

## Daur ulang limbah cair domestik terolah (efluen) sewage treatment plant Plaza Great River Indonesia Kuningan, Jakarta Selatan = Water reuse of domestic sewage treatment plant effluent of Great River Plaza Indonesia at Kuningan, South Jakarta

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Abstrak

**ABSTRAK**

Plaza Great River Indonesia (Plaza GRI) adalah gedung perkantoran dengan tipe gedung perkantoran komersial mid-rise yang terletak di kawasan bisnis Kuningan, Jakarta Selatan. Pembatasan konsumsi sumber air yang berasal dari pasokan air tanah dan harga air PDAM yang relatif mahal menjadi penyebabnya melakukan efisiensi air dengan menerapkan teknologi daur ulang limbah cair diproses di lokasi objek penelitian. Hasil analisis kualitas limbah seluler STP yang ada dengan sistem pengolahan Lumpur Aktif tipe Aerasi yang Diperpanjang pada 18 April 2012 di laboratorium diperoleh nilai BOD5 sebesar 39,12 mg/L; COD 75,63 mg/L; TSS 22 mg/L; NH3-N 32,92 mg/L; MBAS 0,11 mg/L; Minyak dan Lemak 1.22 mg/L; dan Fecal Coliform dengan nilai lebih dari 1.600 MPN/100 mL. Skor kualitas efluen telah memenuhi baku mutu pengolahan limbah cair berdasarkan Pergub DKI Jakarta No. 122 Tahun 2005 tentang Pengelolaan Air Limbah Domestik di Provinsi DKI Jakarta, kecuali parameter uji NH3-N. Pemanfaatan air olahan dari proses daur ulang dimaksudkan sebagai pengganti kebutuhan air bersih untuk kegiatan non-potable-urban reuse, meliputi: pembilasan toilet lainnya 66 m3/hari, menara pendingin 48 m3/hari, dan irigasi lanskap 6 m3/hari. Teknologi sistem pemrosesan siklus yang direkomendasikan pengerjaan ulang yang sesuai untuk diterapkan berdasarkan analisis kinerja sistem pengolahan (persentase penyisihan) dan aspek ekonomi (biaya infrastruktur dan operasional /m3) adalah filter karbon aktif (pra-perawatan), osmosis balik, dan Desinfeksi radiasi UV (pasca perawatan), dengan persentase penghapusan total parameter BOD5 94%; COD 95%; TSS 99%; NH3-N 95%;Kekeruhan 96%; dan Fecal Coliform 95% yang mengacu pada pencapaian target kualitas air kelas II berdasarkan PP No. 82 Tahun 2001.

**ABSTRACT**

Plaza Great River Indonesia (Plaza GRI) is an office building with a mid-rise commercial office building type located in the Kuningan business district, South Jakarta. Restrictions on consumption of water sources originating from groundwater supplies and the relatively expensive price of PDAM water are the reasons for carrying out water efficiency by applying the technology of recycling liquid waste processed at the location of the object of research. The results of the analysis of the quality of the existing STP cellular waste with an Extended Aeration-type Active Sludge treatment system on April 18, 2012 in the laboratory obtained a BOD5 value of 39.12 mg/L; COD 75.63 mg/L; TSS 22 mg/L; NH3-N 32.92 mg/L; MBAS 0.11 mg/L; Oils and Fats 1.22 mg/L; and Fecal Coliform with a value of more than 1,600 MPN/100 mL. The score of effluent quality has met the quality standard for wastewater treatment based on Pergub DKI Jakarta No. 122 of 2005 concerning Domestic Wastewater Management in DKI Jakarta Province, except for the NH3-N test parameter. The utilization of treated water from the recycling process is intended to replace the need for clean water for non-potable-urban reuse activities,

including: flushing other toilets 66 m<sup>3</sup>/day, cooling towers 48 m<sup>3</sup>/day, and landscape irrigation 6 m<sup>3</sup>/day. The recommended rework cycle processing system technology that is suitable to be applied based on the analysis of treatment system performance (percentage removal) and economic aspects (infrastructure and operational costs /m<sup>3</sup>) is activated carbon filter (pre-treatment), reverse osmosis, and UV radiation disinfection ( post-treatment), with the percentage of total deletion of parameters BOD<sub>5</sub> 94%; COD 95%; TSS 99%; NH<sub>3</sub>-N 95%; Turbidity 96%; and 95% Fecal Coliform which refers to the achievement of class II water quality targets based on PP no. 82 of 2001.