



## STAFF REPORT

**TO:** Environment & Planning Committee

**FROM:** Trevor James, Resource Scientist

**REFERENCE:** W416, R07001

**SUBJECT:** **REPORT OF THE “STATE OF WATER QUALITY IN THE MOTUPIPI CATCHMENT” - REPORT EP07/03/05 – Report prepared for 28 March Meeting**

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Note: If Councillors wish to see a full copy of this report (43 pages) please contact Trevor James).

### 1. INTRODUCTION

Results from the Tasman District Council’s ‘State of the Environment’ surface water quality sampling conducted at over 70 sites throughout the region have shown the Motupipi and some tributaries to have consistently poor water quality. In particular there are high nutrient concentrations, moderately high concentrations of disease-causing organisms, low dissolved oxygen and moderately high amounts of fine sediment deposited in the bed of the river. Macro-invertebrate populations have been found to be in poor health and there are indications that fish populations are impoverished.

A programme of more detailed investigations was started in 2005 in the Motupipi Catchment with the aim of trying to determine the main sources of contamination, patterns of water quality over daily, monthly and seasonal cycles and in response to rainfall. Studies investigating the state of groundwater and the Motupipi estuary are under way. A study in this catchment investigating the benefits of implementing the ‘Dairy and Clean Streams Accord Programme’ (particularly restricting stock access) began in July 2006. This catchment is recognized as a ‘tier II’ study catchment within the Clean Streams programme (see Appendix 1 for details). Through this alignment Council has been able to attract money from MfE to assist with laboratory analysis related to this project. The hydrological network site situated in the mid-lower reaches of the river has been enabled to provide real time information to the Council website ([www.tasman.govt.nz/index????](http://www.tasman.govt.nz/index????)).

### 2. SUMMARY OF MAIN FINDINGS FROM MONITORING TO DATE

- Average (median) dissolved organic nitrogen and total nitrogen are above ANZECC 2000 guidelines at all sites. Berkett Creek and a spring-fed tributary approximately 500m downstream of the dairy factory have particularly high nitrogen concentrations. Median dissolved organic phosphorus is above these guidelines at most sites, particularly in a tributary of the Motupipi River meeting the main stem opposite Sunbelt Crescent, McConnon Creek and 300m

downstream of Reilly's bridge. Nutrient concentrations do not appear to rise significantly during or after rainfall.

- At stable base flows *E.coli* concentrations are greater than the maximum ("Alarm" level) prescribed by guidelines for bathing water quality for more than 25% of the time. The average (median) *E.coli* concentration at base flows is more than double that of guidelines (ANZECC 2000). There is no indication of reducing *E.coli* concentration. Only during or after significant rainfall events does the *E.coli* concentration exceed stock drinking water guidelines (ANZECC 1992).
- Dissolved oxygen concentrations monitored continuously over almost two weeks in February 2006 showed five sites (Motupipi and tributaries) were below 60% for over 10 hours of a typical day. The site in the upper Motupipi River and McConnon Creek experienced concentrations below 40% for over nine hours of a typical day. Lower Powell Creek experienced the lowest concentrations of less than 20% for over an hour of a typical day (under 40% for seven hours). Concentrations in the lower Motupipi River (upstream of Powell Creek confluence) were below 45% for eight hours of a typical day.
- Fine sediment deposits to the bed of the main stem of the Motupipi are typically 300mm thick in areas of extensive aquatic plant cover (open to the light). Exposed cobbly substrate was evident in areas where there was extensive shading by riparian trees. Downstream of the Powell Creek confluence fine sediment deposits were greater than one meter.
- All macro-invertebrate community indices at all monitored sites in the catchment other than upper Powell Creek indicate poor water quality. Inanga and eel (tuna) appear abundant in parts of the catchment particularly in spring.

### **3. IMPROVING WATER QUALITY IN THE CATCHMENT**

The resident community and landowners are concerned about water quality and are taking measures to improve it. Over the past five years farmers in the catchment have undertaken a range of initiatives to improve water quality such as bridging, upgrades to effluent application and fencing waterways. Through a series of meetings with farmers, and a public meeting, an action plan has been drawn up to attempt to improve water quality. One particular action that involves the full community is establishing streamside vegetation to shading out the areas where aquatic plants are most prolific. An integrated catchment management approach is being used to ensure that all landowners are on board and all activities with potential to discharge contaminants to the catchment are investigated and addressed in priority order.

As part of Tasman District Council's commitment to MfE within the Clean Streams Accord we will be providing a report on the state of the catchment now, and then again in 5 years time. Through this period the community, with support from Tasman District Council, will be undertaking a range of initiatives to improve the water quality of the Motupipi River and the management of its contributing land areas. The landowners and local residents have been involved in setting up the programme and we will be working with them going forward (Appendix 2 outlines the work programme).

#### **4. RECOMMENDATION:**

That the Council receive the report entitled 'State of Surface Water Quality in the Motupipi Catchment'.

Trevor James  
**Resource Scientist**

Intensive monitoring to measure progress against the Dairying and Clean Streams Accord has been carried out for over seven years in four small-medium sized dairy farming catchment around the country (Waikato, Taranaki, Canterbury and Southland). 'Tier II' catchment monitoring programmes have been set up to complement these programmes in other regions but involve intensive monthly monitoring for one year and then again after significant employment of Accord measures in the catchment.

## APPENDIX 2

Further investigations are planned with the overall aim of determining the dominant sources and relative loadings of contaminants to the Motupipi River and tributaries, in order to provide information for a programme to improve the water quality and aquatic ecology of the catchment.

INVESTIGATION	TIMEFRAME
1. Determine the effects of discharges to surface water e.g. from Takaka, Fonterra factory, dairy farm effluent, silage pits, stock crossings and other potential contaminant sources.	Ongoing as part of regular compliance monitoring, complaints from the public or other surveillance.
2. Determining the level of nutrient and faecal contamination in groundwater in the upper Motupipi (also pull together the historical dairy factory compliance monitoring).	Began February 2007
3. Determining the relative contribution of faecal contamination from septic tanks or sewage overflows.	Likely start date late 2007
4. Determining the response of disease-causing organisms to rainfall.	Likely start date spring 2007
5. Determining the cause of benthic algae and scum downstream of Abel Tasman Drive. This would need to use either stable isotope analysis or microbial genetic tracer techniques that are expensive.	Unconfirmed whether this will go ahead.
6. Determine the ecological condition of the Motupipi Estuary (building on the information gathered from a resource consent application for subdivision in the area). A fine-scale and broad mapping of the Motupipi Estuary will occur in 2007-08. Determine the broad pattern of mixing in the estuary.	Will be contracted out in mid 2007.
7. Determine the extent of the issue of saline intrusion in bores in the lower part of the catchment.	Will determine the quantity of water abstracted in the area and, if this is significant or there are complaints, then an investigation could be launched.
8. Determine the effect of passive discharges from the closed Rototai landfill on the surrounding estuary. Analyse seepage and groundwater samples for hydrocarbons and a range of pesticides likely to have been dumped to this landfill.	Likely start date mid 2007. Jenny Easton and Engineering Dept to oversee.
9. Determine the numbers and diversity of birds in the estuary.	Commission the Ornithological Society to carry this out or a Royal Society fellow.