



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

**PROTOCOL NO. 9:
Determining Background Soil Quality**

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

DETERMINING BACKGROUND SOIL QUALITY

1.0 Introduction

Section 2(2) of the *Contaminated Sites Regulation*, OIC 2002/171 states that a site is not a contaminated site if it does not contain any contaminant with a concentration greater than or equal to the local background concentration of that contaminant in the soil, surface water or groundwater. In accordance with section 21(1)(i) of the *Contaminated Sites Regulation*, this protocol describes the methods to be used to determine the local background concentration in soil at a given site for the purpose of such a comparison.

2.0 Definitions

- 2.1** “Background concentration” means the concentration of a substance in an environmental medium in a geographic area, not including any contribution from local human-made point sources of contamination.
- 2.2** “Local background concentration in soil” means the background concentration in soil relevant to a nominal contaminated site, determined by the use of a reference site that is similar in location and in physical and chemical characteristics to the nominal contaminated site.
- 2.3** “Nominal contaminated site” means a site at which exceedances of the numerical standards of the *Contaminated Sites Regulation* have been detected, but the status of the site under section 2(2) of the Regulation has yet to be determined.
- 2.4** “Reference site” means a site used to determine the local background concentrations of contaminants.

3.0 Selection of a Reference Site

The background concentration of a substance may vary between geographic areas, as well as between environmental media within a geographic area, so the local background concentration to which a nominal contaminated site is compared is based on a carefully selected reference site nearby.

The reference site should be substantively similar to the nominal contaminated site in question in respect to:

- a) geographical characteristics, such as location, topography, size, etc.;
- b) physical and chemical characteristics of the soil (see soil maps, Geological Survey of Canada information, etc.);
- c) hydrology; and
- d) soil sampling depth.

Additionally, when selecting a reference site:

- a) preference should be given to vacant land, naturally wooded areas, parks, or large residential lots;
- b) the site should not have received imported fill;
- c) the site must not be located at or near anthropogenic point sources of contamination;
- d) the site should not show any obvious damage or stress to vegetation; and
- e) the history of the reference site and adjacent land, including current and previous activities, must be considered and documented.

It is recommended that the proponent consult with the Environmental Programs Branch upon selection of a reference site before proceeding with sampling in order to ensure that the site will be acceptable for regulatory purposes. Also, before any sampling occurs, permission may be required from the landowner.

4.0 Reference Site Characterization

Sampling should be conducted at the reference site in accordance with a detailed plan. This plan should select sampling methods and locations at the reference site in order to maximize comparability between the reference site and the nominal contaminated site, such as by using similar soil types and sample depths. Samples must be analysed using analytical methods identical to those used with the samples from the nominal contaminated site, and preferably by the same laboratory.

5.0 Comparison and Reporting

Persons wishing to have a site released from consideration as a contaminated site based on a comparison of contaminant concentrations at the site and a local reference site must submit to the Environmental Programs Branch a written request for such a release accompanied by a report prepared by a qualified environmental practitioner. The report shall contain, at a minimum, the following details:

- 5.1** The rationale for selecting the reference site, accompanied by the following details about the site:
 - a) name and address of the property owner;
 - b) civic and legal addresses, where available, as well as geographic coordinates;
 - c) current land use;
 - d) surrounding land uses;
 - e) previous land uses;
 - f) potential contaminant sources, both natural and anthropogenic, including non-point sources;
 - g) physical characteristics;
 - h) a diagram or map of the site showing property boundaries and all sampling locations.
- 5.2** Sampling and analysis procedures shall be described, and any differences between methods used at the reference site and the nominal contaminated site shall be explained and justified.
- 5.3** The analytical results for the reference site shall be compared to those for the nominal contaminated site, and the statistical significance of the result shall be reported.
- 5.4** Conclusions shall be drawn from the comparison, indicating whether the site should be released from consideration as a contaminated site as per section 2(2) of the *Contaminated Sites Regulation*.

If the report shows that the site is suitable for release under section 2(2) of the *Contaminated Sites Regulation*, the Environmental Programs Branch will provide written authorization for such a release.

6.0 Effective Date

The effective date of this protocol shall be **November 19, 2007**, and it shall remain in effect until replaced or rescinded by the Environmental Programs Branch.

