

KARAKTERISTIK GEOKIMIA AIRTANAH DAERAH SELOGIRI DAN SEKITARNYA, KABUPATEN WONOGIRI, PROVINSI JAWA TENGAH

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SARI

Desa Jendi, Kecamatan Selogiri merupakan daerah di lokasi penelitian hingga sekarang berlangsung kegiatan penambangan emas tradisional. Kegiatan penambangan emas ini dapat menyebabkan kontaminasi airtanah khususnya di Desa Jendi dan sekitarnya. Penelitian ini menarik, karena penelitian sebelumnya belum menunjukkan karakteristik fasies kimia airtanah pada daerah sekitar lokasi penambangan dalam lingkup lebih luas. Penelitian ini bertujuan untuk mengetahui kondisi hidrogeologi, fasies kimia airtanah, dan keterkaitan karakteristik kimia airtanah dengan berbagai kondisi hidrogeologi. Metode penelitian dilakukan dengan pengumpulan data lapangan berupa pengamatan litologi, serta data hidrogeologi berupa kedalaman muka airtanah, dan parameter fisika – kimia meliputi DHL, TDS, suhu, dan pH pada air sumur gali. Analisis batuan dilakukan dengan metode petrografi untuk mengetahui komposisi mineral batuan, sedangkan analisis airtanah dilakukan dengan alat *Ion Chromatography* untuk mengetahui kandungan ion mayor airtanah yang selanjutnya digunakan untuk evaluasi kimia airtanah. Evaluasi kimia airtanah dilakukan dengan menggunakan beberapa diagram kimia airtanah. Hasil penelitian menunjukkan bahwa daerah penelitian tersusun satuan litologi pasir kerakalan, laharlawu, batugamping, breksi, diorit, dan batupasir tufan. Terdapat struktur berupa kekar dan sesar geser dekstral. Aliran airtanah mengalir dari arah Selatan ke Utara. Kedalaman muka airtanah berkisar antara 0,33 hingga 17,15 m. Akuifer yang berkembang berupa akuifer bebas dengan sistem akuifer berupa akuifer endapan, tanah lapukan, dan rekahan. Suhu airtanah berkisar antara 24,1°C – 30,5 °C, pH airtanah antara 5,6 hingga 7,8, nilai DHL antara 20 µS/cm – 1.720 µS/cm, nilai TDS antara 0 mg/L – 850 mg/L. Pada daerah penelitian secara umum memiliki tipe airtanah magnesium bikarbonat, magnesium alkali bikarbonat, dan kalsium sulfat, sedangkan fasies airtanahnya yaitu fasies magnesium bikarbonat dan fasies kalsium sulfat. Secara hidrogeologi, airtanah hanya memiliki satu fasies kimia airtanah, yaitu magnesium bikarbonat. Anomali kimia airtanah terjadi pada satuan pasir kerakalan yang memiliki kandungan Cl⁻ cukup tinggi dan pada satuan diorit yang airtanahnya bertipe kalsium sulfat. Secara umum airtanah mengalami pengkayaan magnesium dan bikarbonat sepanjang aliran air dari hulu ke hilir.

Kata kunci : Airtanah, Hidrogeokimia, Selogiri, Wonogiri

GEOCHEMISTRY CHARACTERISTIC OF GROUNDWATER AT SELOGIRI AND SURROUNDINGS AREA, WONOGIRI REGENCY, CENTRAL JAVA PROVINCE

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ABSTRACT

There are traditional gold mining activities in Jendi Village, Selogiri Sub-district where is the research location took place. These gold mining activities can cause groundwater contamination especially in Jendi and surroundings areas. The research becomes interesting because the previous research has not shown the characteristics of groundwater chemical facies around of mining location with wider scale. This research purpose to determine of hydrogeology condition, groundwater chemical facies, and to know the cause of groundwater chemical facies difference. This research method consist of collecting field data such as lithologic observation and also hydrogeology data such as depth of groundwater level and physical - chemical parameters including EC, TDS, temperature, and pH from the well. The rock analysis was done by petrography method to to know the mineral composition of rock, while groundwater analysis was done by Ion Chromatography tool to find out the groundwater major ions which subsequently used for groundwater chemical evaluation. Groundwater chemical evaluation was done by using some groundwater chemical diagrams. The results of the research showed that the area is composed by pebbly-sand, lava of Lawu, limestone, breccia, diorite, and tuffaceous sandstone units. There was a structure of shear fault and joint. Groundwater flow flows from South to North. Groundwater depths range from 0.33 to 17.15 m. There was consist of free aquifer, with aquifer system in the form of sediment aquifer, weathered rock aquifer, and fracture aquifer. Groundwater temperatures range from 24.1 ° C – 30.5 ° C, groundwater pH between 5.6 to 7.8, EC values between 20 μ S/cm – 1.720 μ S/cm, TDS values between 0 mg/L – 850 mg/L. Generally, the reserach area has magnesium bicarbonate, magnesium alkali bicarbonate, and calcium sulphate groundwater type, while the groundwater facies are magnesium bicarbonate facies and calcium sulphate facies. According to the hydrogeology, there was one chemical facies of groundwater, namely magnesium bicarbonate. Groundwater chemistry anomalies occur in pebbly-sand units that have a high enough Cl⁻ content and in diorite units that groundwater was calcium sulphate type. Generally, the groundwater enrich magnesium and bicarbonate along the water stream from upstream to downstream.

Keywords: Groundwater, Hydrogeochemistry, Selogiri, Wonogiri