

A Groundwater is water found below the water table and is recharged either by downward percolation of rain (precipitation) or surface water, and/or inflows from adjacent aquifers.

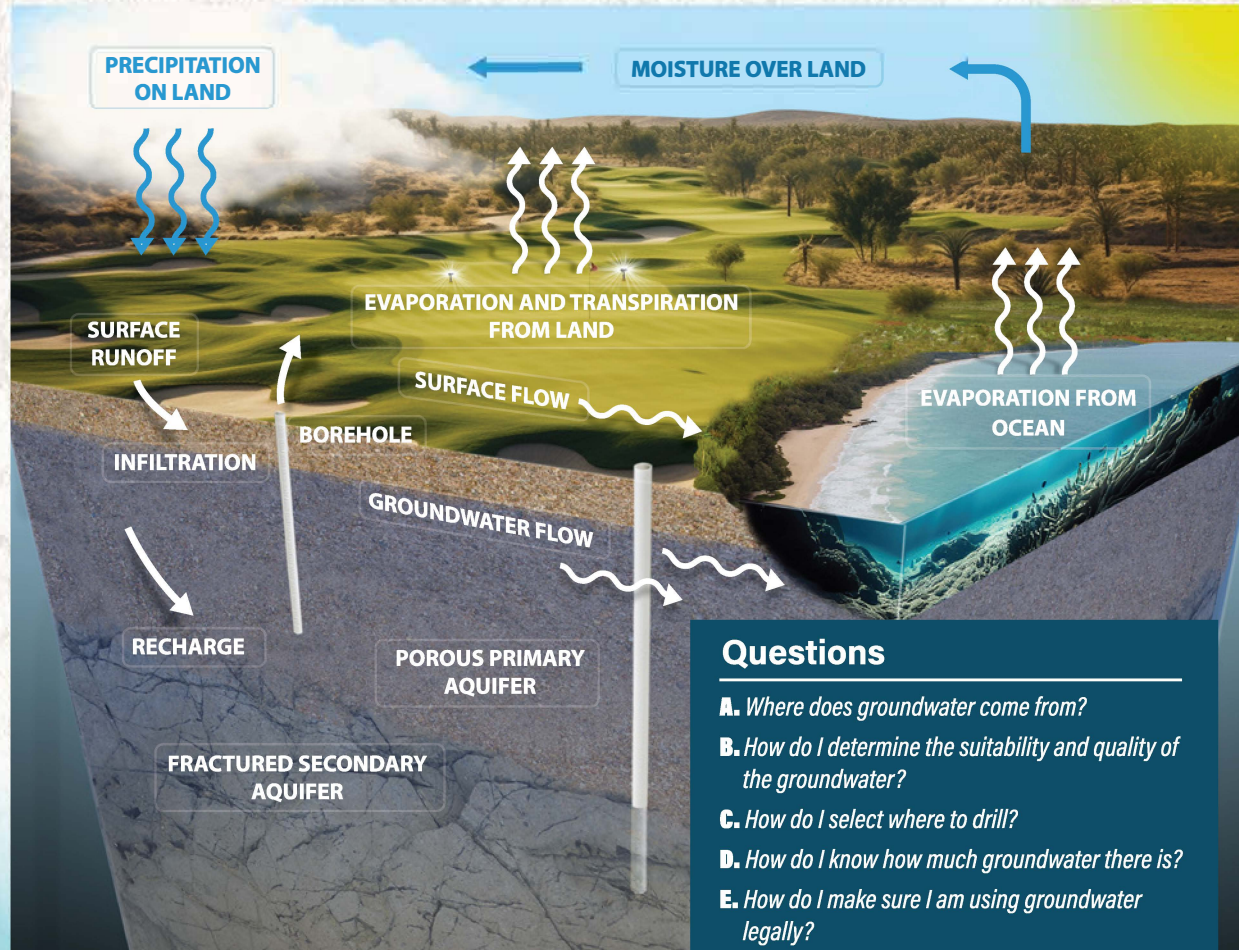
H Groundwater monitoring entails measurement of borehole water levels, volumes of groundwater abstracted, groundwater temperature, quality and rainfall on a regular basis. This data should be used to ensure that a healthy water balance is maintained. The use of sensors and data loggers is the preferred method for monitoring. With good monitoring data it is feasible to manage groundwater resources optimally, adjusting pump rates and duration accordingly. Good groundwater monitoring data enables numerical modelling to optimise groundwater management. It is the legal responsibility of each groundwater user to monitor their own use. The National Government Department of Water and Sanitation (DWS) gazetted new guidelines for all borehole and wellpoint use, effective [12 January 2018 Government Gazette No. 41381 \(Vol. 631\)](#).

G Saline water intrusion, also known as saltwater intrusion, is the movement of saline water into freshwater aquifers. This typically occurs in coastal areas where groundwater is extracted faster than it can be naturally replenished, or when sea levels rise. Mitigation strategies may involve groundwater monitoring and management, reducing groundwater extraction, and enhancing artificial recharge of aquifers to prevent the migration of the salt water-freshwater interface.

B The quality and suitability of groundwater are determined by correctly: collecting groundwater samples, preserving (if necessary), and analysing for selected chemical elements. Depending on the intended use of the groundwater, there are clear guidelines and standards.

C Deciding where to drill is one of the most frequently asked questions. It is best to use a process based on geological understanding and experience: *aerial photographs* assist in identifying favourable geological structures; *geological field mapping* helps understand the rock types and structural geology; *geophysical surveys* (resistivity, electromagnetic and magnetic techniques) assist with delineating favourable geological target structures. In addition, a *hydrocensus* (i.e. a property-to-property survey of existing boreholes and their yields and water quality) also provides very useful information. Borehole drilling is expensive; thus a detailed knowledge of the geological setting is a good starting point and a worthwhile investment.

Answers to Typical Groundwater Questions



F The City of Cape Town Municipality requires that an application be made to drill a borehole or wellpoint (Refer to: [Apply](#) to sink a borehole). Upon successful drilling, the borehole/wellpoint should be registered (Refer to: [Register](#) a borehole).

Questions

- A.** Where does groundwater come from?
- B.** How do I determine the suitability and quality of the groundwater?
- C.** How do I select where to drill?
- D.** How do I know how much groundwater there is?
- E.** How do I make sure I am using groundwater legally?
- F.** Should I obtain permission to drill and register my wellpoint / borehole with the Local Municipality?
- G.** What is saline water intrusion?
- H.** How do I monitor and manage groundwater?

D The best way to determine *how much groundwater* there is, is to obtain information from drilling records and to complete a borehole yield test (also known as a pumping test). This test should follow the SANS 10299-4:2003 guideline – i.e. a step test (the abstraction rate is increased in steps); followed by a constant discharge test, after which the recovery of the water level in the borehole must be monitored. To obtain accurate aquifer parameters as many as possible other boreholes in the area should be monitored. Doing the test properly enables scientific analysis of the data and the borehole yield, and duration of pumping and pump depth can be accurately calculated. (If you intend to licence the groundwater use, the SANS 10299-4:2003 test is mandatory).

E Legal use is an important issue. If groundwater use exceeds the General Authorisation (GA) for the quaternary catchment within which the property is situated, it must be authorised and licensed by the Department of Water and Sanitation (DWS), unless your water usage is within the Existing Lawful Use (ELU) category. If your water use is within the GA, it should still be registered with DWS. Using groundwater for domestic or household purposes at a residential property is classified as a Schedule 1 use and does not require registration with the DWS.