



# Performance Analysis of Bank Infiltration for the Removal of Selected Water Contaminants

## PENYELIDIKAN & PEMBANGUNAN

### KAJIAN KESESUAIAN PENYUSUPAN TEBING (RIVERBANK FILTRATION, RBF) UNTUK INTERAKSI AIR PERMUKAAN DAN AIR TANAH

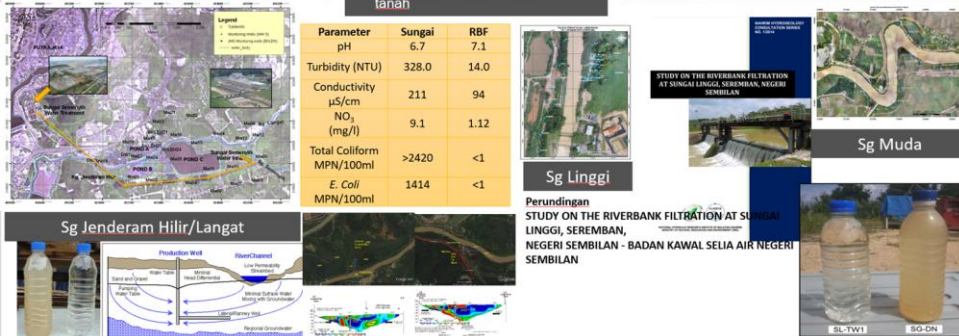
- RBF bertindak sebagai Pra-rawatan semulajadi untuk meningkatkan kualiti air mentah
- Interaksi dengan air permukaan meningkatkan kuantiti dan kelestarian sumber air tanah

#### OBJEKTIF

- Menilai kesesuaian kawasan kajian untuk mengoptimalkan sumber air tanah
- Menentukan potensi sumber air tanah

#### HASIL KAJIAN

- RBF mampu meningkatkan kualiti air mentah
- Kesesuaian kawasan sangat bergantung kepada ciri-ciri hidrologik akuifer, tebing sungai dan dasar sungai



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# **Performance Analysis of Bank Infiltration for the Removal of Selected Water Contaminants**

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**2025**

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## **Abstract**

The increasing population has led to a growing demand for high-quality water supply. Riverbank filtration (RBF) has been explored as a sustainable method to improve water quality by extracting groundwater from wells adjacent to rivers. This study investigates the effectiveness of RBF in improving water quality at Sungai Muda, located in Penang and Kedah. In-situ parameters, including pH, temperature, turbidity, conductivity, salinity, and dissolved oxygen, were measured on-site, while ex-situ parameters such as BOD, COD, nitrate ( $\text{NO}_3^-$ ), phosphate ( $\text{PO}_4^{3-}$ ), sulphate ( $\text{SO}_4^{2-}$ ), and ammonia nitrogen ( $\text{NH}_3\text{-N}$ ) were analyzed in the laboratory. Results showed significant improvement in well water quality compared to river water, with reductions of up to 95% in several pollutants ( $p < 0.05$ ). However, 5 out of 13 parameters did not show statistically significant differences and 3 parameters exceeded drinking water standards, namely conductivity, COD, and ammonia nitrogen. These findings indicate that RBF has the potential to enhance water quality, though further studies with extended pumping durations are recommended to assess long-term performance and stability of the filtration process.