

Report to the Rural Services and Wairarapa Committee  
from B Stansfield, Water Quality Scientist

## **Lake Wairarapa Water Quality Monitoring Programme**

### **1. Purpose**

To inform members of the outcomes from a four year review of the Lake Wairarapa Wetlands water quality monitoring programme.

### **2. Background**

2.1 The Lake Wairarapa wetlands are used for a variety of recreational purposes including yachting, camping, fishing and duckshooting. Lake Wairarapa also acts as a reservoir for flood water thus allowing some control of flooding in the lower valley. In 1989 a National Water Conservation Order was placed on Lake Wairarapa due to the importance of the wildlife inhabiting this lake. Due to the intrinsic values of the Lake Wairarapa Wetlands and the discharges they receive, the Regional Council has monitored the water quality of this area since June 1994.

2.2 Most potential pollutants enter Lake Wairarapa via its tributaries. For instance, water from the Ruamahanga enters Lake Wairarapa during floods. Longwood water race enters Lake Wairarapa via Tauherenikau River, Burton's Lagoon and Abbots Creek. Waste from the Featherston Sewage Treatment Plant enters Lake Wairarapa via Abbots Creek.

2.3 This report focuses on the water quality variables recommended by Burns (1998) to detect spatial and temporal trends ( trends over space and time) from the first four years worth of data collated from the Lake Wairarapa Wetlands water quality monitoring programme

### **3. Methods**

3.1 The sites were selected on the basis of their importance for recreation and wildlife, and their proximity to incoming tributaries. These are illustrated in Figure 1.

- 3.2 Field measurements of secchi disc, dissolved oxygen, temperature and depth were taken.
- 3.3 The samples were analysed for *chlorophyll a*, *total nitrogen* and *total particulate phosphorus*.

#### **4. Results**

- 4.1 Boggy Pond (site 5) and Matthew's Lagoon (site 6) generally have higher nutrient concentrations and better water clarity compared to the four Lake Wairarapa sites. As a result, chlorophyll a concentrations are also higher in these small wetlands compared to Lake Wairarapa. The surface waters of these wetlands are not connected to Lake Wairarapa and they receive their water from direct farm drainage.
- 4.2 The water quality results from Matthew's Lagoon and Boggy Pond are expected as these wetlands are well sheltered and they offer less dilution to the discharges they receive compared to Lake Wairarapa.
- 4.3 Site 1 generally has lower nutrient concentrations compare to the other three sites located in Lake Wairarapa. This result is expected as site 1 is in close proximity to the Tauherenikau river mouth. Previous annual water quality reports have shown that the Tauherenikau River has good water quality, clearly of better quality compared to Lake Wairarapa.
- 4.4 Temporal trends analysed for Lake Wairarapa indicate that there has been no significant change in trophic state of this lake since monitoring commenced (June 1994). Temporal trend analysis has not been conducted on the smaller wetlands because their data sets are currently too small.
- 4.5 According to Burns (1998) trophic level index, Lake Wairarapa remains in a supertrophic state. This means the lake has comparatively high nutrient concentrations compared to other lakes in New Zealand.

#### **5 Recommendation**

- (1) *That the report be received and acknowledged.*
- (2) *That the Lake Wairarapa wetlands water quality monitoring programme be continued to obtain a more comprehensive data set.*

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