

# NZWWA SPONSORS GROUNDWATER GATHERING

## - Mix of Professions Sets Agenda

Mark Milke, University of Canterbury

Another in a series of the 1994 NZWWA-sponsored workshops met on October 13 and 14 to discuss groundwater. The event began from efforts of D Ogilvie and was presented by the Centre for Continuing Education of the University of Canterbury with support from the NZWWA, the NZ Hydrological Society, Landcare Research, and the Canterbury Regional Council.

The two days at the Autolodge Motor Inn in Christchurch focused discussion on the topics of groundwater planning,

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allocation, supply, and pollution. The four topics were developed through a keynote speaker, and then a panel discussion. Mark Milke (Dept. Civil Engineering, University of Canterbury) served as chair and discussion facilitator.

About 40 participants attended some part of the workshop, and participants worked for regional councils, city/district councils, consulting firms, well drillers, and researchers. The geographic and professional mix allowed for wide-ranging discussion of groundwater concerns.

### Groundwater Planning

The first day started with a welcome by David Ogilvie on behalf of NZWWA and then a presentation by Frank Stewart, Canterbury Regional Council, on the new framework for groundwater planning under the Resource Management Act. In addition to a review of the RMA framework, Frank focussed on the need to avoid unnecessary bureaucracy in planning, and on the distinctions between rules and policy.

The ensuing discussion led to participants concluding that improved planning for groundwater management would come through

- better public education,
- better understanding of our groundwater resources, and an
- improved sense of guardianship of groundwater resources

### Groundwater Allocation

Andrew Fenemor, Tasman District Council, started the afternoon session with a discussion of models and tradeable permits and their places in groundwater allocations. He highlighted how models become most useful when they are tailored to specific management questions.

The topic of models was continued in the discussion session. A number of participants noted that model-phobia of the public and managers seems to be exaggerated by model users, and that models commonly operate behind the scenes without undue concern. Improved presentation of model results was seen to be the key to model acceptance.

The participants linked the allocation discussion to the planning discussion earlier in the day by noting that a proper allocation of groundwater can only take place after planning processes have clearly worked through water allocations during droughts, and have set environmental “bottom-lines” (eg, maintenance of biota in groundwater discharge zones).

The participants foreshadowed the second day's events by pointing to the interaction of groundwater quality and groundwater quantity issues. Participants noted that plans for artificial recharge via stormwater disposal or treated sewage disposal will need to carefully balance the advantage of augmented groundwater quantity with the disadvantage of deteriorations in groundwater quality.

### Groundwater Supply

The second day of the workshop started with a presentation by Tony Cussins and John Morrison of the Wellington Re-

gional Council on the groundwater supply system from the Lower Hutt aquifer. Tony Cussins discussed the hydrogeological setting of the artesian aquifer and the history of its development. He also highlighted their sophisticated head level monitoring system: the system is connected with their flood control monitoring scheme, and provides quick response time to limit the danger of sea water intrusion or other effects.

John Morrison went on to discuss the development of the water supply. The urban setting of the new Waterloo well field was chosen for technical reasons, and this setting has led to a number of difficulties. During testing of the well bores, they had the problem of draining away over 300 litres/sec of water in a suburban neighbourhood. After operation, they had problems of noise from a control valve at a well. Their supply is now connected to other supply systems in the Wellington area and the mix of surface and groundwater in the system are providing challenges. One challenge has been the flow of chlorinated surface water supplies in pipes designed for non-chlorinated groundwater supplies. The council is closely monitoring corrosion.

The idea of mixing groundwater supplies with other supplies was then discussed by the participants. The flexibility of a dual supply system and the ability to resolve quality problems were widely regarded as benefits, but concerns were mentioned as well: assuring an adequate chlorine residual would be more difficult in dual systems, and satisfying users' taste preferences would be difficult with variable water sources.

The presence of participants from the New Zealand Drillers Federation (NZDF) led to productive discussion on the relations between regulators, drillers, and the driller's customers. Participants provided means by which all three parties could improve the drilling process: regulators could vigorously prosecute those who violate permits and only enact regulations it intends to enforce, drillers could strengthen the NZDF to improve the practice of small, or part-time drillers, while the customers could be better informed of rules regarding wells, and better educated about groundwater occurrence, behaviour, and pollution.

