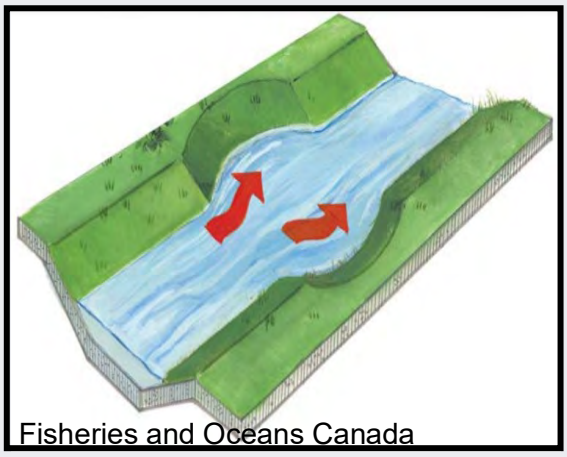
Sediment Traps

Fisheries and Oceans Canada

What is a Sediment Trap?

In a municipal drain, a sediment trap is a deepening and widening of the channel. Sediment traps reduce flow velocities and allow sediment to settle into the excavated area. Sediment traps can be constructed as a stand-alone feature. Where gradients allow, combining them with a rock flow check dam can increase their effectiveness. Sediment traps need to be maintained to be effective, so locations should be chosen that allow for convenient access.

Sediment traps typically extend for several metres and are dug a minimum of 30 cm below the design grade of the drain. Depending on the drain's gradient and size, sediment traps may require a slight widening of the channel that should not compromise the stability of the drainage channel.



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Plan view of an on-line sediment trap (left).

Deepening of the drain may require a widening of the channel, complemented with bank protection (right).

Benefits

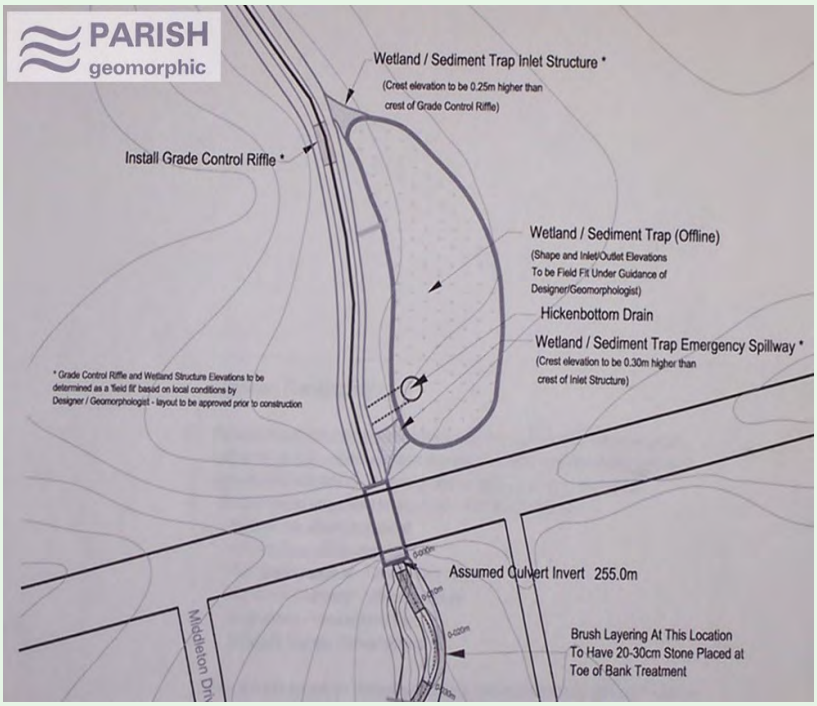
By conducting a spot cleanout of sediment traps on a semi-regular basis, the costs associated with recurring cleanouts along the entire length of the drain may be avoided. Sediment traps also provide benefits to fish habitat during low flow conditions, by providing refugia pools for fish.

Case Study: Steenstra Drain- Offline Sediment Trap

The Steenstra Drain is managed under Ontario's Drainage Act R.S.O 1990, by the Municipality of Central Huron. The drain is a permanently flowing tributary of the Bayfield River. It sustains a coldwater fishery with a population of Brook Trout, a sensitive species.

The Steenstra Drain improvement was designed by Parish Geomorphic Ltd., under a drainage report written and prepared by R.J. Burnside Engineering (Maitland Engineering).

The sediment traps were designed to accommodate high (bank full) flows diverted from the main channel into the available flood plain, lose velocity, and drop out sediment. These stilling areas function through the duration of an event until flows recede to a point where they are contained in the main channel. Water in the sediment trap drains slowly through a combination of a rock chute and a riser pipe.



The sediment traps are effective, easily accessible, and easy to maintain. Built-up material can be removed from the drain without impacting the drainage channel or working in water. Since the drain was redesigned in 2006, a noted reduction in sediment has been observed, and maintenance has been limited to the two sediment traps.

The Steenstra Drain Demonstration Project received funding support from Ministry of Northern Development, Mines, Natural Resources and Forestry; Huron Stewardship Council; Ontario Ministry of Agriculture, Food and Rural Affairs; Fisheries and Oceans Canada; Parish Geomorphic Ltd.; Wetland Habit Fund; Trout Unlimited; Huron Clean Water Project; and the Ausable Bayfield Conservation Authority.