

KETERSEDIAAN AIRTANAH BEBAS PADA BENTUKLAHAN DATARAN KAKI VULKANIK DI DAS BEDOG PROVINSI DAERAH ISTIMEWA YOGYAKARTA

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INTISARI

DAS Bedog terletak pada bentuklahan dataran-kaki Gunungapi Merapi. Berdasarkan sistem airtanah, bentuklahan tersebut merupakan daerah pelepasan atau penurapan sehingga mempunyai potensi untuk mengeksploitasi airtanah yang terdapat pada akuifer.

Tujuan penelitian ini untuk mengetahui agihan ketersediaan airtanah bebas secara spasial dan hasil aman penurapan airtanah di bentuklahan dataran-kaki vulkanik DAS Bedog. Teknik analisis yang digunakan adalah analisis deskriptif dari hasil tumpang-susun peta dan hasil perhitungan dengan menggunakan rumus.

Agihan ketersediaan airtanah bebas diketahui dari peta zonasi potensi airtanah bebas yang dibuat berdasarkan tumpang-susun peta zonasi kedalaman muka airtanah bebas dengan peta zonasi fluktuasi airtanah bebas. Peta zonasi potensi airtanah bebas dan koefisien permeabilitas akuifer digunakan untuk mendeskripsikan agihan ketersediaan airtanah bebas. Perhitungan cadangan statis digunakan rumus perkalian luas akuifer, *specific yield*, dan ketebalan akuifer. Sedangkan perhitungan hasil aman digunakan rumus perkalian luas akuifer, *specific yield*, dan fluktuasi muka airtanah bebas.

Daerah penelitian memiliki potensi airtanah kelas tinggi dan potensi airtanah kelas sedang. Potensi airtanah kelas tinggi yang terdiri dari satuan airtanah D1F1 (kedalaman muka airtanah kelas dangkal, fluktuasi muka airtanah kelas kecil), D1F2, dan D2F1 yang tersebar diseluruh daerah penelitian. Sedangkan potensi airtanah kelas sedang terdiri dari satuan airtanah D2F2 yang terdapat di sebagian Desa Tridadi, Desa Tlogoadi, Desa Sumberadi, Desa Ambarketawang, Desa Banyuraden, Desa Ngestiharjo, dan Desa Tamantirto. Ketersediaan airtanah bebas (cadangan statis) sebesar 42.598.624.923,56 m³/tahun, dengan hasil aman totalnya 1.031.335.570,55 m³/tahun.

Kata kunci : Ketersediaan airtanah bebas, hasil aman, bentuklahan dataran-kaki vulkanik

**UNCONFINED GROUNDWATER AVAILABILITY IN VOLCANIC
FOOTPLAIN LANDFORM OF BEDOG WATERSHED
YOGYAKARTA SPECIAL PROVINCE**

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ABSTRACT

Bedog watershed is located in footplain landform of Merapi Volcano. Based on the groundwater system, that landform is the place where groundwater is released or pumped to exploit the groundwater in the aquifer.

The aim of this study is to investigate the distribution of groundwater in the unconfined zone spatially and to know the safe yield of groundwater pumping in volcanic footplain landform of Bedog watershed. The Analysis technique used in this study was deskriptive analysis from overlaying the maps and calculating value from the formula.

Distribution of groundwater availability in unconfined zone was known from zone of unconfined groundwater potentiation map that made based on the overlay of watertable level zoning map with fluctuation of watertable map. The unconfined groundwater map and coefficient permeability of aquifer applied describe the distribution of groundwater availability in unconfined zone. Calculation of static reserve is applied by multiplication formula of aquifer wide, specific yield, and aquifer thickness. While calculation safe yield is applied by multiplication formula of aquifer wide, specific yield, and fluctuation of unconfined groundwater.

This study area has a high and average of groundwater potentiation class. High groundwater potentiation class include of D1F1 groundwater unit (shallow water table, low class of watertable fluctuation), D1F2, and D2F1 that spread all around the research area. Average groundwater potentiation class include of D2F2 groundwater unit that spread in the half of Tridadi, Tlogodadi, Sumberdadi, Ambarketawang, Banyuraden, Ngestiharjo and Tamantirto village. Groundwater availability (static storage) was 42.598.624.923,56 m³/years, with total of safe yield 1.031.335.570,55 m³/years.

Kata kunci : *groundwater availability, safe yield, vulcanic footplain landform*