### Groundwater Quality

The groundwater quality session had

Wayne Russell, Woodward-Clyde, to set the scene. He focused on uncertainty in groundwater pollution problems, and the fact that uncertainty leads to conservative designs and excess monitoring, and that this in turn leads to excess costs. He took as an example, the estimation of landfill leachate's impact on groundwater quality.

The discussion session covered many points and a couple of themes might be useful to relate. First, was an interchange of ideas on groundwater sampling protocols. The general conclusion was that sampling protocols were important, and that, generally, protocols had been improving recently. Still, concerns were expressed about:

- the proliferation of methods for measuring total petroleum hydrocarbons, and
- the proper means of filtering samples and the effects of various particle and colloid sizes.

Many participants noted that contamination of groundwater by toxic sites is very small - one is still surprised to find contamination. It was also acknowledged that there are likely to be more "surprises" waiting to be found, and that the political dimension of these sites made them difficult.

The impact of agriculture on groundwater quality generated more discussion than the impact of toxic chemicals. A key viewpoint put was that land use controls are needed to protect certain groundwaters. It may be appropriate to have farming industries demonstrate "sustainability" with respect to groundwater quality.

This topic neatly wrapped up the workshop when participants noted that computer models would be actively used in assessing the need for land use controls, and so the concerns about model use discussed earlier with respect to groundwater allocation also applied to groundwater quality. Attendees suggested that the limitation will be getting farming communities "on-side"- in concert with the discussion on planning, there seemed to be a need for technical education for land users, and a need for imbibing people with an understanding of the close relationship between land use actions and groundwater quality.

The proceedings from this Workshop will be available later in the year.

## ENTEROCOCCI WORKSHOP

On Friday 9 December an excellent gathering of 32 people attended the NZWWA Enterococci Workshop at the Wellington Polytechnic. Participants came from Auckland to Invercargill to be brought up-to-date with the methodology in enterococci testing.

The facilitators were Gillian Lewis, Environmental Science, University of Auckland; Andrea Donnison, Environmental Management, MIRINZ; and Stan Abbott, Nursing, Health and Environmental Sciences, Wellington Polytechnic.

The theoretical session of the workshop covered the basis of bacterial indicators, the classification and sanitary significance of enterococci, and the Provisional Microbiological Water Quality Guidelines.

The workshop concentrated on the practical aspects of enterococci testing, including sample handling and processing, membrane filtration techniques, multiple tube techniques, QC and reporting.

Highlights (apart from the excellent lunch) were the large scatter in the number of positive colonies identified by the par-

ticipants when counting the same plates, the Gram stain refresher course, and meeting people from over all the country who are doing similar work.

Responses to the questionnaire sent to participants were most positive, with many expressing the hope that another workshop would be held in the future, especially once the guidelines are no longer "provisional".

The success of the course was in a large part due to the energy of the local organiser, Stan Abbott. Andrea and Gillian are thanked for their excellent presentations. Thanks are also due to the Ministry of Health for supplying each participant with a copy of the manual they commissioned in May 1994 from Gillian and Andrea: "Microbiological Methods for Monitoring Saline Recreational Waters".

Thanks are also due to the Wellington Polytechnic for generously providing the facilities, and to the Ministry of Health and the Public Health Commission for financial assistance, and Lab Supply Pierce NZ Ltd and Intermed Scientific Ltd are thanked for supporting the brochure.

## NZWWA 1995 ANNUAL CONFERENCE AND TRADE DISPLAY

### WATER SOLUTIONS - at what cost?

*at the Ellerslie Convention Centre, Auckland, 5-8 September*

We have had an excellent response to our Call for Papers so you can be assured of a very interesting conference on Wednesday 6 September to Friday 8 September.

#### ALSO

We are planning three very interesting

**PRE-CONFERENCE WORKSHOPS** for Tuesday 5 September:

- Analytical Workshop
- Inflow/Infiltration Workshop
- Air Quality and Odour Issues Workshop

#### AND

We intend to offer a day for Operators to visit some of the region's water and wastewater treatment units.

The Land Disposal Collective and the Water Supply Managers are also planning to hold meetings on the Tuesday.

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