

FARM PRACTICE

DRAINAGE

Description

In some parts of British Columbia, high levels of precipitation and seasonal runoff can cause saturation of agricultural soils. Most agricultural crops are adversely affected by ponded water on the soil surface and prolonged soil saturation in the root zone. Chronic flooding limits the range of crops that can be grown on certain parcels of land, reduces crop yields – and in some cases – causes disease. Good drainage allows farmers a wider selection of crops and a longer growing season, resulting in land that is more productive and crops that are more profitable and easier to market.

Drainage is defined as the practice of removing excess water that may cause reduced crop production. Proper drainage can be achieved by using a combination of surface and subsurface drainage techniques. Surface drainage provides channels such as open ditches to remove standing water from the surface of the land. Drain tile is subsurface piping used to remove excess water from the soil profile. Subsurface drainage can also be used to control erosion and salinity.

Activities and Operations

Blind Inlets

Blind inlets may be installed to permit surface water to percolate into a subsurface drainage system. A blind inlet is constructed by backfilling a drainage trench with various sizes of granular material such as gravel. Decomposable materials such as hog fuel cannot be used as blinding material because they create leachates that can contaminate water sources and kill fish.

Ditch Cleaning

Farmers must often maintain ditches and other watercourses on their farms. The *Drainage Management Guide* developed as part of the Environmental Farm Plan Program provides direction on procedures, timing windows and guidelines that should be followed for maintenance work on constructed ditches. If a farmer is unsure about the classification of a specific watercourse for which he may wish to conduct maintenance activities, its status should be verified with the federal Department of Fisheries and Oceans (DFO) and/or the provincial Ministry of Environment. Ditch cleaning should occur during the summer months when water levels are low. If water is flowing, silt barriers should be installed. Reseeding of ditch banks may be necessary to prevent possible erosion. The *BC Agricultural Drainage Manual*, published by the BC Ministry of Agriculture, provides recommendations for the design, operation and maintenance of ditching systems. Further related information can be found in the Ministry of Agriculture's fact sheet entitled *Agricultural Building Setbacks from Watercourses in Farming Areas*.

The Department of Fisheries and Oceans should always be contacted prior to doing maintenance works on channelized and natural streams.

See also Farm Practice: [Habitat Management](#)

Drainage Outlets

Farm drainage systems require outlets in order to function properly. Drainage water can flow by gravity to a ditch or be pumped from a sump. No permit is required to install a subsurface drainage outlet which feeds into a constructed ditch or natural watercourse. Care must be taken at the time of construction, however, to ensure that banks along the watercourse are disturbed as little as possible.

See also Farm Practice: [Habitat Management](#)

Fill Placement for Flood Protection

Unless otherwise prohibited by local government bylaw, the construction and maintenance of dikes, ditches, related pump houses, and ancillary works – including access roads and facilities – is a permitted use for land in the Agricultural Land Reserve (ALR) if such works are required to combat the threat of sectional or perimeter flooding or for the purposes of drainage or irrigation. If deemed essential as part of completing such improvements, soil removal and the placement of fill is permitted. Provincial regulations, however, do not allow wide-spread or area-wide filling to create a uniform elevation above a flood plain.

Land Grading

Land grading is often carried out in fields with local depressions or in fields with little or no slope to improve the distribution of water or to direct overland flow to drainage swales or ditches. Whenever possible, a vegetated buffer strip should be left at or incorporated into the edge of a field. Grading should be timed to allow a suitable vegetative cover to establish itself before the winter rain or snow season arrives.

Surface and Subsurface Drainage

A combination of surface and subsurface drainage systems may be used to obtain adequate drainage on a farm. The *Drainage, Ditch and Dike Act* regulates and authorizes the construction of municipal ditches and dikes. Ditch and drainage systems should be designed as outlined in the *British Columbia Agricultural Drainage Manual*.

Related Farm Practices

Other farm practices that pertain to drainage practices include, but are not limited to, the following.

Habitat Management

Drainage system installation and maintenance must be done in a manner that protects riparian areas and fish habitat.

See also Farm Practice: [Habitat Management](#)

Legislation

Information on federal and provincial legislation can be found in Appendices B and C. Acts, regulations and bylaws that regulate or may affect drainage include, but are not limited to, the following.

Federal Legislation

The *Fisheries Act* protects fish and fish habitat.

Provincial Legislation

The *Drainage, Ditch and Dike Act* regulates and authorizes the construction of municipal ditches and dikes.

Publications

Publications that provide further information on drainage include, but are not limited to, the following. See Appendix D for details.

Agricultural Building Setbacks from Watercourses in Farming Areas
British Columbia Agricultural Drainage Manual
British Columbia Environmental Farm Plan Drainage Management Guide
Watershed Stewardship: A Guide for Agriculture