



GOVERNMENT OF  
NEWFOUNDLAND AND LABRADOR

Department of  
Environment  
Pollution Prevention Division

**Guidance Document**

**Title:** Guidelines for Decommissioning of Monitor Wells and Boreholes

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**Issue Date:** February 13, 2003

**Approved By:** Derrick Maddocks  
Derrick Maddocks, Director

## **OBJECTIVE**

The guidance document will establish minimum acceptable standards for the decommissioning of monitor wells and boreholes, and accompanying documentation. The objectives of the decommissioning procedure are to:

- 1) eliminate the vertical migration of fluids down the borehole;
- 2) eliminate physical hazards;
- 3) eliminate improper use; and,
- 4) conserve groundwater resources.

## **EXCLUSIONS**

This policy does not apply to:

- a. seismic shot holes and mineral exploration holes\*;
- b. piezometers, and monitor wells where active long term monitoring is required (eg. dams, service stations, landfills);
- c. boreholes advanced above an aquifer for the purpose of characterizing local geology;
- d. water wells, oil and gas wells; and,
- e. special cases with prior approval of the Department.

## **INTRODUCTION/BACKGROUND**

Monitor wells are specifically designed and used for aquifer assessment purposes including groundwater flow and water quality observations. Monitor wells and other types of boreholes such as remediation wells that penetrate into the water table depth provide potential pathways for contaminants to impact local groundwater resources. These types of monitor wells and boreholes should be sealed to prevent both vertical movement of water within the well bore and infiltration of surface water into the well.

## **LEGISLATION:**

General provisions of the *Environmental Protection Act* SNL 2002 cE-14.2 and the *Water Resources Act* SNL 2002 cW-4.01 apply to this policy.

## **GUIDANCE:**

A monitor well or borehole must be decommissioned in accordance with this guidance document within 1 year after abandonment.

## IMPLEMENTATION:

Monitor wells and boreholes shall be decommissioned in accordance with the following protocols.

### Monitor/Recovery Wells

1. Wells that have not been monitored for 1 year shall be considered abandoned unless written permission is obtained from the Pollution Prevention Division of the Department of Environment to continue usage of the well. This permission is contingent upon inspection and verification that the well is in good condition.
2. Monitor wells shall be checked to ensure they are free from obstructions prior to sealing. In all cases, the casing must be cut below the natural ground level so as not to interfere with future land use. In no case should the casing be cut less than 1 m below ground level.
3. Decommissioned monitor wells and boreholes must be filled with material of equal or lower permeability than the original geologic formation.
4. Monitor wells up to and including 50 mm in diameter shall be completely filled with a sealant such as bentonite pellets or chips sized no more than 1/4 of the minimum well diameter. The rate of pouring the pellets/chips into the well shall be at a rate to prevent bridging. Where pellets/chips are poured above the water level, the addition of water is required to properly hydrate the bentonite.
5. Monitor wells and other vertical structures greater than 50 mm and less than or equal to 300 mm diameter are to be filled with alternating layers of 3.0 m sand and 0.3 m bentonite to the bottom of the well, starting with a minimum of 0.3 m of bentonite.
6. Vertical infrastructures with a diameter greater than 300 mm are to be removed and the void filled with material having a permeability lower than the native, on site material.
7. Where the abandonment will be completed below grade, the area of the well boring shall be covered with a layer of bentonite, grout, or other sealant before back filling.
8. Acceptable sealants are bentonite grout, pellets, and chips.
9. A monitor well abandonment record is required for each well that is decommissioned. This log is to be sent to the Department of Environment, Pollution Prevention Division, P.O. Box 8700, St. John's, NL, A1B 4J6.

### Boreholes

1. Boreholes that are advanced into an aquifer for the purpose of characterizing local geology and are not developed into a monitor well are to be backfilled with material of equal or lower permeability.
2. The back filling material must be compacted and a mound placed over the hole to allow for future settling.
3. Boreholes in which a monitor well is not installed shall be decommissioned immediately upon completion of the relevant site investigation activities.

## Documentation

The attached form must be completed. In any case the following minimum information is required.

Client Name	List of Materials Used
Project Title	Well Abandonment Method
Site ID #	Name of Site Professional
Borehole Designation	Total Well Depth
Borehole Log showing zone(s) of grout placement	

## DEFINITIONS

**Aquifer** means a water bearing formation that transmits water in sufficient quantities to supply a well for a beneficial use.

**Borehole** means an open or cased subsurface hole created by drilling.

**Casing** means the pipe installed to maintain integrity of the borehole.

**Department** means the Department of Environment.

**Grout** means approved cement, concrete or bentonite sealing material used to fill in the annular spacing of a well or to abandon a well.

**Monitor Well** means an artificial excavation constructed to measure or monitor the quality and/or quantity or movement of substances, elements, chemicals, or fluids, beneath the surface of the ground.

**Permeability** means the ability to transmit fluid.

**Recovery Well** means a sub surface infrastructure installed for the purpose of bulk recovery of free phase contaminant fluids.

\* Addressed by Department of Mines and Energy Regulations.



Project Number: \_\_\_\_\_  
Location: \_\_\_\_\_

Date: \_\_\_\_\_  
Project Name: \_\_\_\_\_  
Form Completed By: \_\_\_\_\_

Sub-Contractor:	Well:
Date Completed:	Lithology:

**MONITOR WELL SPECIFICATIONS**

**MATERIALS REMOVED**

Well Depth: (m)	Well Protector: Type:
Casing Stick-up: (m)	Casing: (m) Screen: (m)
Borehole/Pack Diameter: (mm)	Other:
Screen Length: (m)	
Sand Pack Length (m)	
Static Water Level: (m)	

**ABANDONMENT PROCEDURE**

**ABANDONED BOREHOLE LOG**

Grout Pumping Method:	Description of Material Emplaced	Strata Plot	Emplaced Material Depth	
Grout Type:			<i>From</i>	<i>To</i>
Volume Grout Used:				
<b>SUMMARY OF MATERIALS USED</b>				
Item	Specifications	Volume Used		
Grout				
Sand				
Bentonite				
Cement				
Notes:				