



BCTS
BC Timber Sales

TSG – Water and Aquatic Habitat Management Guidelines

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SUSTAINABLE FORESTRY INITIATIVE

SFI-00088

These guidelines provide best management practices for water and aquatic habitat management in forestry operations. These best practices are provided as guidance only. In the event of any discrepancy between these guidelines, contractual, legal, and regulatory requirements related to forest practices or safety, the contractual, legal, or regulatory requirements shall prevail.

Definitions

Best management practices: Frequently used practices endorsed by industry or governing agencies for common tasks. This document and guidelines provided in your EMS documentation, as well as those provided by DFO and Ministry of Environment are examples of BMPs for working around fish habitat.

Codes of Practice (DFO): Fisheries and Oceans Canada provide the following in relation to codes of practice:
A code of practice specifies procedures, practices or standards for avoiding the death of fish or the harmful alteration, disruption or destruction of fish habitat. This is in relation to works, undertakings and activities during various phases of their life cycle, such as construction, operation, maintenance or decommissioning.

These documents apply to certain types of projects, including the installation of temporary crossings. To determine if a Code of Practice has been established for your project, refer to DFO – Code of practice website: <https://www.dfo-mpo.gc.ca/pnw-ppe/practice-pratique-eng.html>

Project Review by DFO: Projects that have the potential to cause a ‘Harmful Alteration Disruption or Destruction’ of Fish Habitat require (HADD Sec. 35 Fisheries Act) require a project review by DFO. To determine if your project requires a DFO review, refer to DFO – projects near water website: <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>

Qualified Environmental Professional (QEP): Individuals that may act as Qualified Environmental Professionals (QEP) under the [Riparian Areas Protection Regulation, section 21](#). The QEP must be acting under their professional association’s code of ethics and subject to the organization’s disciplinary action.

Qualified Environmental Professionals may hold the following designations:

- Agrolgist
- Applied technologist or technician
- Professional biologist
- Professional engineer
- Professional forester
- Professional geoscientist
- Registered forest technologist

Qualified environmental professionals can conduct assessments as individuals or together with other qualified environmental professionals. They must have a **combination of education, training and experience** that qualifies them to make judgements **regarding your specific situation**. When choosing an **Environmental Monitor**, it is advisable to ensure that they can **also satisfy these requirements**.

Environmental Management System (EMS) documents: These documents are **provided by BCTS** as part of a contract or Timber Sale Licence (TSL). They include: *Environmental Emergency Response Plan (ERP)*, *Environmental Field Procedures (EFPs)* and guidelines such as *Ground Based Harvesting Guidelines, and this document*.

Timing Windows: These are the times of year when in stream work is least likely to result in serious harm to fish or habitat. They are provided by Ministry of Environment as part of the ‘*Terms and Conditions of the Habitat Officer*’. They vary by region and fish species, please refer to **Regional Terms & Conditions & Timing Windows** website: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows>

Background

Any time water collects on the ground and begins to flow across its surface, we need to consider potential implications. Flowing water can lead to erosion, pick up contaminants and carry debris. Any of these things can cause impacts to fish habitat, water quality, and water quantity downslope of your work site. It is important to know the **legal requirements and best management practices** associated with your project **prior to getting started** in order to prevent damage to aquatic resources.

Natural watercourses such as **lakes, rivers, creeks, springs, gullies, wetlands, and swamps** all have legal status under various legislation and require specific management.

In some cases, man-made structures also need to be managed where they contribute to resource values. You need to be aware of **ditches, ponds, and surface runoff** areas if they contribute to fish habitat, water quality, and water quantity.

Where you don’t know the status of a watercourse, **ask someone. Awareness of your site is your responsibility.** In complex cases a **Qualified Environmental Professional (QEP)** will be required to develop a plan, and an **Environmental Monitor** will need to be on-site during the work to implement it.

Applicable Legislation:

Fisheries Act	Federal act that governs all aspects of fish habitat management including: harmful alteration, disruption or destruction of habitat, introduction of deleterious substances and obstructing fish passage.
Species At Risk Act	Federal act that provides protection for threatened and endangered species. It is important to know which species are present in your area so that you can manage any requirements.
Forest and Range Practices Act	If you are doing forestry related work on Crown Land, this Act and its regulations apply and governs fish habitat, obstructions, and riparian areas.
Wildlife Act	This provincial legislation applies to bird nests, beaver dams, and threatened and endangered species as well as other aspects of wildlife management. Be aware of these requirements.
Water Sustainability Act	If your project is governed under FRPA, You are exempt from the requirement to notify the provincial government (Section 11) however fish windows, BMPs and other requirements are provided in the ‘Terms and Conditions of the Habitat Officer’ (https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/working-around-water/regional-terms-conditions-timing-windows)

Water and Aquatic Habitat Management Checklist

Start by becoming familiar with your worksite and the project details (e.g., designs, equipment required, material excavation and placement, etc.). Use the checklist below to determine the requirements, and if referral to a **Qualified Environmental Professional** is required.

