



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

**PROTOCOL No. 8:  
Monitored Natural Attenuation**

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

# MONITORED NATURAL ATTENUATION

## 1.0 Introduction

Natural attenuation refers to physical, chemical, or biological processes, occurring without human intervention, which act to reduce the quantity or concentration of contaminants in soil or groundwater. Monitored natural attenuation (MNA) is a controlled approach to site remediation in which natural attenuation processes are used to achieve compliance with the standards in the *Contaminated Sites Regulation*, OIC 2002/171 (CSR) within a reasonable timeframe. Progress is closely monitored to ensure that attenuation is occurring and that the contamination is not presenting unacceptable risks to human health or the environment. This Protocol is designed to outline acceptable practices for the implementation of MNA for the remediation of contaminated sites, and is approved under section 21(1) of the *Contaminated Sites Regulation*.

## 2.0 Prerequisites

Unless otherwise authorized by the Standards & Approvals section of the Environmental Programs Branch, the *Contaminated Sites Regulation*, or another Protocol approved under section 21(1) of the CSR, MNA shall only be used at a contaminated site where a quantitative risk assessment has been conducted, and it has been demonstrated to the satisfaction of the Standards & Approvals section that:

- 2.1 active remediation is not required to mitigate any unacceptable risks;
- 2.2 the use of MNA will provide effective and timely remediation of the contamination;
- 2.3 the use of MNA will prevent the contaminants from impacting nearby surface water or other receiving environments; and
- 2.4 the owners of all land contaminated by the plume to be remediated by MNA have approved of MNA as an acceptable remedial strategy.

## 3.0 Standard Practices

One or more of the following guidelines or standards shall be followed when implementing MNA:

- 3.1 OSWER Directive 9200.4-17P, "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites", United States Environmental Protection Agency (US EPA), 1999, available at <http://www.epa.gov/swerust1/cat/mna.htm>;
- 3.2 ASTM E1943-98(2004), "Standard Guide for Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites", ASTM International, 2004, available at <http://www.astm.org/>.

## 4.0 Special Considerations

Anyone who wishes to implement MNA in accordance with a different standard than those described above must first obtain approval from the Standards & Approvals section.

Some consultants have established their own protocols or may wish to use certain methods that are not part of the standard practices listed in section 3.0. These may be used if they are equal to or better than the standard practices listed above, and if the relevant scientific literature regarding the change in procedure or method has been submitted to and accepted by the Standards &

Approvals section. Additionally, such deviations from the standard practices must be documented in reports produced for the site.

## 5.0 Effective Date

The effective date of this protocol shall be **March 1, 2011** and it shall remain in effect until replaced or rescinded by the Standards & Approvals section.

## 6.0 Additional Information

For more information on monitored natural attenuation, 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 F: 867-393-6205 E: <a href="mailto:envprot@gov.yk.ca">envprot@gov.yk.ca</a>
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Approved: 

Date: March 1, 2011

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Manager, Standards and Approvals Section  
Environmental Programs Branch  
Environment Yukon