



UNDERSTANDING A WATER LICENCE

Surface water use requires a water licence from the Ministry of Environment. A licence should be in place or applied for early on in the system design and layout process to avoid delays.

Water Licence Basics

A water licence is required from the Ministry of Environment for use of any surface water under the B.C. *Water Act* (ground water licencing is expected in the near future).

Water licences are given for "beneficial use" of the water. When applying for a licence indicate the amount of water, the specified purpose, what 'works' will be constructed to access the water and the parcel of land to which 'works' are attached.

A water licence is attached to the land or "appurtenant" and not the owner of the land or licence. This means that if the land is sold the water licence remains with the property. Part or all of the licence may be moved ("transfer of appurtenancy") as long as the water can be accessed and used beneficially on the new land.

A water licence protects rights to continued use of the water for the specified conditions. It also comes with an annual fee consisting of charges for the water quantity, any access across Crown land, any Crown land flooded due to water storage such as a dam reservoir, charges for the land area occupied by a dam, etc. While the actual cost of the water may be reasonable, some of the Crown land costs can add a significant cost to the total annual water licence fee.

Three years of nonbeneficial use at any time may result in the loss of the licence.

A licence should be applied for well in advance of any system installation to ensure it will not delay the work.

For more information on water licencing, go to the province of BC publication *Water Rights in British Columbia* available at:

http://lwbc.bc.ca/03water/licencing/docs/water_rights_in_bc.pdf

For water licence holder's rights and obligations, go to the province of BC publication *Water Licence Holders Rights and Obligations* available at:

http://lwbc.bc.ca/03water/licencing/docs/wl_rights.pdf

A water licence doesn't authorize the licensee to enter upon private land. Before constructing any works get permission of any property owner whose land the licenced works will cross. For information, go to the province of BC publication *A Water licensee's Rights to Expropriate Land* available at:

<http://lwbc.bc.ca/03water/licencing/docs/expropriate.pdf>

Conditional Versus Final Licences

Conditional Licence. When a licence is first issued it is called a *Conditional Licence*, as at this point no works are in place. This licence has the clauses indicated below, including the intended type and location of the works and land to be supplied with domestic, stock or irrigation water. Where needed, a permit to install the works on Crown land (a “PCL”) to access the water is included with a Conditional Licence.

Upon receipt of a conditional water licence, three years are given to complete the works and start beneficial use of the water as licenced.

Final Licence. A *Final Licence* is only issued after the completed works have been completed, the actual water quantity determined and the location of water use verified. No approval to install works is given in a Final Licence (such work having been completed under the Conditional Licence).

Although few Final Licences are issued, if an area is having water supply difficulties, licencees could have land areas surveyed and matched to water use. For instance, over use of water could require a cutback of irrigated acreage or under use could see a reduction in licenced water quantity.

A Conditional Licence is not inferior and has the same protection of water access and use as a Final Licence. Most water licences in B.C. are Conditional Licences.

Main Clauses on a Water Licence

Terms and conditions on a licence state everything needed to understand how the water is to be used. The following are the main clauses on a typical water licence, not all on which may be on every licence:

- (a) ***The source on which the rights are granted.***
This may include a number of streams and lakes in a watershed but generally is issued on a single stream or lake source.
- (b) ***The points of diversion and re-diversion*** (where appropriate)
These are indicated on a map attached to the licence. A diversion point indicates where water is taken from the source; re-diversion would be a second location where water is, say pumped or gravity fed to the land it's to be used on.
- (c) ***The precedence date of the licence.***
Also called the priority date, this establishes the order or seniority of rights amongst licences on the same stream and is generally the date the water application was received by Water Management. Precedence date becomes important should a water source have reduced supply and rationing be required; the oldest date having the first rights to water on that source.
- (d) ***The purpose for which the water may be used.***
This may be irrigation, domestic (in a dwelling), industrial (stock watering), etc.
- (e) ***The maximum quantity of water which may be used or stored.***
Irrigation quantity is given in acre-feet, which is the volume of water covering one acre to a depth of one foot.
 - 1 ac-ft = 325,800 US gallons = 271,300 Imperial gallonsDomestic and stock watering quantity is given in Imperial gallons per day.
 - 1 Imperial gallon = 1.2 US gallon
- (f) ***The period of the year during which the water may be used.***
Domestic use may be for the whole year; stock watering may be for the whole year or part of the year (i.e., winter watering); irrigation is for 1st April to 30th September.
- (g) ***The land upon which the water is to be used and to which the licence is appurtenant.***

District lot, Plan, etc will identify the property. The actual irrigated field(s), domestic or stock watering locations may be anywhere on the property. An irrigation licence will indicate the acreage that may be irrigated on the land.

(h) *The authorized works to divert and convey the water.*

This may be a diversion structure, an intake and pump or gravity pipe system, etc. and are identified on the licence map.

The water use and storage may be on separate licences or combined on one licence as with recently issued licences. Storage licences may have various dates allowing the storage of water but the period of use will generally be as above.

(i) *Many new irrigation water licences have a maximum withdrawal rate stated.*

This is given in cubic feet per second (see page 4 for details).

