| MAP CODE **DTCH** | # DITCHES | **USE** Erosion Sediment Stormwater Site Environmental |

What

☞ Open drainage works ranging from shallow, narrow, frequently dry ditches, to wide, deep, permanently wetted ditches.

Purpose

☞ To capture and control stormwater and runoff, and to direct it off site. Ditches prevent storm water from collecting silt and can partially filter out potential pollutants, protecting downstream aquatic ecosystems.

☞ To divert stormwater and runoff around a site.

☞ To keep work areas as dry as possible, thereby maximizing production and reducing machine and tire wear.

☞ Also used to direct wash water to sediment ponds to receive treatment for reuse, load application or discharge.
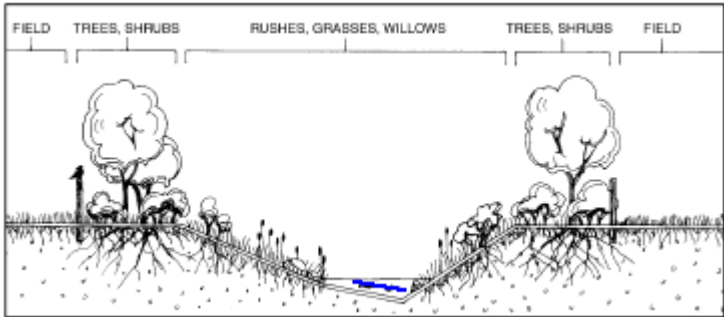
Where

YES: Anywhere stormwater needs to be captured or conveyed. To effectively drain the active site, ditches should be located where stormwater would naturally collect and flow.

NO: Where natural watercourses convey water seasonally or perennially (i.e. do not channel natural watercourses).

Materials Equipment & Costs

🚚 Plants (shrubs, small trees) and grass seeds, geotextiles, gravel or rip rap for armouring, fish barrier.

✗ Backhoe, equipment operator, labour.

$ Low to moderate.

Plans & Spec's

Design and Location

• Ditches should be sized to accommodate 110% of peak/storm flows. The sizing should allow for the volume of the vegetation planted in the ditch for erosion

control. By providing for this "over-capacity", ditches will function effectively for a longer period and with reduced maintenance requirements and less risk of failure.

- Corners and outfalls should be armoured with rip rap or boulders.
- Ditches should have sufficient grade and capacity to carry the expected run-off, and should be designed and spaced to drain the entire site effectively.
- Permanent ditches should be constructed along the edges of the property; the may not be needed in some dry upland sites.
- With proper design, location and construction, ditches require less maintenance and are more economical over time.
- To minimize the creation of sediment:
  - construct and maintain ditches during dry periods;
  - provide vegetated swales or buffers to filter sediment and pollutants, and
  - provide filter berms or clean-outs to trap mobilized sediment and pollutants.
- Ditches should have barriers to prevent fish from entering and should drain into treatment structures.

Vegetation & Planting

- Planting vegetation and a vegetated buffer strip alongside ditches can be highly beneficial, creating small wind breaks to reduce soil erosion and dust.
- Do not use pesticides close to ditches. A good rule of thumb is to maintain a minimum 10 metres pesticide-free zone along ditches.
- Vegetation growing on the bank of the ditch can help to remove sediment as surface run-off flows through it.

Maintenance

- Regular emptying of clean-outs, especially at culvert inlets and outlets and sediment accumulation areas.
- It is best to work in or near ditches during dry weather.
- Look for areas of the ditch that consistently fill in over time and constrict water flow, usually at an obstruction or a sudden decrease in gradient. Clean out these sections first to see if improvements to water flow are adequate.
- If ditches and sumps are refilling with sediment on a chronic basis, erosion control measures upstream at the operation/site need to be reassessed and improved. Refer to BMPs.
- Check for erosion due to high flow rate.
- Armour as necessary.
- Add check dams if feasible.

Sources

Fisheries and Oceans Canada. **Ditches, Fish and Fish Habitat.**

United States Department of Agriculture and Mississippi State University. (1999): **Diversion Channel;** in Water Related BMP's in the Landscape/Best Management Practices/Water Runoff Control/D. Water Volume Management/Diversion Channel. *Watershed Science Institute United States Department of Agriculture and Mississippi State University,* <http://abe.msstate.edu/csd/NRCS-BMPs/pdf/water/volume/diversion_chan.pdf>, October 2001.