<p>1.</p>	<p>Do I have all the information that I need?</p> <p><i>Plans and Environmental Management System</i> Copies of Harvest Plan and/or Road Construction maps, as well as Riparian Management Prescriptions and EMS documents for the project. Stream classifications and special restrictions are indicated. Features are clearly located on the ground. Ask your supervisor, coordinating registered professional, or BCTS representative if these have not been provided.</p> <p><input type="checkbox"/></p> <p><i>Permits and Approvals</i> Some projects require DFO or BC Government review prior to getting started. If your project requires permits or approvals, ensure these documents are on-site.</p>
<p>2.</p>	<p>Am I working within a Community Watershed, upstream of an Intake or in a Fisheries Sensitive Watershed?</p> <p><i>Watershed Restrictions</i> Specific restrictions may apply (TSG-ERP for Community Watersheds) including harvesting or construction methods, equipment use and storage, types of lubricants allowed, and waste storage or disposal. Ask your supervisor, coordinating registered professional, or BCTS representative if these have not been provided.</p> <p><input type="checkbox"/></p>
<p>3.</p>	<p>Is there a watercourse within or adjacent to my worksite?</p> <p><input type="checkbox"/> Best management practices are defined by the classification of the waterway and the type of work being performed.</p>
<p>4.</p>	<p>Are there established BMPs for my project?</p> <p><input type="checkbox"/> DFO and Ministry of Forests have published Codes of Practice and BMPs for common projects. Check their websites, including links below, to see if there is a guidance document for your project.</p> <ul style="list-style-type: none"> • DFO – Projects near water; http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html • FOR – Standards and Best Practices for Instream Works (2004); http://www.env.gov.bc.ca/wld/documents/bmp/iswstdsbpsmarch2004.pdf <p>Additional review may be required where conditions of the best management practices cannot be met. If review is not required, follow General BMPs for your project.</p> <p>BCTS EMS guidance documents can be accessed in links below:</p> <ul style="list-style-type: none"> • BCTS Business Area EMS; https://www2.gov.bc.ca/gov/content/industry/forestry/bc-timber-sales/forest-certification/ems-sfm • FOR – Fish-stream Crossing Guidebook (2012); https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/resource-roads/fish-stream_crossing_web.pdf

<p>5.</p>	<p>Do I need a Qualified Environmental Professional? If any of the following apply, planning and/or consultation with a Qualified Environmental Professional may be required. An environmental monitor may be required during works. Ask your supervisor, coordinating registered professional, or BCTS representative.</p>
	<p><input type="checkbox"/> There is fish habitat at the site and there is a risk of a harmful alteration, disruption, or destruction of habitat (i.e., instream works). Your project may require DFO review. Seek guidance from a QEP.</p>
	<p><input type="checkbox"/> Work is anticipated to impact a marine environment (i.e., construction, re-activation or repairs to a log sorting or dumping facility). Refer to BCTS Environmental Field Procedure #08 for additional guidance.</p>
	<p><input type="checkbox"/> Fish presence for the site is not known. There is no indication of waterbody classification on related documents.</p>
	<p><input type="checkbox"/> Work is being conducted on a stream in a community watershed or fisheries sensitive watershed where there is risk of sedimentation in the water supply. Consider requirement for Sediment and Drainage Management Plan (SDMP)</p>
	<p><input type="checkbox"/> The machine will need to cross a fish stream with no provision for construction of a temporary crossing, or work will need to be conducted on a fish bearing stream below the high water mark.</p>
	<p><input type="checkbox"/> Work is being conducted on fish streams outside the fish window.</p>
	<p><input type="checkbox"/> Work is being conducted in fish habitat and fish salvage, site isolation, or stream diversion will need to take place. Additional permits or approvals may be required. Ensure these requirements have been satisfied and copies of approvals are on-site before proceeding.</p>
	<p><input type="checkbox"/> Spawning fish, eggs or juvenile fish have been observed within the work area.</p>
	<p><input type="checkbox"/> Sensitive soils or critical fish habitat have been observed at the site. The site will require a Sediment and Drainage Management Plan (SDMP) or habitat protection measures.</p>
	<p><input type="checkbox"/> Concrete or other hazardous substances will be used within or adjacent to the watercourse. An Environmental Management Plan, water quality monitoring, or specialized equipment may be required to do this work.</p>
	<p><input type="checkbox"/> Species at Risk or other aquatic wildlife habitat features have been noted at the site. Timing windows or other restrictions may apply.</p>
	<p><input type="checkbox"/> If there is uncertainty for any of the items above, or insufficient information is available, ask your supervisor, coordinating registered professional, or BCTS representative.</p>

