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**SANS 10299-8:2003**

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Edition 1

## **SOUTH AFRICAN NATIONAL STANDARD**

### **Development, maintenance and management of groundwater resources**

#### **Part 8: The management of water boreholes**

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## SANS 10299-8:2003

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### Table of changes

Change No.	Date	Scope

### Foreword

This South African standard was approved by National Committee STANSA SC 5120.12B, *Water supply, equipment and systems – Groundwater extraction*, in accordance with procedures of Standards South Africa, in compliance with annex 3 of the WTO/TBT agreement.

SANS 10299 consists of the following parts, under the general title *Development, maintenance and management of groundwater resources*:

Part 0: *Glossary of terms.*

Part 1: *The location and siting of water boreholes.*

Part 2: *The design, construction and drilling of boreholes.*

Part 4: *Test-pumping of water boreholes.*

Part 5: *The design, selection and performance of pumping equipment for production boreholes.*

Part 6: *The installation and commissioning of pumping equipment for production boreholes.*

Part 7: *The rehabilitation of water boreholes.*

Part 8: *The management of water boreholes.*

Part 9: *The decommissioning of water boreholes.*

## **Development, maintenance and management of groundwater resources**

### **Part 8:**

#### **The management of water boreholes**

### **1 Scope**

**1.1** This part of SANS 10299 covers the overall strategy requirements for the regular monitoring, inspection and maintenance of boreholes for water production purposes.

**1.2** This part of SANS 10299 does not, however, cover the requirements for the monitoring, inspection and general systems maintenance of boreholes drilled for the purpose of exploration or recharge.

### **2 Normative references**

The following standards contain provisions which, through reference in this text, constitute provisions of this part of SANS 10299. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this part of SANS 10299 are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards can be obtained from Standards South Africa.

SANS 241 (SABS 241), *Drinking water*.

SANS 10299-0, *Development, maintenance and management of groundwater resources – Part 0: Glossary of terms*.

SANS 10299-1 (SABS 0299-1), *Development, maintenance and management of groundwater resources – Part 1: The location and siting of water boreholes*.

SANS 10299-4 (SABS 0299-4), *Development, maintenance and management of groundwater resources – Part 4: Test-pumping of water boreholes*.

### **3 Definitions**

For the purpose of this part of SANS 10299 the definitions given in SANS 10299-0 apply.

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### **4 Operation**

#### **4.1 General**

The owner should ensure that the borehole is used for the purpose for which it is intended and that it is used in accordance with the original design criteria.

#### **4.2 Production monitoring**

##### **4.2.1 General**

To ensure the effective operation of a water borehole, the parameters given below should be measured at regular intervals appropriate to the type of a water borehole (or use), or at intervals recommended by the professional person, and the data should be compared with the original data obtained during the test-pumping done in accordance with SANS 10299-4.

##### **4.2.2 The static water level in the water borehole**

The static water level in the borehole shall be measured from a specified reference point (for example, the top of the casing) to the surface of the water in the borehole after a fixed recovery period (for example, 12 h) or as directed by the professional person. In the case of an artesian well the pressure head shall be measured in lieu of the static water level.

##### **4.2.3 The dynamic water level in the water borehole**

The dynamic water level in the water borehole shall be measured from a specified reference point (for example, the top of the casing) to the surface of the water in the water borehole after pumping for 2 h.

##### **4.2.4 The abstraction rate**

The abstraction rate shall be measured at the same time as the dynamic water level, in accordance with SANS 10299-4.

##### **4.2.5 Specific capacity of the water borehole**

The specific capacity of the water borehole pump system shall be calculated in accordance with the following calculation, using data obtained from 4.2.2 to 4.2.4 (inclusive).

$$SC = \frac{A}{D}$$

where

SC is the specific capacity;

A is the abstraction rate, in cubic metres per hour;

D is the drawdown (i.e. the difference between the dynamic water level after 2 h pumping and the static water level after at least 12 h rest.).

### **4.3 The water quality of the borehole**

The quality of the borehole water shall be assessed at least once a year or at such intervals as recommended by the professional person on the basis of a sample collected and tested in accordance with SANS 241.

## **5 Inspection and maintenance**

### **5.1 General**

The owner shall be responsible for the regular inspection and maintenance of the water borehole, its equipment and the surrounding environment to ensure the effective operation of the water borehole and its equipment.

### **5.2 Inspection**

The following shall be inspected at regular intervals or as recommended by a professional person:

- a) the depth of the water borehole to check for the silting of the water borehole;
- b) the water borehole casing, to check for corrosion, encrustation, blockage of screens and collapse of the casing;
- c) equipment in the hole (for example, pump, riser piping, electrical cables and joints). This equipment shall be checked for soundness and fitness for further service;
- d) surface equipment (for example, slab, piping, electrical cables and controls). This equipment shall be checked for clogging or fouling, soundness and fitness for further service;
- e) the area surrounding the water borehole, to ensure that the integrity of the site as defined in SANS 10299-1 is not compromised.

### **5.3 Maintenance**

The pump and pumping equipment shall be maintained in an efficient working order by the owner and in accordance with the manufacturer's instructions.

## **6 Recording of monitoring data**

All of the monitoring data and test results obtained above shall be recorded and, when required, shall be forwarded and directed to the relevant catchment management authority.

## **7 Management action**

The data in clause 6 shall be evaluated by the catchment management authority and, where appropriate, the necessary corrective action shall be taken to ensure the effective operation of the borehole and its equipment (for example changes to pumping rate or times; rehabilitation or disinfection).