



THE HYDROLOGICAL SOCIETY OF S.A.

Water Resources Branch
Box 1751, Adelaide, S.A. 5001

Newsletter No. 43

June 1982

1. Programme of meetings for 1982 (remaining to be held)

24th June: (Thursday); "The history and state-of-the-art of water-well completion" by R. Hancock, Department of Mines and Energy.

20th August: (Thursday); Annual General Meeting - "The hydrology of salt lakes" by J. W. Holmes and R. Schmid, School of Earth Sciences, Flinders University.

28th October: (Thursday); "Whey disposal and waste treatment proposals in the South-East", by a panel of speakers.

All of these meetings will commence at 7.45 p.m. and will be held at the Charles Hawker Conference Centre, Waite Institute.

2. The National Committee for Hydrology

The National Committee for Hydrology is a committee of the Australian Academy of Science. Its membership was renewed and changed, in accordance with the Academy's policy, during early 1982. The new members are,

Mr. D. N. Body (Chairman), CSIRO, Canberra,
Dr. G. B. Allison, CSIRO, Adelaide,
Prof. T. G. Chapman, University of New South Wales,
Dr. C. R. Lawrence, Department of Minerals and Energy, Victoria,
Dr. E. M. O'Loughlin, CSIRO, Canberra, and
Prof. W. D. Williams, University of Adelaide.

The committee considers an important part of its work, in the immediate future, is to develop a more formal structure within Australia for effective liaison with the International Association of Hydrological Sciences.

3. News from the Engineering and Water Supply Department

3.1 Investigation of Salinity Mitigation Between Lock 2 and Lock 3

The State Government is funding an investigation into the feasibility and effectiveness of controlling the flow of saline groundwater into the River Murray between Locks 2 and 3.

Salinity increases of up to 200 E.C. units can occur during periods of regulated flow. Within the 19 kilometre reach from Woolpunda to Lowbank alone the salt intake has been estimated at 300 tonnes per day. As there is little irrigation in this reach, it appears that the bulk of this saline inflow can be attributed to natural groundwater.

The consultants engaged for the investigation are Coffey and Partners, in association with Sinclair Knight and Partners and McGowan International.

It is anticipated that the study will be completed in October, 1982 to enable co-ordination of the results with the stage-development of the River Murray Water Quality Management Study being conducted by Maunsell and Partners for the River Murray Commission.

3.2 Angas-Bremer Feasibility Study and Irrigation Survey

The Minister of Water Resources has approved an inter-departmental proposal for a joint feasibility study and irrigation survey of the Angas-Bremer Proclaimed Region. The twelve month study commencing in July 1982 is expected to cost \$121,000 and will investigate options for the management of problems associated with deteriorating groundwater salinity.

This situation has arisen principally as a result of

- (a) groundwater being extracted at a rate of approximately 25,000 ML per year, compared to a natural recharge rate (not including induced recharge) estimated to be only about 5,600 ML per year, and
- (b) The development of two permanent cones of depression, which have led to the creation of a "salt trap" with an inevitable rise in salinity in the confined aquifer.

Estimates of the average salt load entering the confined aquifer range from 46,000 to 80,000 tonnes a year. It is anticipated that groundwater modelling will resolve this uncertainty.

The study will be undertaken by staff from the Departments of Agriculture, Mines and Energy, Environment and Planning and the Engineering and Water Supply Department.

4. News from the Department of Mines and Energy

4.1 Use of Transducer in Aquifer Tests

Aquifer testing at the Honeymoon Uranium Prospect revealed discrepancies between aquifer parameters obtained from drawdown measurements at individual piezometers (time/drawdown curve, non-steady state) and those parameters obtained from considering drawdown measurements from several different piezometers simultaneously (distance/drawdown curve, steady state conditions).

The discrepancies were found to be due to the slow response of the water levels in the piezometers to very early changes in pressure in the aquifer. The problem was overcome by sealing a pressure transducer within the aquifer interval of the piezometer with a modified pneumatic packer which isolated the transducer from the column of water inside the piezometer casing. The transducer digitally recorded near-instantaneous pressure changes within the aquifer. The derived parameters were then similar to the steady-state distance/drawdown results.

4.2 Water Well Acidization Experiment

After geophysical logging and a 24-hour production test on a selected well, drilled into the Gambier Limestone aquifer, an acidization treatment of the well was undertaken using 1,200 litres of hydrochloric acid. After injection, the well was sealed for 20 hours to allow it to be pressurised by the generated carbon dioxide.

Following re-development, the caliper log showed a minor increase in hole diameter below the casing, and another 24 hour test indicated an increase in well efficiency by about 15%. Although not dramatically successful, additional testing is recommended in other areas.

5. Hydrology and Water Resources Conference

The annual conference of the Institution of Engineers, Australia on Hydrology and Water Resources was held in Melbourne during the period 11-13 May. It was combined, this year, with the First National Symposium on Forest Hydrology. The papers for both the meetings have been published and are available for purchase from the Institution of Engineers, Australia, 11 National Circuit, Barton, ACT, 2600. Several of the libraries in Adelaide have copies for loan. The two volumes, together, are likely to be regarded as a milestone in the recording of hydrological research in Australia.

6. Forthcoming events, conferences, etc.

6.1 The Committee for Hydrological Research, TNO, The Netherlands, has announced that it is sponsoring an International Symposium on Methods and Instrumentation for Investigations of Groundwater Systems, 2-7 May, 1983. The Chairman of the Bureau, Mr. H. J. Colenbrander, who is also one of the secretaries for IAHS, is keen to obtain support by papers and attendance for the topics, "Criteria for optimal sampling strategies and network design" and "Instrumentation for the acquisition and processing of geo-hydrological data". Information about the symposium can be obtained from him, C/- Bureau of the Committee for Hydrological Research, TNO, P.O. Box 297, 2501 BD The Hague, The Netherlands.

6.2 Symposium on Prediction in Water Quality. The programme for this symposium has now been finalised. The papers, 22 in all, have been commissioned in the following topics - 1. Overview of Australian situation. 2. Hydrologic cycle. 3. Quality transformations at the land surface. 4. Quality transformations in porous media. 5. Quality transformations in free water. 6. Aspects of specific quality determinants. 7. Data collection. 8. Some water quality issues in Australia. The Symposium will be held in Canberra during the period 30 Nov. - 2 Dec, 1982. Information about it can be obtained from The Secretary, (Attn. Mr. P. O'Connor), Australian Academy of Science, P.O. Box 783, Canberra, ACT, 2601.

6.3 The I.U.G.G. General Assembly

The International Union of Geodesy and Geophysics, of which IAHS is a constituent Association will meet in Hamburg in August, 1983. Its previous meeting was in Canberra, attended by a number of HSSA members. There will be a Programme in Hydrological

Sciences. Further information is available from your Newsletter Editor.

6.4 Bi-Centenary, 1988

The Australian Bi-centennial Authority has begun to publicise its work to provide suitable events and commemorations for BICENTENARY '88. Should a scientific society such as ours respond to the call? The Committee would entertain, perhaps even welcome, suggestions from members.

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