Best Management Practices for Forestry Activities

Project Planning

- **Have a project plan.** Refer to BCTS Environmental Field Procedure #04 and #05.
- Plan to operate during **favourable weather conditions**. For installation of structures, work within the fish window.
- **If you are working outside the fish window**, DFO or a QEP needs to review your project for potential impacts to fish or habitat features. Have a contingency plan for unsuitable weather conditions.
- Ensure all permits, approvals and licences have been obtained and have **copies on-site**.
- If a change of plan is needed, stop work, then notify project supervisor. **Changes to a project plan must be documented, made by a qualified professional**, and meet the intended results and strategies for the project area and protect environmental values.
- If Sediment and Drainage Management Plan (SDMP) is part of the project plan, make sure the **equipment and tools** needed to implement it **are on-site**.
- **Walk the site prior to starting work.** Look for hazards, potential habitat, and access points for equipment. Discuss requirements for removal of vegetation or timber in relation to safety, visibility, machine clearance, etc. with other workers on the project.
- **Clearly mark and know** the location of machine free zones, riparian management areas, designated stream crossings and temporary access structures.
- **If you anticipate difficulties with the project plan**, communicate them to the on-site supervisor, coordinating registered professional, or BCTS representative. The plan may need to be changed before starting work.
- Where **dewatering and/or fish salvage** is required, discuss this part of the plan with your Environmental Monitor or QEP before getting started. Permits, additional equipment and specific certifications are required.

Equipment

- Make sure your **spill response equipment is adequate, on-site**, and readily available to deploy – **spills happen fast! Conduct a test or drill if required.**
- Equipment is to arrive at worksites **clean, leak free and free of invasive species**.
- Equipment should be **inspected daily**, prior to starting work to ensure that it is clean and leak free for the days' work.
- Equipment should be parked, **fuelled, and serviced away from watercourses**, in designated locations where spilled contaminants will not impact riparian areas. Fuel and service machines before starting work for the day.
- Equipment should be in **good running condition**, breakdowns in watercourses can lead to violations.

Accessing work areas

- **Disturbance** adjacent to streams should be **kept to a minimum**, choose access points that are stable and that provide optimal reach for machines. **Preservation of stream banks and vegetation** is a requirement of protecting fish habitat. Where possible, **avoid pulling or snapping trees** with excavators. Cut vegetation adjacent to streams to limit soil disturbance and promote re-growth. **Limit vegetation removal** to that which is required for safety, access, and visibility.
- **Avoid concentrated soil disturbance.** Be conscious of rutting and compaction of soils in heavily travelled areas. Use available materials such as logs or branch cuttings to **buffer soil disturbance** where possible. Consider placing **geotextile over sensitive or unstable soils** to minimize disturbance and sedimentation into streams.
- Avoid wet areas and **maintain natural drainage patterns**.
- **Rehabilitate disturbed access points** with re-contouring, scattering cut vegetation, and planting with native seed mix.

Working at the Site



- Ensure spill response and **erosion control measures** are in place and properly installed (i.e., spill boom deployed downstream).
- **Spill response** equipment should be **on board** equipment at all times.
- Operate machines from stable locations **above the high water mark**.
- Where a wetted crossing is part of the plan, place logs or other **clean materials** in the channel to minimize disturbance. Wetted crossings are typically limited to **one time (over and back)** for the project. Plan so that additional crossings are not required. The need for **additional crossings not in the project plan** should be discussed with an agency representative. Projects that require **multiple crossings** should incorporate the installation of a clean, elevated temporary crossing. Any project that incorporates a **wetted crossing** should be checked to determine if review by DFO is required. The plan should be **discussed with the crew** and other professionals at the site prior to starting work.
- Use **access trails and crossing locations** indicated on your **Harvest, Road Construction or Site Plan**.
- Use **clean construction materials** (e.g., ballast, rip rap) adjacent to streams.
- **Do not pile slash or debris on watercourses**. Keep these materials out of RMA if possible.
- **Spoil** excavated materials that will not be re-used in **designated areas only**. All spoil sites must be outside riparian areas to prevent introduction of sediments and contaminants.
- Know and **follow rainfall shutdown** guidelines and shut down the site. **Deploy sediment control** devices during periods of heavy rainfall.
- **Do not introduce foreign materials** (e.g., sawdust, woody debris, road surface material) into streams.
- **Follow stream cleaning prescriptions** provided. **If you see a problem** with the prescription for a stream, communicate it to the on-site supervisor, coordinating registered professional, or BCTS representative. The plan may need to be changed before starting work.
- Store all potential **contaminants** (fuel, oil, grease) **away from riparian areas**. In some cases, **environmentally friendly lubricants** may be required for the project.

