

ABSTRAK

KONSERVASI BERKELANJUTAN MATA AIR BERDASARKAN ANALISIS KUALITAS DAN KUANTITAS AIR DI DESA MRANGGEN, SRUMBUNG, MAGELANG, JAWA TENGAH

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Mata Air Pringsari yang terletak di Desa Mranggen, Kecamatan Srumbung, Kabupaten Magelang, Provinsi Jawa Tengah dimanfaatkan sebagai sumber utama pemenuhan kebutuhan air domestik masyarakat. Keberlanjutan mata air ini menghadapi permasalahan utama berupa penurunan debit pada musim kemarau berkepanjangan, potensi ancaman kualitas air pada Mata Air Pringsari, serta kebutuhan air yang semakin bertambah tiap tahunnya. Penelitian ini bertujuan untuk menganalisis tipe dan karakteristik Mata Air Pringsari, menganalisis tingkat klasifikasi daerah imbuhan, menganalisis potensi pemenuhan kebutuhan air domestik 10 tahun ke depan, serta menyusun arahan pengelolaan dan teknik konservasi mata air yang berkelanjutan.

Penelitian ini menggunakan pendekatan deskriptif dengan analisis kuantitatif dan kualitatif. Metode yang digunakan meliputi survei dan pemetaan, *purposive sampling* dan *grab sampling*, uji laboratorium, serta analisis spasial deskriptif menggunakan pembobotan dan *overlay* berdasarkan Permen PU No. 2 Tahun 2013 yang menghasilkan peta klasifikasi daerah imbuhan, dan metode matematis Indeks Kekritisitas Air (IKA) untuk menghitung potensi pemenuhan kebutuhan air 10 tahun ke depan.

Hasil menunjukkan bahwa Mata Air Pringsari termasuk *depression springs* dengan debit harian 0,6675 L/s (kelas debit 6) dan memiliki sifat pengaliran *perennial spring*. Kualitas air belum memenuhi baku mutu pada parameter *Escherichia coli* sebesar 6 CFU/100 ml, dan total coliform TNTC (*too numerous to count*). Proyeksi IKA untuk 10 tahun ke depan menunjukkan kategori aman pada tahun 2035. Tingkat klasifikasi daerah imbuhan didominasi klasifikasi kelas sedang sebanyak 227,3324 ha (63,07%). Arahan konservasi mata air berdasarkan klasifikasi daerah imbuhan dengan pendekatan teknis (pembuatan rorak dan konservasi vegetatif), pendekatan non-teknis melalui penataan tutupan lahan, pengendalian sumber pencemar domestik, dan pendekatan sosial-instansi.

Kata kunci: Mata Air, Daerah Imbuhan, Indeks Kekritisitas Air (IKA), Analisis Spasial, Konservasi Mata Air

ABSTRACT

SUSTAINABLE SPRING CONSERVATION BASED ON WATER QUALITY AND QUANTITY ANALYSIS IN MRANGGEN VILLAGE, SRUMBUNG, MAGELANG, CENTRAL JAVA

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Pringsari Spring, located in Mranggen Village, Srumbung District, Magelang Regency, Central Java Province, serves as the primary source of domestic water supply for the local community. The sustainability of this spring faces several major challenges, including discharge reduction during prolonged dry seasons, potential threats to water quality, and increasing water demand each year. This study aims to analyze the type and characteristics of Pringsari Spring, assess the classification level of its recharge area, evaluate the potential to meet domestic water demand over the next ten years, and formulate sustainable management and conservation strategies.

This study uses a descriptive approach with quantitative, and qualitative. The research methods included field surveys and mapping, purposive and grab sampling, laboratory testing, and descriptive spatial analysis using scoring and overlay techniques based on Regulation of the Minister of Public Works No. 2 of 2013 to produce a recharge area classification map. A mathematical approach using the Water Criticality Index (WCI) was applied to estimate the potential fulfillment of domestic water demand for the next ten years.

*The results indicate that Pringsari Spring is classified as a depression spring with an average discharge of 0.6675 L/s (discharge class 6) and exhibits a perennial flow pattern. Water quality does not meet the required standard for microbiological parameters, with *Escherichia coli* measured at 6 CFU/100 ml and total coliform detected as TNTC (too numerous to count). The ten-year WCI projection indicates a safe category by 2035. The recharge area classification is dominated by the moderate class, covering 227.3324 ha (63.07%). Conservation measures are proposed based on recharge area classification through technical approaches (construction of rorak pits and vegetative conservation), non-technical approaches including land cover management and control of domestic pollution sources, as well as social and institutional approaches.*

Keywords: Spring, Recharge Area, Water Criticality Index (WCI), Spatial Analysis, Spring Conservation