

CHAPTER V

CONCLUSION AND SUGGESTION

5.1 Conclusion

The conclusion that can be drawn from this study is that:

1. The evaluation of water quality using the WQI indicated that Teknologi Lake (FKAAB) received the classification of slightly polluted, with typical WQI scores from 60 to 80. The six principal water quality parameters (DO, BOD, COD, AN, TSS, and pH), among the parameters, BOD and AN consistently indicated Class IV–V values under the NWQS Malaysia which was a clear sign of heavy pollution for these parameters. The average WQI still showed the lake slightly polluted, but the alarming BOD and AN situation called for water quality problems that might require treatment before being allowed for some of the permitted uses, emphasizing the importance of proactive management to prevent further degradation.
2. According to the CTSI, Teknologi Lake (FKAAB) is identified as eutrophic with CTSI values of 53.83–65.10. The CO₂ solubility consumption evaporating (diurnal) cycles above all (done through low visibility Secchi disk) and primary productivity estimation via chlorophyll-a extraction (50.00-55.00 µg/L) and total phosphorus estimation (0.04-0.24 mg/L) showed at least a one-third of the lake's waters covered by dense algal blooms. The stable condition with the treatment of eutrophic and the rich supply of nutrients is continuing in the lake, especially nitrogen and phosphorus, likely derived from anthropogenic sources and surface runoff.
3. Statistical analysis using Pearson and Spearman correlation tests revealed significant relationships among several parameters. It is noteworthy that DO negatively correlated with BOD, COD, and AN, suggesting that bacteria and other organisms used up oxygen as a result of organic and nutrient loading. TSS showed a very strong positive correlation with turbidity and a moderate negative correlation with Secchi depth, confirming thus the role of suspended solids in diminishing lake transparency. Temperature had a moderate

correlation with some chemical parameters, suggesting its role in accelerating biochemical processes and influencing water quality.

5.2 Suggestion

Several recommendations are proposed for future studies, including:

1. Increase the frequency of sampling, especially at the time of seasonal changes (between wet and dry periods), to attain a clearer view of the temporal fluctuations. This would not only highlight and localize the short-term fluctuations related to the episodic events like rainfall runoff but also aid in the comprehension of the seasonal trends in a better way, providing a more robust dataset for long-term trend analysis.
2. Include additional water quality parameters, such as heavy metals, oil and grease, and microbiological indicators, thereby providing a more thorough assessment. An oil film was detected during the sampling process in Teknologi Lake's inlet area, which might have partly come from the rainwater runoff of the FKAAB buildings. Moreover, the presence of heavy metals such as lead (Pb), copper (Cu), and zinc (Zn) should not be overlooked as they are capable of entering the lake through laboratory work, construction materials, and vehicle emissions, and may harm aquatic life due to their toxicity and accumulation in organisms.
3. Encourage continuous practices of terraced landscapes, trees, and grasslands in relation to water conservation, for the conservation and management of biodiversity alongside leadership roles for good agricultural practices.