GENESA DAN PENGOLAHAN AIRTANAH PAYAU SEBAGAI SUMBER AIR BERSIH WARGA DESA JAMBAKAN, KECAMATAN BAYAT, KABUPATEN KLATEN, PROVINSI JAWA TENGAH

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INTISARI

Fenomena airtanah payau dijumpai disalah satu desa di Kecamatan Bayat yaitu Desa Jambakan. Airtanah payau tersebut berada pada beberapa sumur milik warga Desa Jambakan tersebut. Airtanah payau akan bertambah rasanya ketika memasuki musim kemarau. Selain dengan cara dirasa, airtanah payau dapat diidentifikasikan oleh pengujian nilai TDS, dimana nilai TDS > 1000 mg/L dikategorikan dengan airtanah payau. Airtanah payau identik dengan intrusi airlaut, namun letak daerah penelitian jauh dengan pantai sekitar ± 55 km. Oleh karena itu, kondisi tersebut menarik untuk diteliti untuk mengetahui penyebab terbentuknya airtanah payau, sebaran kualitas airtanah payau, dan cara pengolahan airtanah payau yang ada di lokasi penelitian.

Metode yang digunakan dalam penelitian ini meliputi metode survey, wawancara, laboratorium dan matematis. Air yang ada di lokasi penelitian digunakan untuk kebutuhan air bersih sehingga parameter yang diujikan untuk kualitas airbersih adalah parameter fisik berupa TDS, DHL, kekeruhan dan pH; parameter kimia berupa salinitas, klorida, kalsium, natrium, magnesium, dan kesadahan; dan parameter biologi berupa *total coliform* yang mengacu pada Permenkes No. 32 Tahun 2007 tentang Persyaratan Kesehatan Air untuk Keperluan Higiene Sanitasi, Kolam Renang, *Solus per Aqua*, dan Pemandian Umum. Pengambilan sampel air untuk diuji menggunakan teknik *Purposive Sampling.* Dalam penentuan genesa airtanah payau di lokasi penelitian menggunakan metode *trilinier piper*.

Berdasarkan hasil penelitian, airtanah payau di daerah peneilitian terbentuk karena adanya air jebakan (*connate water)* ditunjukkan dengan sampel air sumur kode 1 dan kode 2. Hasil pengujian menunjukkan parameter yang berada di atas baku mutu meliputi TDS, DHL, klorida, natrium, sulfat, salinitas, dan kesadahan. Pengolahan yang dilakukan dalam menurunkan parameter yang masih diatas baku mutu menggunakan metode adsorbsi dengan media adsorben karbon aktif dengan perbedaan ketebalan kolom sebesar 60 cm dan 70 cm. Hasil pengolahan tersebut didapatkan efektivitas tertinggi menurunkan konsentrasi sulfat mencapai 46,296% pada ketebalan 70 cm.

Kata kunci : Airtanah Payau, Air Jebakan, Adsorbsi Karbon Aktif

THE GENESIS AND BRACKISH GROUNDWATER TREATMENT AS A SOURCE OF CLEAN WATER FOR RESIDENTS AT JAMBAKAN VILLAGE, BAYAT SUBDISTRICT, KLATEN DISTRICT, CENTRAL JAVA PROVINCE

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ABSTRACT

The phenomenon of brackish groundwater is found in one village at Bayat Subdistrict called Jambakan Village. The brackish groundwater is in several resident's well of the Jambakan Village. The brackish groundwater will increase when entering the dry season. In addition to the perceived method, the brackish groundwater can be identified by testing the value of TDS, where the value of TDS >1000 mg/L is categorized as brackish groundwater. The brackish groundwater is identical with sea water intrusion, but the location of research area is far from the coast about ± 55 km. Therefore, these condition are interesting to do a research to find out the causes of brackish groundwater formation, the distribution of brackish groundwater quality, and the brackish groundwater treatment methods in the research area.

The methods used in this research include survey, interview, laboratory, and mathematical. The water in the research area used to fulfil the needs of clean water so the parameters tested for clean water quality are physical parameters include TDS, DHL, turbidity, and pH; chemical parameters include salinity, chloride, calcium, sodium, magnesium, and hardness; and biological parameter include total coliform with reference to Permenkes No. 32 Year 2007 concering to Water Health Requirements for Sanitary Hygiene, Swimming Pools, Solvents per Aqua, and Public Baths. Water sampling to be tested using purposive sampling technique. In determining the genesis of brackish groundwater in the research area using piper trilinier method.

Based on research results, the brackish groundwater in the research area was formed by the connate water. indicated by well water code 1 and code 2. The test results showed the parameters that are above the quality standard include TDS, DHL, chloride, sodium, sulphate, salinity, and hardness. The treatment that being done to reducing the parameters that are still above the quality standard used the adsorption method with activated carbon adsorbent media with differences in column thickness of 60 cm and 70 cm. The treatment results obtained the highest effectiveness of reducing sulphate concentration up to 46,296% at a thickness of 70 cm.

Keywords: Brackish Groundwater, Connate Water, Activated Carbon Adsorption