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EDITORIAL

HYDROLOGY AND THE ADMINISTRATOR

The time is fast approaching when we must pay more attention to the optimal management of land for water yield and to its allocation. Historically New Zealand is a young country and we are not faced with the large scale problems of more heavily populated countries or of those with less favourable climates. We are, however, beginning to experience the kinds of problems met elsewhere and we have the opportunity to learn from others' mistakes and from their solutions, before we get into crunch situations.

It behoves us then to look at the structure of the organisation charged with the administration of our water resources, how they are advised and serviced, and where the hydrologist fits into the picture. The starting point is legislation, the Water and Soil Conservation Act 1967 which is:

"An act to promote a national policy in respect of natural water, and to make better provision for the conservation, allocation, use and quality of natural water, and for promoting soil conservation, and preventing damage by flood and erosion, and for promoting and controlling multiple uses of natural water and the drainage of land, and for ensuring that adequate account is taken of the needs of primary and secondary industry, water supplies of local authorities, fisheries, wildlife habitat, and all recreational uses of water."

To administer the Act we have a National Water and Soil Conservation Authority comprising:

The Minister of Works and Development as chairman.

One member appointed by the Governor-General on the advice of the Minister.

Five other members similarly appointed, representing the Water Resources Council, the Soil Conservation and Rivers Control Council, the Catchment Authorities Association, and the Municipal and County Associations.

The Authority's functions and powers are spelt out in five pages of detail, elaborating on the long title. Of particular interest to this society are the following:

To examine problems concerning, and make plans in respect of the allocation and quality of natural water.

To guide and encourage research in matters relating to natural waters and of soil conservation in the best public interests.

To carry out hydrological research, and to promote research in matters where . . . there is a lack of research data which would enable the applicability of overseas work to New Zealand conditions to be assessed.

To carry out surveys and investigations for the purpose of ascertaining the causes, nature and extent of the deterioration of the quality of natural water.

To organise and encourage research into ways and means of maintaining or improving the quality of natural water overall.

Perhaps its functions and objectives are expressed simply in one subclause which reads:

“To coordinate all matters relating to natural water so as to ensure that this national asset is available to meet as many demands as possible and is used to the best advantage of both the country and the region in which it exists in the course of nature.”

The Authority meets monthly and determines policy in terms of the legislation and among other things, grants Crown water rights. Beneath the Authority are two councils—Water Resources and Soil Conservation and Rivers Control. The former currently consists of a chairman, who is not a Government officer or employee; five officers representing Agriculture and Fisheries, DSIR, Works and Development, Health, and Transport; three representatives of local authorities (Counties, Municipalities, and Catchment Authorities) and one each to represent Federated Farmers, Manufacturers' Federation, Dairy Board, Meat Industry Research Institute, and recreational interests. The National Authority delegates to the Water Resources Council those of its functions which relate to the quality and allocation of water, within certain limits.

At the territorial level there are 20 regional water boards each with their own functions and powers and which by and large have representatives of local Government, elected or appointed, and of Government Departments. These regional water boards exercise functions and powers delegated to them by the Authority or the Water Resources Council and act as their agents.

Their main function is to “promote the protection of water supplies of local authorities and the conservation and most beneficial uses of natural water within the region, including the promotion of works and projects for the conservation of natural water, and projects for the multiple use of natural water”. A particular function of great importance is the granting of water rights, other than to the Crown, although even in this case water boards are required to make recommendations to the council and Authority. Some delegation is being made to boards to handle minor Crown water rights.

It is no secret that water and soil legislation is under review and that in anticipation certain moves have been made in servicing the two councils and in coordinating their work. It may well be that in due course there will be only one council, thereby giving full recognition to the close relationship between the management of land and the management of water.

As a further expression of this inter-relationship four committees have been set up to advise both councils, namely: Administration and Finance, Policy and Planning, Works, and Research and Survey.

In view of the professional nature of this society the Research and Surveys Committee composition and function is relevant. This committee is chaired

by the deputy chairman of the Water Resources Council and has 13 other members with a wide range of experience in water and soil conservation, science, and industry. Its terms of reference are to make recommendations on matters concerning research and survey, particularly where existing policy needs revision. Its scope includes work being carried out by Water and Soil Division staff, Ministry of Works and Development, catchment and regional water authorities, and by other agencies in those areas concerning water and soil with which the National Water and Soil Conservation Organisation is involved.

