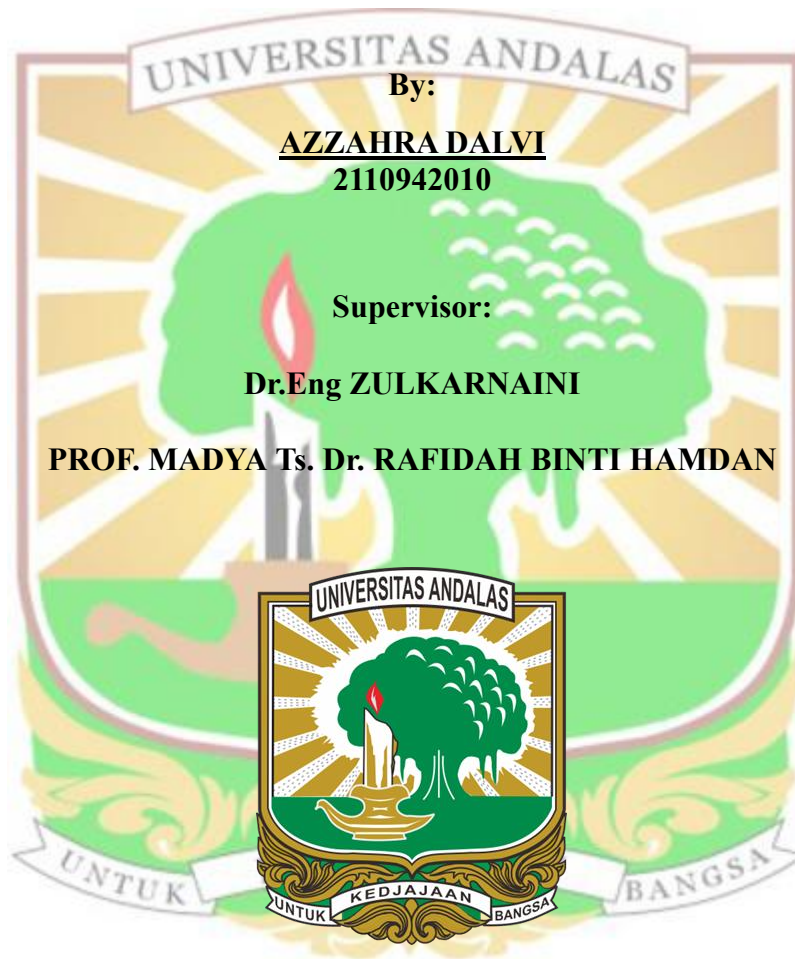


**WATER QUALITY AND TROPHIC STATUS ASSESSMENT
OF TEKNOLOGI LAKE (FPTV), MALAYSIA, BASED ON
WQI AND CTSI**

FINAL PROJECT

As one of the requirements for completing
The Bachelor's Program
In the Department of Environmental Engineering
Faculty of Engineering Universitas Andalas



**BACHELOR'S DEGREE PROGRAM IN
ENVIRONMENTAL ENGINEERING
DEPARTMENT OF ENVIRONMENTAL ENGINEERING
FACULTY OF ENGINEERING – UNIVERSITAS ANDALAS
PADANG
2025**

ABSTRACT

Teknologi Lake at the Faculty of Technical and Vocational Education (FPTV), Universiti Tun Hussein Onn Malaysia (UTHM), is an artificial retention pond covering about 16,530 m² that serves as the final basin of the campus drainage network. It receives stormwater runoff from nearby academic buildings, the mosque, the food court, and surrounding palm plantation areas before being discharged off-campus, while also enhancing the visual and ecological value of the university landscape. This study assessed the lake's water quality and trophic status using the Water Quality Index (WQI) and Carlson's Trophic State Index (CTSI) and examined the relationships among their parameters. Water samples were collected weekly for three months at six points representing both inflow and outflow areas. The obtained WQI values (59.66–73.63) classified the lake as slightly polluted (Class III), mainly due to elevated BOD and COD, while the CTSI values (61.43–70.32) indicated a eutrophic condition influenced by high total phosphorus (TP), chlorophyll-a (Chl-a), and low Secchi depth. A strong negative correlation was found between WQI and organic parameters (BOD and COD), whereas CTSI showed a strong positive correlation with nutrient-related parameters (TP and Chl-a). The study identified the primary pollutant sources at D2–D3, where runoff from the FPTV building and mosque areas carried organic matter and nutrients into the lake. These findings suggest that organic loading and nutrient enrichment are the key factors affecting water quality, highlighting the importance of regular monitoring and improved stormwater management.

Keywords: CTSI, eutrophication, Teknologi Lake (FPTV), water quality, WQI