Fish bearing watercourses



Unless directed by a Qualified Environmental Professional:

- **Don't remove** material from a stream or other waterbody.
- **Don't alter a channel** or stream banks.
- **Don't place** any part of structures (including rip rap) **below the high water mark**.
- **Don't work** in areas where **fish or other sensitive aquatic wildlife** are **observed** within or adjacent to the worksite. Sensitive life stages may be present.
- **Don't obstruct or place materials** in waterways
- **Don't direct surface runoff** (including ditches) towards the stream
- **Don't conduct works** while **stationed within the stream**.

Leaving the site for the day


- Park equipment and vehicles **away from riparian areas**.
- Use excavators to **block access to** potentially **hazardous areas** of the work site.
- **Set up erosion and sediment control devices** (i.e., cover up) spoil areas, open excavations, and destabilized banks **if rainfall is expected** before returning.
- Ensure **servicing and fuelling** equipment is stored **away from riparian areas**.
- **Check** sediment control and site isolation installations **to make sure they are secure**. If shutting down the site due to **heavy rains or for extended periods** of time, **remove any devices deployed in the stream**.
- Where sites will be shut down for extended periods, make sure **periodic inspections are planned** to monitor the site for erosion and environmental impacts.

Completion of the Work

- **Stabilize**, re-contour and re-vegetate all disturbed areas and **exposed soils**
- **Remove all debris and refuse** from the work site.
- **Remove any foreign materials** that may have fallen into streams during construction.
- **When no longer required, remove** all site isolation and **sediment management devices** from streams and stream banks.
- **Remove all contaminants**, soiled spill response equipment and contaminated soils **to an appropriate disposal location**.

Examples of Good and Poor Practices

Crossing Structure Installation	
Good	Poor
	
<ul style="list-style-type: none"> • Minimal disturbance to vegetation • Structure preserves stream banks • Adjacent disturbed sites oriented to prevent sedimentation into stream • No debris / disturbance in channel • Clean, appropriate materials used in construction 	<ul style="list-style-type: none"> • Heavily disturbed vegetation • Inadequate span to preserve stream banks • Adjacent disturbed sites not adequately re-worked to prevent sedimentation • Structure below high water mark of stream, disturbance to channel • Soiled, damaged building materials
Road Drainage Management	
Good	Poor
	
<ul style="list-style-type: none"> • Exposed soils Minimized where possible • Road surface crowned to drain water • Stable travelled way (not damaged by vehicle traffic) • Sediment management deployed in response to mobile sediments 	<ul style="list-style-type: none"> • Large exposed areas of fine materials • Improper crown to drain road surface • No ditching to capture overland flow • Uneven surface, large windrow in center of travelled way • Sediment management absent

Harvesting	
Good	Poor
 <ul style="list-style-type: none"> • Exposed soils minimized where possible • Minimal disturbance from machines • Streams free of debris and other materials 	 <ul style="list-style-type: none"> • Large accumulations of debris • Excessive disturbance and rutting • Material being introduced to streams • Erosion and sedimentation occurring
Spill Response	
Good	Poor
 <ul style="list-style-type: none"> • Source of spill remedied • Spill area controlled/contained • Spill pads/bioremediation deployed • Soiled materials properly disposed/cleaned up 	 <ul style="list-style-type: none"> • Source of spill not remedied • No containment/spill response equipment deployed • Soiled materials not removed and disposed

Fuel Storage

Good



- Legal and EMS requirements satisfied (see callout boxes)
- Storage containers clean and leak free
- Spill response equipment clean and accessible
- Fire suppression equipment accessible
- Tank secured properly

Poor



- Legal requirements not satisfied
- Soiled materials not properly contained/disposed
- Leak/spill prevention not properly addressed

Equipment Clean and Leak Free

Poor



- Mud and other sediments accumulated on tracks and running gears
- Debris hiding potential leaks, making inspection difficult. Potential for introduction of sediment and contaminants
- Grease and other servicing products not wiped up after use

Good



- [Same Site] Sediment and contaminant introduction measures observed and addressed.
- Machine, treads and running gear shoveled clear of debris prior to making crossing to minimize sedimentation into creek.
- No leaks observed during track clearing. Potential leaks not obscured by accumulations of other materials
- Low flows. Crossing elevated to keep machine out of stream

References:

Engineers and Geoscientists of BC and Association of BC Forest Professionals. (2021) Guidelines for Professional Services in the Forest Sect – Crossings, Version 3. <https://www.egbc.ca/app/Practice-Resources/Individual-Practice/Guidelines-Advisories#natural-resources>

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