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## Investigating potential additional sources of groundwater flow into a defined watershed

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### Abstract

With the advancement in digital elevation model accuracies and scales, automated catchment delineation has become more widely used to reduce cost, time and errors that can occur during manual delineation. However, this type of delineation does not consider possible influxes of groundwater due to geological structures, such as dipping of bedding planes. This paper investigates the impact that the dip of bedding planes may have on groundwater flow in a catchment in the Sandveld, South Africa. Reasons for this investigation are that a number of boreholes in the area seem unaffected by pumping, even during the recent drought. To understand the possible contribution that the dip of bedding planes may have on groundwater flow, factors such as runoff, infiltration and recharge need to be considered. The intensity of rainfall can impact the amount of surface runoff or percolation that can occur from an event. Cross sections will be used to determine the dip of the bedding planes, and in conjunction with the relationship between surface runoff, deep drainage and subsurface runoff in high relief areas, will give an indication as to which areas should be excluded or included in the water balance of the catchment.

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### 1. Introduction

In South Africa, catchment management agencies (CMAs) are being implemented to manage and allocate water in a more equitable, efficient and sustainable manner. To date, only a few of these catchment management agencies have been developed. The division of these CMAs is done around primary river networks and at present the smallest operating unit is quaternary, although catchment sizes of primary, secondary and tertiary exist.

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