

## Simulation of thermal stratification and eutrophication of Taham dam reservoir using CE-QUAL-W2 model

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### ABSTRACT:

Increasing water demand and spread of water pollution through the development of agricultural, urban, industrial, and mineral activities have caused unfavorable conditions in many parts of the world, including Iran. As water resources in Iran are limited, the quality of fresh water supplies is becoming more and more important. The models of simulating the quality of reservoir water are an appropriate tool for forecasting the water quality and estimating the effects of environmental pollution after the start of operation, regarding the physical and climatic conditions of the reservoir and the inflow of the river. This paper aims to simulate the thermal stratification and eutrophication of the Taham Dam reservoir using the CE-QUAL-W2 model. In this regard, first, the hydrodynamic model of the Taham Dam reservoir was constructed and calibrated with ce-qual-w2 software and used to simulate thermal stratification in the dam. The results showed that thermal stratification and eutrophication in this reservoir occurs from the late spring to early autumn. However, the thermal stratification is disappeared and mixing condition happens in the reservoir by approaching the winter. At the time of thermal stratification, temperature changes and its effect on water temperature, simultaneously on algae and other parameters affecting the concentration of dissolved oxygen reduce the concentration of this parameter in depth and liken the conditions of the reservoir floor to anaerobic state.

### Keywords:

Taham dam, Thermal stratification, Eutrophication, CE-QUAL-W2, Dam reservoir, Calibration.