

## ABSTRAK

Lapangan Mudi merupakan daerah penghasil minyak dan gas bumi di Tuban Jawa Timur, kegiatan operasional migas lapangan Mudi menghasilkan limbah yang berpotensi mencemari lingkungan. Tujuan dari penelitian yaitu (1) mengidentifikasi jenis, jumlah, komposisi dan kondisi serta pola pengelolaan limbah cair dan non air dari operasional migas Lapangan Mudi. Tujuan (2) mengkaji dampak limbah terhadap lingkungan abiotik, biotik dan kultural, dan tujuan ke (3) Bagaimana menyusun strategi pengelolaan lingkungan terhadap kerusakan komponen lingkungan yang berpengaruh terhadap pencemaran lingkungan. Penentuan sampel lingkungan komponen abiotik, biotik dan kultural di lapangan menggunakan metode survei. Jenis pengambilan sampel air (air sungai, air limbah domestik, air terproduksi dan air drainase) dan sampel non air (kebisingan, kebauan dan pencemaran udara ambien).

Metode yang digunakan dalam penelitian ini adalah metode kombinasi antara metode kualitatif dan kuantitatif. Untuk mengetahui kualitas limbah cair di uji di laboratorium HKL (Hidrologi Klimatologi Lingkungan) UGM, selanjutnya dibandingkan dengan baku mutu. Metode analisis tingkat pencemaran Sungai Cangkring menggunakan indeks pencemaran (IP), metode *Systematic Literature Review* (SLR) efektif dalam memadukan hasil-hasil penelitian yang relevan. Analisis sosial menggunakan Metode *Social Impact Assessment* (SIA) digunakan untuk mengetahui persepsi masyarakat terhadap lingkungan migas lapangan Mudi.

Hasil analisis parameter air limbah lapangan mudi, terutama air limbah domestik. Masih sesuai baku mutu Peraturan Menteri Lingkungan dan kehutanan Republik Indonesia No P.68/Menlhk/Setjen/Kum.1/8/2016 tentang baku mutu air limbah domestik, air limbah yang diatas baku mutu yaitu air terproduksi. Hasil parameter non air (kualitas udara, kebauan dan kebisingan) masih sesuai baku mutu. Tingkat kerusakan perairan Sungai Cangkring dengan hasil tingkat kerusakan tingkat cemar sedang. Kualitas Parameter air lainnya masih sesuai baku mutu dan kualitas air sungai Cangkring masuk kategori tingkatan kelas III. Dapat disimpulkan bahwa kondisi air Sungai Cangkring aman untuk masyarakat. Dampak aspek sosial ekonomi, adanya lowongan pekerjaan bagi tenaga kerja lokal dan peningkatan ekonomi masyarakat setempat dengan munculnya berbagai peluang usaha.

Strategi pengelolaan lingkungan Lapangan Mudi menggunakan matrik sebagai model pelestarian Sungai Cangkring. Pengelolaan lingkungan perairan Sungai Cangkring dengan pembuatan IPAL di Lapangan migas Mudi. Pengelolaan lingkungan Lapangan Mudi dapat diterapkan di lokasi migas yang berbeda. Setelah melalui proses mitigasi untuk mendapatkan hasil akhir matrik pengelolaan lingkungan lapangan migas ditempat yang berbeda.

Kata Kunci : Migas, Indeks Pencemaran, Air Terproduksi, Sungai Cangkring, SIA

## ABSTRACT

The Mudi Field is an oil and gas producing area in Tuban, East Java, the Mudi field's oil and gas operations produce waste that has the potential to pollute the environment. The aims of the research are (1) to identify the type, amount, composition and condition as well as the management pattern of liquid and non-water waste from the oil and gas operations of the Mudi Field. Objective (2) examine the impact of waste on the abiotic, biotic and cultural environment, and objective (3) How to develop an environmental management strategy for damage to environmental components that affect environmental pollution. Determination of environmental samples of abiotic, biotic and cultural components in the field using survey methods. Types of water sampling (river water, domestic wastewater, produced water and drainage water) and non-water samples (noise, odor and ambient air pollution).

The method used in this research is a combination method between qualitative and quantitative methods. To find out the quality of the liquid waste, it was tested at the UGM HKL (Environmental Hydrology Climatology) laboratory, then compared with the quality standard. The method for analyzing the pollution level of the Cangkring River uses the pollution index (IP), the Systematic Literature Review (SLR) method is effective in integrating relevant research results. Social analysis using the Social Impact Assessment (SIA) method was used to determine community perceptions of the Mudi field's oil and gas environment.

The results of the analysis of the parameters of the mudfield wastewater, especially domestic wastewater. Still in accordance with the quality standards of the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. P.68/Menlhk/Setjen/Kum.1/8/2016 concerning quality standards for domestic wastewater, waste water above the quality standard is produced water. Non-water parameter results (air quality, smell and noise) are still in accordance with quality standards. The level of damage to the waters of the Cangkring River results in a moderate pollution level. Other water quality parameters are still in accordance with quality standards and the quality of Cangkring river water is in the class III level category. It can be concluded that the water conditions of the Cangkring River are safe for the community. The impact of the socio-economic aspect, there are job vacancies for local workers and an increase in the local community's economy with the emergence of various business opportunities.

Mudi Field's environmental management strategy uses a matrix as a model for preserving the Cangkring River. Environmental management of the waters of the Cangkring River by constructing an WWTP in the Mudi oil and gas field. Mudi Field environmental management can be applied in different oil and gas locations. After going through the mitigation process to get the final results of the environmental management matrix for oil and gas fields in different places.

**Keywords:** Oil and Gas, Pollution Index, Produced Water, Cangkring River, SIA