One of the first tasks of this committee has been to review the work programme of the research and survey section of the Water and Soil Division and of the regional water boards/catchment boards and contracts entered into with universities. In order to further its work this committee has in turn set up three working parties for water quantity, water quality, and land resources, and has brought even more people with scientific and associated experience into closer contact with the work of the organisation.

As chairman of the two councils I am well aware of the benefit of the widest possible consultation in respect of achieving the objectives and performing the functions of the councils and of the Authority. I am equally very conscious of the high degree of dependence of these bodies on scientific input when making decisions, and of the trust placed in those who give technical advice. This brings me to that much debated subject of how much research effort can we afford in fields not clearly and closely related to the task in hand.

There will always be a place for fundamental research aiming at better understanding of natural processes but I make no apology for asking that the greater emphasis be given to acquiring and testing data from which sound conclusions can be drawn and management decisions based as and when society demands they be made. Sooner or later the administrator has to make decisions within approved policies and in terms of statutory authority. In the administration of water resources his ultimate power and responsibility is what can be done with a given body of water. To do this he must know how much of it there is, how much it will fluctuate in quantity, what its quality is, what uses are currently made of it, what are the foreseeable demands on it in both quantity and quality and what will be the consequences of certain forms of land management and of discharges into it of various kinds. It is obvious that answers to most of these questions must be sought from hydrologists.

We are far from being in possession of all the facts we need, but there is being accumulated a wealth of data which can be used to compile water management plans or strategies for individual regions or catchment areas. These plans form the basis for the next step, that of preparing water allocation plans which, although they have no statutory standing, provide a means of presenting all available facts, and of outlining how the water resource could or should be managed. Public comment is invited during the preparation of water allocation plans.

The critical stage is reached when these plans are translated into legal water rights, with statutory provision for submissions and objections, and for subsequent appeal to the Town and Country Planning Appeal Boards and if need be, on matters of law only, to the Supreme Court. It should be abundantly clear by now how vital is the information supplied by hydrologists during the planning stages. This information will be put to the test when water right

applications are considered by the regional water boards and when their decisions may be contested on appeal.

It is not just the administrator who will be involved in these democratic processes. There will be times when the hydrologist will have to stand up and be counted. I come back to the point I made earlier, that whether we like it or not, we have to direct the bulk of our research and survey effort into producing scientific understanding and resource data to allow decisions to be made, however temporary or provisional they may be. The needs of society must be met and society's impatience is apt to wear thin at long delays in decision making.

I identify some of the more pressing problems or matters of major public interest and cannot but be impressed by their variety. For example:

In the management of high country is the aspect of water yield being given adequate recognition? In more detail, is the current policy in respect of cattle in tussock country in need of review, and are the effects of exotic forestry on minimum flow under different climatic and soil conditions fully understood?

Much has been heard in the last year or two about wild and scenic rivers and regional water boards have been asked to assemble information which will help in the accommodation of these interests, along with other valid competing claims on the use of such waters.

These few examples have I hope illustrated the range of hydrological issues. Another way to illustrate many of them would be to take the case of greater Auckland's future water supply. A geographer could involve himself in a fascinating study embracing the multiple use management of local water supply catchments (exotic and indigenous forestry production and recreational use), the contribution from and allocation of the underground water of the Pukekohe Plateau, and the whole water regime of the Waikato River. What a wide hydrological field of study is then opened up, involving an understanding of alpine processes at the head of its tributaries, including those of the Wanganui River; natural and man-made lakes and the uses made of them for power generation, fishing and international rowing fixtures; land management; aesthetic considerations; industrial requirements including discharge rights for pulp factories, meatworks, geothermal and coal-fired power plants; sand and gravel extraction. The mind begins to boggle at the number of channels one could follow from this starting point.

While hydrology links many disciplines—engineering, meteorology, soil conservation, forestry, chemistry, geology, etc.—this linkage is not sufficient in itself. There must be the further link with those who have to abide by legislation, to formulate policies and to put them into practice for the public good. It is for this reason that I have dwelt on legislation, on the structure of statutory and advisory bodies, and on the machinery for consultation at professional and lay level. If there is one specific request I would make it is that whatever the particular expertise and whatever the personal career preferences, thought should be spared for those administrators and managers who place reliance on research findings and translate them into action in the more exposed public arena.

(Editor's Note: This is an edited text of an address by Mr M J Conway to the December 1978 Society Symposium held in Wellington. Mr Conway is a member of the National Water and Soil Conservation Authority and chairman of its two councils, the Water Resources Council, and the Soil Conservation and Rivers Control Council.)