

## ABSTRAK

SPAM Mookervaart didesain menggunakan teknologi MBBR (*Moving Bed Bio Reactor*) dan teknologi BWRO (*Brackish Water Reverse Osmosis*). Penelitian dengan metode evaluatif dan kuantitatif ini bertujuan untuk mengetahui pengaruh penggunaan MBBR (*Moving Bed Biofilm Reactor*) dan BWRO (*Brackish Water Reverse Osmosis*) terhadap kualitas air minum produksi pada SPAM Mookervaart. Pada teknologi MBBR (*Moving Bed Biofilm Reactor*) dengan biakan PVA Gel dengan kondisi aerasi didapatkan nilai % *removal* amonia sebesar 93,19%, nilai ini di atas kriteria desain dari SPAM Mookervaart sebesar 80% untuk % *removal* amonia, hal ini menunjukkan bahwa bak MBBR SPAM Mookervaart bekerja efektif dalam menurunkan konsentrasi amonia yang menjadi permasalahan air baku terutama di Sungai Mookervaart. Pada teknologi BWRO (*Brackish Water Reverse Osmosis*) didapatkan hasil % *removal* TDS sebesar 93,90%, % *removal* sulfat sebesar 92,46%, % *removal* zat organik sebesar 78,29%, % *removal* klorida sebesar 88,74%, dan % *removal* kesadahan sebesar 93,46%. Hasil tersebut di atas kriteria desain dari SPAM Mookervaart untuk % *removal* teknologi BWRO. Berdasarkan hasil penelitian penggunaan teknologi MBBR dan BWRO pada SPAM Mookervaart sangat berpengaruh pada kualitas hasil produksi, dengan kedua teknologi tersebut didapatkan % *removal* total produksi untuk setiap parameter memberikan nilai sebesar > 90%. Selanjutnya untuk hasil pengujian yang dikeluarkan oleh Laboratorium Pusat PAM Jaya terhadap air hasil produksi SPAM Mookervaart menunjukkan bahwa dari 17 parameter pengujian, keseluruhannya memenuhi standar PERMENKES No.492/MENKES/PER/IV/2010 Tentang Persyaratan Kualitas Air Minum.

Kata kunci: Mookervaart, *Moving Bed Biofilm Reactor*, *Brackish Water Reverse Osmosis*

## **ABSTRACT**

*SPAM Mookervaart is designed using MBBR (Moving Bed Bio Reactor) technology and BWRO (Brackish Water Reverse Osmosis) technology. This research using evaluative and quantitative methods aims to determine the effect of using MBBR (Moving Bed Biofilm Reactor) and BWRO (Brackish Water Reverse Osmosis) on the quality of drinking water produced at SPAM Mookervaart. In the MBBR (Moving Bed Biofilm Reactor) technology with PVA Gel culture under aerated conditions, the % ammonia removal value was obtained at 93.19%, this value was above the design criteria from SPAM Mookervaart of 80% for % ammonia removal, this shows that the MBBR tub SPAM Mookervaart works effectively in reducing the concentration of ammonia which is a raw water problem, especially in the Mookervaart River. In the BWRO (Brackish Water Reverse Osmosis) technology, the results obtained for % TDS removal were 93.90%, % sulfate removal was 92.46%, % organic matter removal was 78.29%, % chloride removal was 88.74%, and % hardness removal of 93.46%. These results are above the design criteria of SPAM Mookervaart for % BWRO removal technology. Based on the results of research using MBBR and BWRO technology in SPAM Mookervaart, it greatly influences the quality of production results, with these two technologies, the % removal of total production for each parameter gives a value of > 90%. Furthermore, the test results issued by the PAM JAYA Central Laboratory for water produced by SPAM Mookervaart show that of the 17 test parameters, all of them meet the PERMENKES No.492/MENKES/PER/IV/2010 standard concerning Drinking Water Quality Requirements.*

*Keywords: Mookervaart, Moving Bed Biofilm Reactor, Brackish Water Reverse Osmosis*