



**PROTOCOL FOR THE CONTAMINATED SITES REGULATION  
UNDER THE ENVIRONMENT ACT**

**PROTOCOL No. 6:  
Application of Water Quality Standards**

Prepared pursuant to Part 6 – Administration, Section 21,  
*Contaminated Sites Regulation*, OIC 2002/171

# APPLICATION OF WATER QUALITY STANDARDS

## 1.0 Introduction

The Yukon *Contaminated Sites Regulation*, OIC 2002/171 (CSR) contains standards to ensure that water at a site, or which flows from a site, is suitable for direct use and is clean enough to protect water uses on adjacent properties. The following protocol specifies which water quality standards are applicable to a given site in the Yukon. This protocol has been adopted in accordance with Section 21(1)(g) of the CSR, which authorizes the Minister or his/her delegate to approve or adopt protocols for evaluating site conditions.

## 2.0 Types of Standards

The *Contaminated Sites Regulation* contains standards based on four types of water use:

- a) **Aquatic Life** water use standards apply to water used as a habitat for any component of the freshwater or marine ecosystem;
- b) **Drinking Water** use standards apply to water used for consumption by humans;
- c) **Irrigation** water use standards apply to water used to produce agricultural products; and
- d) **Livestock** water use standards apply to water used for consumption by livestock.

The standards for a variety of contaminants in water for each of these uses are listed in Schedule 3 of the CSR.

## 3.0 Water Uses

Multiple surface water or groundwater uses may apply to a given site based on the type of activity that is conducted at the site or at adjacent properties, or the proximity of the site to surface water and potable water sources. Water use is also determined based on the potential for the groundwater or surface water to cause pollution.

In most cases where water is used directly, the corresponding water use is easily determined. However, indirect water uses may not be easily identified. For example, if groundwater flows into adjacent surface water, it may be difficult to determine all applicable water uses. In these cases several factors that may impact the potential of the groundwater to cause pollution are used to determine the applicable water use standards.

It has been observed by hydrogeologists and other contaminated sites experts that groundwater travel times of less than 50 years usually occur only if a site is located at a maximum of one kilometre away from surface water. Therefore, for sites where a 50 year travel time to surface water is used to apply a standard, the appropriate distance corollary is **1 km** between the current contamination plume and surface water. For travel times of up to 100 years, the appropriate distance corollary is **1.5 km** between the current contaminant plume and surface water.

### 3.1 Aquatic Life Water Use

If the leading edge of a contaminated groundwater plume is located **within a 1 km radius** (travel time of less than or equal to 50 years) of the closest surface water potentially containing aquatic life, the **Aquatic Life** water use standards are applicable to the site due to the potential for the groundwater to pollute the receiving waters.

Please refer to section 5 below for additional information regarding the application of aquatic life standards.

### **3.2 Drinking Water Use**

If the leading edge of a contaminated groundwater plume is located **within a 1.5 km radius** (travel time of less than or equal to 100 years) of the closest existing or probable future drinking water source, the **Drinking Water** use standards are applicable to the site due to the potential for the groundwater to pollute the receiving waters.

### **3.3 Irrigation Water Use**

If the leading edge of a contaminated groundwater plume is located **within a 1.5 km radius** (travel time of less than or equal to 100 years) of the closest surface water body used for an irrigation water source, the **Irrigation** water use standards are applicable to the site due to the potential for the groundwater to pollute the receiving waters.

### **3.4 Livestock Water Use**

If the leading edge of a contaminated groundwater plume is located **within a 1.5 km radius** (travel time of less than or equal to 100 years) of the closest surface water body used as a source for drinking water for livestock, the **Livestock** water use standards are applicable to the site due to the potential for the groundwater to pollute the receiving waters.

### **3.5 Multiple Water Uses**

In the case of multiple surface water uses existing near a site with potentially contaminated groundwater, the most stringent applicable water use standard should be used for the site.

The petroleum hydrocarbon standards  $VH_{W6-10}$  and  $EH_{W10-19}$  are applicable to all sites irrespective of water use.

## **4.0 Special Considerations**

If the leading edge of a groundwater plume has not been determined, the location where groundwater contamination has been detected that is closest to the receiving environment of concern shall be deemed to be the leading edge of the plume.

If the primary water use of either surface water or groundwater at a site is unclear, the Minister of Environment may decide the appropriate primary water use after considering current and reasonable potential future water uses based on a number of factors listed in section 3(4) of the CSR.

In determining the appropriate standards for use at a site, the Minister of Environment may also consider the presence of preferential pathways between the site and any nearby surface water, such as storm drains or utility conduits, and whether drinking water supplies may be affected by contaminated groundwater infiltrating plastic piping or inline gaskets.

## **5.0 Application of the Standards**

Once the appropriate water use at a site is determined, surface water or groundwater monitoring results should be compared to the applicable generic numerical water standards in Schedule 3 of the CSR, the approved site-specific standards developed for the site or relevant risk-based remediation standards in accordance with a permit to use such standards.

The CSR aquatic life standards in Schedule 3 assume that a minimum 1:10 dilution factor is available between a sampling point at a site and any waters that may contain aquatic life. When this condition is not applicable (such as when sampling is conducted within the receiving water body itself), the dilution factor must be “removed” from the CSR standards by dividing the aquatic life standards by 10 before comparing the sampling results with the adjusted standards.

Drinking water, irrigation and livestock water use standards do not assume that there will be dilution between the sampling location and the water withdrawal location; therefore, sampling results are compared directly to the standards listed in Schedule 3 of the CSR for these water uses.

## 6.0 Effective Date

The effective date of this protocol shall be **August 30, 2012** and it shall remain in effect until replaced or rescinded by the Standards & Approvals section.

## 7.0 Additional Information

For more information on water uses at contaminated sites, please contact:

Standards & Approvals  
Environmental Programs Branch (V-8)  
Environment Yukon  
Box 2703, Whitehorse, YT Y1A 2C6

T: 867-667-5683 or  
1-800-661-0408 ext. 5683  
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Approved:



Date: August 30, 2012

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