- $1 \text{ ft}^3/\text{sec} = 448.9 \text{ US gpm}$

A Note on Units

Units used in water system design and licences are a mixture of Imperial and US:

- **licence** area units are in acres (ac)
- **licence** volume units are in Imperial gallons (gal) or acre-feet (ac-ft)
- **licence** flow rate units (if given) are in cubic feet per second (ft^3/sec)
- **design** units are in acres; US gallons (USgal); US gallons per minute (USgpm)

As of January 1, 2006, all new water licence units and water bills will be in metric:

- **new licence & bill** area units will be in hectares (ha)
- **new licence & bill** volume units will be in cubic metres (m^3)
- **new licence & bill** flow rate units (if given) will be in cubic metres per second (m^3/sec); per day (m^3/day); or per annum (m^3/annum)

Conversions to metric units as used on water licences are:

1 acre (ac)	=	0.404685 hectare (ha)
1 acre-foot (ac-ft)	=	1,233.49 cubic metre (m^3)
1 Imperial gal (gal)	=	0.00454609 cubic metre (m^3)
1 cubic foot (ft^3)	=	0.0283168 cubic metre (m^3)

Other conversions of interest are:

1 cubic metre (m^3)	=	264.2 US gal (USgal)
1 cubic metre / second (m^3/sec)	=	35.3 cubic feet per second (ft^3/sec)
	=	13,200 Imperial gal per minute (gpm)
	=	15,850 US gal per minute (USgpm)

Water Duty

The **duty** is the amount of water (in inches, feet or metres) allowed on a licence to irrigate an acre of land for a year in a given climatic area. The duty is calculated for individual areas of B.C. for maximum water-demand crops, irrigated for the full season, such as alfalfa and tree fruits. The licenced field size is calculated by dividing the licenced water quantity by the duty (see example below). This duty should be the same as was used in designing the irrigation system for that climatic area.

Example of a Typical Irrigation Licence

The previous eight licence clauses would contain the following information on a typical irrigation licence, for example, in the Kamloops valley:

- Source** - South Thompson River
- Point of diversion** – as indicated on map
- Precedence** - March 10, 1937
- Purpose** - Irrigation
- Quantity** - 90 acre-feet per annum
- Period of year** - from 1st April 1 to 30th September
- Land** - for D.L. 354 Plan 1421, of which 30 acres may be irrigated
- Authorized works** – pump house located at the river bank
- Withdrawal Rate** – $0.47 \text{ ft}^3/\text{sec}$ (210 US gpm)

This licence allows irrigation each year of 90 acre-feet of water onto 30 acres of District Lot 354 using a pump system from the South Thompson River that has a peak withdrawal (pumping) rate of 210 US gpm. As the normal irrigation *duty* in that area is 3 feet, this is sufficient water (90 acre-feet divided by 3 feet = 30 acres).

Property at a higher elevation will have a reduced duty and a 90 acre-foot licence would irrigate a larger parcel. For instance, where the duty is 2.5 feet, a 90 acre-foot licence would be sufficient water to irrigate 36 acres (2.5 x 36 = 90).

Withdrawal Rates

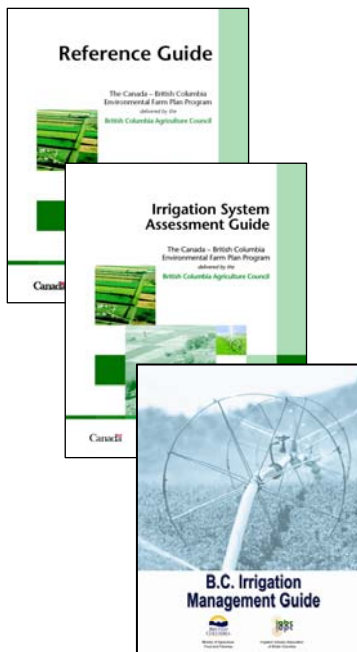
The licenced amount of irrigation water is expected to be used 'uniformly' through the irrigation season so all users, as well as the instream flow for fish, etc., will have an assured water flow. If, for instance, a pump was to remove a weeks worth of water in a day, serious low stream flows might result. With normal irrigation practices this is not a problem. But as a precaution, some water licences are being issued with maximum withdrawal rates in addition to all the other terms.

Calculating this withdrawal rate requires dividing the quantity of water by the actual operating time of the irrigation system for that location. This time is not a given but might vary from about 120 days (likely the maximum period, although the full season is 183 days) to something much less, partly depending on the local climate.

For the Kamloops example licence of 90 acre-feet, a flow rate of 210 US gpm would require pumping for 97 days through the growing season (210 US gpm pumped for 97 days = 90 ac-ft). This number of day's operation per year of an irrigation system is typical for the climatic area in the Kamloops valley.

Checking Irrigation Water Use

Even if a withdrawal rate is not on your licence, it is useful to check your irrigation flow rate against your licenced quantity. Worksheets for checking irrigation water withdrawal rates and annual water use against the licenced amount have been developed as part of the Environmental Farm Plan (EFP) program.



EFP Reference Guide. Irrigation Worksheets are discussed in Chapter 9 Water, pages 9-21 to 9-32, and is available at the BC Agricultural Council web site: http://www.bcac.bc.ca/documents/EFP_Reference_Guide_March_2005_part_9.pdf

Irrigation System Assessment Guide. Also part of the Environmental Farm Plan program, this publication has a more in-depth review of an irrigation system. It expands on the *Reference Guide* information and is available from the BC Ministry of Agriculture and Lands, Resource Management Branch, web site: http://www.al.gov.bc.ca/resmgmt/EnviroFarmPlanning/EFP_Irrigation_Guide/Irrig_Guide_toc.htm

BC Irrigation Management Guide. For complete irrigation assessment and management information, this contains the above assessment information with more detail, plus it covers scheduling, energy use, chemigation, frost protection and crop cooling as well as the use of reclaimed water. Prepared by the Ministry of Agriculture and Lands, it is available from the Irrigation Industry Association of BC. Go to <http://www.irrigationbc.com> then click on the **BC Irrigation Management Guide** link.