:

<p style="font-size: 1.2em; color: blue; margin: 0;"><u>MELANIE HUDDEE</u></p> <p style="margin: 0;">Environmental Assessment Specialist</p>	
<p style="font-size: 1.2em; color: blue; margin: 0;"><u>Melanie Hudee</u></p> <p style="margin: 0;">Signature</p>	<p style="margin: 0;">Date: <u>JUN 20, 14</u></p>

Environmental Impact Analysis Reviewed and Approved:

<p style="font-size: 1.2em; color: blue; margin: 0;"><u>MARAYNE SIA</u></p> <p style="margin: 0;">Senior Environmental Assessment Scientist</p>	
<p style="font-size: 1.2em; color: blue; margin: 0;"><u>Marayne Sia</u></p> <p style="margin: 0;">Signature</p>	<p style="margin: 0;">Date: <u>JUN 20, 14</u></p>



Attachment 1

Fisheries and Oceans Canada – Operational Statement - Temporary Stream Crossing

Version 1.0

Fisheries and Oceans Canada
Alberta Operational Statement

A temporary stream crossing consists of i) a one-time ford in flowing waters, ii) a seasonally dry streambed ford, or iii) a temporary bridge (e.g., Bailey bridge or log stringer bridge). Temporary stream crossings are employed for short term access across a watercourse by construction vehicles when an existing crossing is not available or practical to use. They are not intended for prolonged use (e.g., forest or mining haul roads). The use of temporary bridges or dry fording is preferred over fording in flowing waters due to the reduced risk of damaging the bed and banks of the watercourse and downstream sedimentation caused by vehicles. Separate Operational Statements are available for *Ice Bridges and Snow Fills* used for temporary access during the winter and for non-temporary *Clear Span Bridges*.

The risks to fish and fish habitat associated with temporary stream crossings include the potential for direct harm to stream banks and beds, release of excessive sediments and other deleterious substances (e.g., fuel, oil leaks), loss of riparian habitat and disruption to sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your temporary stream crossing project without a DFO review when you meet the following conditions:

- the project is not located on a Class A stream according to the *Alberta Water Act - Code of Practice*,
- the bridge is no greater than one lane in width, and no part of its structure is placed within the wetted portion of the stream,
- the work does not include realigning the watercourse,
- for fording in flowing waters and temporary bridges, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- disturbance to riparian vegetation is minimized,
- the work does not involve dredging, infilling, grading or excavating the bed or bank of the watercourse,
- all crossing materials will be removed prior to the spring freshet, or immediately following project completion if this occurs earlier,
- fording involves a one time event (over and back) and will not occur in areas that are known fish spawning sites,
- the crossing will not result in erosion and sedimentation of the stream, or alteration (e.g., compaction or rutting) of the bed and bank substrates,
- the crossing does not involve installation of a temporary culvert, and



- you incorporate the *Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing* listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (SARA) (www.sararegistry.gc.ca). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Alberta DFO office list).

We ask that you notify DFO, preferably 14 days before starting your work, by filling out and sending the Alberta Operational Statement notification form (www.dfo-mpo.gc.ca/regions/central/habitat/os-ao/provinces-territoires-territoires/ab/os-ao20-eng.htm) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.
2. Locate crossings at straight sections of the stream, perpendicular to the bank, whenever possible. Avoid crossing on meander bends, braided streams, alluvial fans, or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.
3. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way or approved work space. When practicable, prune or top the vegetation instead of uprooting.
4. Generally, there are no restrictions on timing for the construction of bridge structures or fording seasonally dry streambeds, as they do not involve in-water work. However, if there are any activities with the potential to disrupt sensitive fish life stages (e.g., fording of the watercourse by machinery) these should adhere to appropriate fisheries timing windows (see *Alberta Water Act - Code of Practice* restricted activity periods, which can be found at: <http://environment.alberta.ca/1411.html>).
5. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use.
 - 5.1. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used, provided they do not constrict flows or block fish passage.
 - 5.2. Grading of the stream banks for the approaches should not occur.
 - 5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary bridge should be used in order to protect these areas.
 - 5.4. The one-time fording should adhere to fisheries timing windows (see Measure 4).
 - 5.5. Fording should occur under low flow conditions, and not when flows are elevated due to local rain events or seasonal flooding.
6. Install effective sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.



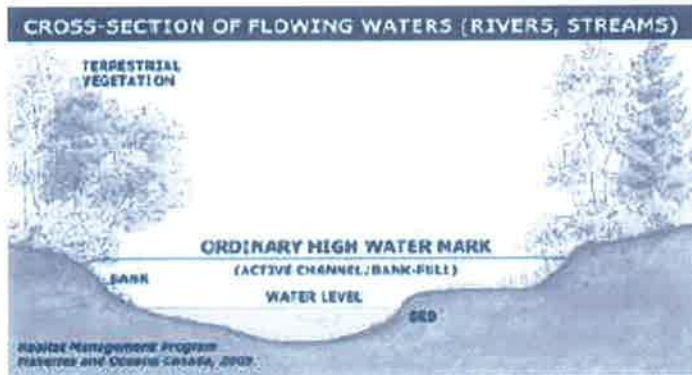
7. For temporary bridges also employ the following measures:
 - 7.1. Use only clean materials (e.g., rock or coarse gravel fill, wood, or steel) for approaches to the bridge (i.e., not sand, clay or organic soil) and install in a manner that avoids erosion and sedimentation.
 - 7.2. Design temporary bridges to accommodate any expected high flows of the watercourse during the construction period.
 - 7.3. Restore the bank and substrate to pre-construction condition.
 - 7.4. Completely remove all materials used in the construction of the temporary bridge from the watercourse following the equipment crossing, and stabilize and re-vegetate the banks.
8. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.
 - 8.1. Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
 - 8.2. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
 - 8.3. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
 - 8.4. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering any watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.
10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
 - 10.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes or wetlands, it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

CROSS-SECTION OF INLAND LAKES OR WETLANDS





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