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Report to the Rural Services and Wairarapa Committee
from Matthew Morgan, Section Leader – Resource Investigations, Planning and Resources

Annual Hydrology Reports

1. Purpose

To inform the Committee of the findings of the 1999 Annual Surface Water Hydrology and Ground Water Hydrology Reports.

2. Background

A review of the Councils state of environment reporting in 1998/99 recommended the production of annual hydrology reports, which analyse the region's water resources over the entire Wellington Region rather than individually in Wellington and Wairarapa reports.

The reviewers agreed that the reporting year should be the calendar year (January – December) and due to the time delay in retrieving, processing and analysing the data, they should be reported by 30 June the following year. Issues beyond December 31, like summer low flows should also be included in the reports.

The Council collects substantial information relating to hydrology, at a detail that is beyond the scope of these annual reports. They are intended as summary, overview documents that supplement the hydrological database and technical reports containing more extensive analysis and investigations.

3. Key Findings

3.1 Rainfall and Climate

(1) The year 1999 began with a strong La Nina climate pattern that persisted through summer and autumn before weakening during winter, only to strengthen again towards the end of the year.

(2) 1999 had the most occurrences of anticyclones since records began in New Zealand. These produced more frequent easterlies over the North Island and weaker westerly winds.

(3) Mean temperatures were above average. Wellington was 1.1^{o}C above average and was the highest since records began. Wairarapa Valley was 1.2^{o}C above average.

(4) Total wind run in the Wairarapa Valley was 80 percent of the average.

(5) The region's 1999 annual rainfall was not significantly different from the annual average, ranging from 80 to 123 percent of the average.

(6) Rainfall across the region varied from 7008 mm at Angle Knob in the Tararuas to 751 mm at Martinborough.

3.2 River flows

(7) Most of the region's 1999 river flows tended to be below average, at between 60 to 90 percent of average. This is less than expected given the rainfall pattern, but can probably be explained by the low soil moisture levels following the 1997/98 drought, particularly in the Wairarapa eastern hills.

(8) The number of flood events in 1999 was significantly lower than previous years.

(9) Two flood events reached high alarm levels in the Wairarapa, one in May and the other in August when all lower valley floodways operated.

3.3 Ground water levels

(10) 1999 saw below average rainfall in the winter recharge months.

(11) Ground water levels particularly in rainfall recharge aquifers generally continue to be below average. Aquifers exhibiting significantly lower than normal water levels are the deeper aquifers in the Parkvale, Lower Valley and Martinborough Terraces zones.

(12) The highly allocated deeper Parkvale and Lower Valley aquifers have still not fully recovered from the summer drought of 1997/98.

(13) The groundwater allocation from the Martinborough Terraces zone has doubled over the last two years. Coupled with the below average recharge, water levels in the monitoring bore show a marked decline. Although allocation is only 8% of estimated overall safe yield, pockets of irrigated vineyard development may be placing stress in localised areas of the aquifer. The hydrogeology is complex in this area and further work is required to identify long-term abstraction limits.

(14) There has also been a huge increase in water allocation in the Huangarua groundwater zone in the last few years, from 0 to 68%, as a result of the vineyard expansion south east of Martinborough. A monitoring site is required in this area to monitor future groundwater level trends.

(15) The total maximum daily volume of groundwater allocated for abstraction in the Wairarapa increased by 5% in 1999 to 240,000 m^3/day. The increase has been 20 % in the last 3 years.

5. Communications

The findings will form the basis of an *Ecofile* newspaper article. Information from the reports will also be used in the Annual Environment Report, which is widely distributed.

6. Recommendation

That the report be received and the information noted.

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