Fish Habitat

& THE EFFECTS OF SILT AND SEDIMENT

FACT SHEET T-1

Silt and sediment refers to the fine-grained soil particles that form the beds of lakes, rivers and streams. It is natural to find silt and sediment in water but problems result when excess amounts are introduced into the water. Excess amounts can harmfully affect water quality, an essential component of fish habitat.

This fact sheet provides information on how to avoid the introduction of silt and sediment into a waterway when working in or around water and who to contact for more information.

Be aware of the *Fisheries Act* and other legislation

The federal *Fisheries Act* provides for the protection of fish habitat. Under the *Fisheries Act*, no one may carry out any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat (HADD), unless this HADD has been authorized by the Minister of Fisheries and Oceans Canada. Also under the *Fisheries Act* are the pollution prevention sections that are the responsibility of Environment Canada to enforce, and depending on the province, this may be done in partnership with provincial regulatory authority(ies). The Act states that no one is permitted to deposit a deleterious (harmful) substance into water containing fish. Violations to the *Fisheries Act* can result in substantial fines, and/or the risk of imprisonment. If found guilty, then the violator may also be required to cover the costs of restoring the habitat at the site and/or be required to fulfill other court ordered remedies. Other legislation that may also be relevant is outlined in the introductory Fact Sheet: *Working Around Water? What you should know about Fish Habitat*.

Contacts and approvals

Keep in mind that approval from one government agency does not guarantee that you will be able to obtain approval from another agency. As well as the *Fisheries Act*, other agencies have legal requirements that may affect how to proceed with projects in and around water. The lead review agency for project proposals and their areas of responsibility, listed in the table on the next page, will assist you in determining what other agencies need to be contacted for permits and approvals. Remember you should obtain all approvals before starting work.

Suspended sediment can be harmful

Silt and sediment are sometimes transported in water, and depending on the quantity, can cause cloudiness or turbidity. Silt, sediment and turbidity can result in a variety of harmful impacts to fish and fish habitat. Some of the negative effects of excessive suspended sediments and turbidity include:

- clogging and abrasion of the gills of fish and other aquatic organisms
- behavioural changes, including movement and migration
- decreased resistance to disease
- impairment of feeding, for example, turbidity interferes with feeding for visual feeders such as trout and bass
- poor egg and fry development
- fatal impacts to small aquatic animals that are food for fish.

Deposited silt and sediment can be harmful

Deposited silt and sediment can also be harmful to fish habitat. Some of the harmful impacts of silt and sediment deposits are:

- The clogging of the small spaces between gravel particles prevents the free flow of oxygenated water and the removal of waste products from developing eggs deposited in the gravel. This often suffocates the eggs and may make gravel beds unsuitable for egg incubation
- The destruction of habitat for bottom dwelling organisms such as crayfish and insects. Fish rely on these organisms for food
- The clogging of sheltered areas between boulders and gravel. Young fish need these areas as protection to survive.

Avoid introducing silt and sediment into lakes and rivers

Since silt and sediment and the resulting turbidity can create a variety of harmful impacts to fish and fish habitat, it is important to avoid the introduction of these materials into the water. Planning and designing work projects with care and implementing environmentally friendly practices will protect fish and fish habitat.

For most construction or development projects that cause the release of silt and sediment, there are effective methods for removing suspended sediment from the work site and preventing it from entering streams or lakes.

Protect shoreline vegetation

Disturbance of vegetation or other stabilizing soil cover often results in erosion of the exposed soils. For example, the building of improper stream crossings or clearing trees and vegetation

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to a stream bank or lake shoreline can result in soil erosion. If shoreline vegetation is disturbed, ensure sediment and erosion control measures such as silt curtains are properly in place to prevent silt and sediment from entering the water. Once the work is completed, it is important to revegetate the area as soon as possible. Protecting the riparian or buffer zone along the water is an important component in protecting water quality and fish habitat.

Use clean materials

Ensure all equipment and materials going into the water are clean and free of fine particles.

Protect water quality

If your activity causes the exposure of soil then there is a risk of your work causing the mobilization of silt or sediment into a waterbody. Prevent mobilization of material by rain or wind by covering the exposed soil. In addition, an upland filter barrier or sediment or silt screen may be required around the entire work area. The screen should be carefully removed after the work is completed and all of the silt or sediment has stabilized. If the work is done in the water, it will be necessary to isolate the work area using a silt fence or impermeable barrier. If using a silt fence, plan to work on calm days. This will help prevent the suspension of fine sediment particles into the water by wave action and will ensure the silt screens used in the water are not disturbed by wave action. Sediment or silt screens should be inspected daily and maintained to prevent the spread of suspended sediments to adjacent water and fish habitat.

If you are planning a project in or near water, you must use environmentally friendly practices to avoid the introduction of silt or sediment into waterbodies. Your local provincial regulatory authority(ies) will be able to provide more detailed advice on environmentally friendly practices specific to your project proposal. Be sure to apply for all necessary approvals and permits before undertaking any work around water.

This fact sheet does not constitute any DFO or other regulatory authority(ies) approval.

It is your responsibility to contact all appropriate regulatory authorities.

Working together to protect fish habitat

Help maintain the quality and quantity of fish habitat in our lakes and streams. For more advice on how to work in or around water in an environmentally friendly manner, contact your local agency staff directly.

Contact information

Fisheries and Oceans Canada

www.dfo-mpo.gc.ca/canwaters-eauxcan

Environment Canada

www.ec.gc.ca/ele-ale/

Canada

Cette publication est également disponible en français.

What is Fish Habitat?

Fish habitat is any component of an aquatic system that provides any one of the following:

Cover: Cover provides areas for escape from predators, competitors and high flows. Numerous forms of cover exists including substrate, woody debris, undercut banks and even deep water.

Food: Fish require food in adequate amounts to survive and reproduce. The type and amount of food produced is dependent upon the substrate and riparian characteristics of the watercourse.

Reproduction: Fish require adequate substrate and water quality for successful reproduction.

Water quality: Most species have specific temperature ranges in which they can live. Changes to riparian vegetation and width to depth ratio can alter watercourse temperatures. The introduction of sediment, pesticides or any other deleterious substances degrades water quality.

Migration routes: Fish often travel great distances within a watercourse for both spawning and feeding. Any activity or structure that blocks migration can detrimentally affect fish populations.

Contact information – Ontario

If the property where the work will be carried out is . . .	Your first contact should be . . .
■ in the Rideau Canal or Trent-Severn Waterway ■ in a federally owned small craft harbour	■ Parks Canada Agency ■ Fisheries and Oceans Canada (DFO) - Small Craft Harbours
■ below the average annual high-water mark in a public (Crown) land or on a private water lot	■ Your local Conservation Authority (CA). Where there is no designated CA, contact your local Ontario Ministry of Natural Resources office
■ above the average annual high-water mark but within a regulatory flood plain ■ above the average annual high-water mark and is on private property	■ Your local CA ■ Approvals may be required from your local CA if the structure is within the flood plain or fill regulated area

If silt or sediment is released into the water, contact Environment Canada or the Ontario Ministry of the Environment directly.

Working together to protect and conserve Ontario's aquatic resources

Fisheries and Oceans Canada / Pêches et Océans Canada — www.dfo-mpo.gc.ca/canwaters-eauxcan

Parks Canada / Parcs Canada — www.pc.gc.ca

Ontario — www.mnr.gov.on.ca

www.conservation-ontario.on.ca