LAND IMPROVEMENT CONTRACTORS OF ONTARIO

www.drainage.org

MY DRAINAGE PROJECT –
Is it environmentally sound?

Food production is not optional, thus the use of our most productive land for agriculture is not optional. We have a responsibility to manage land for efficient, reliable production so we can minimize the amount of land required for agriculture. Reliable production is usually associated with land that has a seasonally high water table. Drainage, usually sub-surface drainage, lowers the water table to create a healthy root zone where crops can be produced efficiently. Because soil moisture on these soils usually remains within reach of crop roots, food can be produced reliably and efficiently.

As we consider new drainage projects or drain alterations, we also have a responsibility to consider whether or not our project will be environmentally sound. There are many aspects to this decision and sometimes net effects will determine our decision. For example:

IS THERE AN EXISTING ADEQUATE OUTLET CHANNEL?

This should be confirmed by your Conservation Authority (CA), your drainage superintendent and a licensed drainage contractor. If not, can a channel be constructed in a way that minimizes impact on downstream aquatic life? If an existing water course needs to be altered to provide outlet can the work be organized to minimize instream aquatic damage?

COULD THE PROJECT AFFECT A WETLAND?

It is always better to increase the productivity of existing cropland than to venture into wetlands or natural lands. If there is no way to avoid these environmentally sensitive areas than consult your CA and look for ways to provide off-setting environmental benefits.

Will the project use surface water inlets connected to sub-surface drains? These inlets (catch basins, riser inlets and blind inlets) direct sediment, nutrient, bacteria and pest control products into drain pipes and those drains are then blamed for degraded water quality. Too often inlet installation is the outcome of tillage degraded soil and compaction. This interferes with normal percolation and filtration of water that would otherwise move down through the soil to the drainage system. Clean water begins with good soil management.

WILL THE PROJECT REDUCE GROUNDWATER RECHARGE?

Soil that contributes to significant recharge is referred to as having "natural" drainage. If the topsoil has been degraded by intensive tillage then occasionally water infiltration will be slow resulting in increased surface water runoff and reduced recharge. Improved soil management rather than drainage can improve infiltration so recharge is not affected.

WILL SUB-SURFACE DRAINS INCREASE WATER POLLUTION?

Drains are installed clean and will remain so if they are managed with care. Remember that the soil filters out a significant amount of agri contaminant before water reaches a drain pipe. Without drains a much larger amount of contaminant would leave a field in surface water runoff or infiltrate to ground water.

WILL SUB-SURFACE DRAINS INCREASE DOWNSTREAM PEAK FLOW?

Because it takes time for water to infiltrate to drain pipe, sub-surface drainage reduces peak flow and extends flow time in waterways. The use of water and sediment control basins when combined with no-till can have the same effect without reducing water quality. If potholes are drained the water would add to flow. If the system is connected to straight outlet channels that would accelerate flow and increase peaks. Research in Ontario shows that generally cropland drainage does not cause a net change in watershed hydrology.

DOES DRAINAGE HAVE OTHER ENVIRONMENTAL EFFECTS?

The drainage of "wet" cropland can reduce nitrous oxide emissions. Drainage is often necessary to allow the use of no-till, which reduces organic matter oxidation and thus carbon dioxide loss. Both gasses contribute to global warming.

We must take seriously the many environmental impacts associated with cropland drainage. By thoughtfully addressing each we can identify best options for food production in harmony with the environment. In identifying these options it is wise to work with our Conservation Authority, our municipal drainage superintendent and a licensed drainage contractor.

The Land Improvement Contractors of Ontario (LICO) is an association of professional drainage contractors and suppliers of drainage pipe and equipment. The focus of their business is soil moisture management to enhance crop production in Ontario.

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