

**TEKNIK PENGOLAHAN AIR TERPRODUKSI UNTUK AIR SUNGAI
KELAS III DI KAWASAN EKSPLOITASI MINYAK BUMI SUMUR TUA
WONOCOLO, DESA WONOCOLO, KECAMATAN KEDEWAN,
KABUPATEN BOJONEGORO, PROVINSI JAWA TIMUR**

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INTISARI

Sumur Minyak Bumi Tradisional Wonocolo di Bojonegoro, Jawa Timur. Sudah beroperasi sejak zaman penjajahan Belanda. Sumur minyak bumi dieksploitasi hingga sekarang dengan cara tradisional oleh warga sekitar dan menjadi komoditas ekonomi unggulan di daerah tersebut. Dibalik Hasil bumi yang dikelola masyarakat kurang memperhatikan kondisi lingkungan sekitarnya

Pengambilan data air Terproduksi menggunakan metode *Purposive Sampling*. Metode tersebut digunakan berdasarkan objek yang diteliti yaitu sumur minyak bumi tradisional di lokasi topografi yang sama. Hasil pengujian mengenai kadar parameter fisik dan kimia selanjutnya dibandingkan dengan Baku Mutu PPRI Nomor 82 tahun 2001 tentang Kualitas Air dan Pengendalian Pencemaran Air. Parameter yang diuji adalah Kekeruhan, TDS, minyak lemak, BOD, COD, Fenol, Amonia, Sulfida Terlarut, dan pH. Hasil pengujian menunjukkan bahwa tiap parameter limbah di lokasi penelitian memiliki nilai diatas nilai baku mutu untuk dibuang ke sungai sebagai air kelas III berdasarkan peraturan diatas. Metode yang digunakan dalam pengolahan berupa Metode Fisik - Kimia.. Penentuan lokasi pengolahan air terproduksi juga ditinjau berdasarkan pendekatan kebumihan dengan meninjau topografi dan struktur geologi yang ada di daerah penelitian.

Hasil pengolahan tersebut menurunkan parameter Kekeruhan hingga 98,7%, BOD 83,3%, COD 88%, Sulfida Terlarut 80,5%, Amonia 97,4%, Fenol 35,2%, Minyak Lemak 20%, TDS 46,7%. Meski penurunannya signifikan, namun masih ada beberapa parameter yang masih berada diatas nilai ambang batas, parameter tersebut adalah Fenol, Minyak Lemak, Amonia, BOD, dan Sulfida terlarut. Berdasarkan pendekatan kebumihan yang telah ditinjau, titik koordinat untuk pembuatan IPAL berada pada titik koordinat $x = 572810$ dan $y = 9221175$. Evaluasi pengolahan limbah yang sudah ada adalah perlunya Unit Flotasi, Unit Ekualisasi, Unit Sedimentasi, dan Unit Filtrasi.

Kata Kunci : Eksploitasi Minyak Bumi, Air Terproduksi, Wonocolo, Sumur Tradisional.

**PRODUCED WATER PROCESSING FOR THIRD GRADE SURFACE
WATER QUALITY IN CONVENTIONAL PETROLEUM EXPLOITATION
AT WONOCOLO, KEDEWAN SUB-DISTRICT, BOJONEGORO DISTRICT,
EAST JAVA**

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ABSTRACT

Conventional Petroleum Exploitation has been started Since Netherlands colonialism to Indonesia. The exploitation still running with Traditional method by villagers nowadays and being the first commodity in around Wonocolo. Unfortunately, the exploitation do not consider the environmental aspects.

Produced Water quality was collected by purposive sampling method. The method was chosen based on the Wellsite's location in the same topography as research's objects. From samples were tested about the quality of Physical and Chemical parameters was compared by Peraturan Pemerintah Republik Indonesia Nomor 82 Tahun 2001 Pengelolaan Kualitas Air & Pengendalian Pencemaran Air (Indonesia Government Regulation about water quality and water pollutant control). The parameters comprise turbidity, TDS, Oil and Grease, BOD, COD, Phenols, Ammonia, dissolved Sulfide, and pH. The result showed that every parameters at Wonocolo did not meet the standard based on the regulation above. Produced Water Treatment were Physical-Chemical Methods. Those chosen based on wastewater's characteristic. The determination of Wastewater Treatment Plant's location was analyzed with geoscience aspect based on topography and geological Structure that appears in research location.

The result of Produced Water Treatment found that Physical-Chemical methods has reduced of pollutants level significantly. It able to decrease the Turbidity level with effectiveness of 98,7%, BOD of 83,3%, COD of 88%, Dissolved Sulfide of 80,5%, Ammonia of 97,4%, Phenol of 35,2%, Oil and Grease of 20%, and TDS of 46,7. Parameters that did not met the standard based regulation were phenol, Oil and Grease, Ammonia, BOD, and Dissolved Sulfide. Based on geoscience aspects that has been researched the proper location to build wastewater Treatment Plant is located in around $x = 572810$ and $y = 9221175$. The evaluation for the exist units in research location is needs to add some units such as Flotation Unit, Equalization Unit, Sediment Unit, and Filtration Unit.

Keywords : Petroleum Exploitation, Produced Water, Wonocolo, Produced Water Treatment, Conventional Petroleum Exploitation.