

REFLECTIONS ON POLICY RELEVANT RESEARCH

Irving Fox

Professor Emeritus
University of British Columbia

My own involvement in the field of water resources management dates back to the early 1950s, when I was a staff member of the Commission on the Organization of the United States (U.S.) Federal Government, chaired by former U.S. President Herbert Hoover. Following this experience, I was attracted to positions in the U.S. Department of the Interior dealing with the coordination of natural resources in the south-central U.S. This was followed by a period on the staff of Resources for the Future (RFF) in Washington, D.C., and then as a faculty member and director of a water resources research program, first at the University of Wisconsin and lastly at the University of British Columbia.

The focus of these reflections is the research program I directed at Westwater Research Centre at the University of British Columbia during the period from 1972 to 1976. Since that time institutional arrangements for water management have been evolving to embrace the entire basin of the Fraser River. After describing and assessing the 1972-1976 program of Westwater, I will endeavour to demonstrate briefly how that study relates to the kinds of institutional changes that have followed since.

THE WESTWATER PROGRAM, 1972-1976

In the sections that follow there are summaries of (a) the general nature of the water quality problem, (b) the research activities undertaken by Westwater, and (c) an identification of the distinctive features of the program. The water quality of the Lower Fraser was regarded as important by many people because of the river's significant salmon runs, and the amount of use made of the river by the region's growing population and expanding economy. Some available evidence indicated that quality conditions were deteriorating. It was evident to many that there was a need to define the problems that existed and to implement a program to deal with the situation. The studies launched by Westwater in 1971 aimed to (a) identify the nature and significance of water

quality conditions, (b) identify the remedial measures that should be implemented, and (c) determine what additional knowledge beyond that produced by the studies was required to make reliable decisions.

THE SPECIFIC PROGRAM UNDERTAKEN

The program of Westwater to address the water quality situation in the Lower Fraser included the following:

1. A set of studies designed to determine water quality conditions in the mainstream and tributaries of the Lower Fraser and identify sources of pollution.
2. A set of studies to define the biology of the Lower River and the ecological effects of existing pollution on the biological quality of its water resources.
3. Studies of the nature of the task of implementing pollution control measures to achieve acceptable water quality conditions.
4. An assessment of institutional arrangements for pollution control and the design of alternatives for making institutional arrangements more effective.
5. In light of the findings of the foregoing studies, the development of proposals for (a) the design of long range goals for pollution control, (b) the specification of concrete actions to control pollution, (c) the design of ways to strengthen management, including changes needed in institutional arrangements, and (d) the identification of further investigations required.
6. Communication of the results of the studies to the general public of the region through a series of public lectures and the publication of a book, *The Uncertain Future of the Lower Fraser*, based on the lectures.

THE DISTINCTIVE FEATURES OF THE PROGRAM

There were five features of the program that distinguished it from most other water quality studies undertaken during that period of time, namely:

1. The program of studies was designed to deal with the water quality problem in a comprehensive fashion. It was not limited to specific point sources of pollution but was concerned with all potential sources in the Lower Fraser. (Specific studies of the upper Fraser drainages were not undertaken.) In addition to a comprehensive coverage of water quality conditions, biological conditions in the drainage system were addressed, institutional arrangements for controlling pollution were assessed, and changes needed for strengthening water quality management institutions were designed and recommended.
2. The kind of program undertaken required a research staff with qualifications in a range of disciplines, including chemistry, engineering, economics, biology, law, and public administration. This insured that the range of perspectives provided by the several disciplines resulted in the application of analytical techniques and perspectives that enriched the study program. In addition, there was continuing interaction among staff members which assured critical assessment of alternative approaches to the problems being addressed.
3. It was recognized from the outset that the values and perspectives of members of the affected public needed to be taken into account in defining the content of the planning program. Consultation with a full range of interests on the design and conduct of the study program was initiated at the outset of the study program and continued throughout its implementation.
4. The results of the studies showed that it was not possible to provide definitive answers to all aspects of the water quality problem, nor could all the problems that might arise in the future as populations grew and industrialization increased be foreseen. Consequently, Westwater's report, *The Uncertain Future of the Lower Fraser*, gives substantial attention to the need for on-going studies to provide a solid basis for future decision making.
5. As previously noted, there was a recognition that it was essential to communicate the findings of the studies undertaken to the general public.

THE GENERAL CONTEXT OF THE LOWER FRASER STUDY

In a democratic society, the appropriateness of a given public program should be determined by the values of the public being served. Therefore, the planning process must be designed and conducted to provide the public with the information required to determine whether a given program or an alternate accords with their values. Implementation of this concept requires interaction of the planning staff and a representative body of members of the affected public. While the studies conducted by Westwater may not have taken into account every one of the values held by every member of the public, its involvement of members of the public in the planning process resulted in analyses and, in turn, to the design of proposed programs that were about as responsive to the range of public values as is practicable in a complex program of this nature.

One may well ask what impact the Lower Fraser studies had on the management of the water resources of the region in the years that followed.

In considering this question, one must recognize that resource management decisions in a region of this kind flow from the operation of a complex political and economic system. It is fair to conclude that the participants in this system could not ignore the results of Westwater's studies in making future decisions. In fact, Westwater's research resulted in negotiations within the political system that led to substantial additions to the institutional structure of the region. A Fraser River Estuary Management Program was undertaken, and in recognition of the physical and economic interrelationships between the upper and lower Fraser, a Fraser Basin Management Board and Program was launched. While these arrangements were not specifically proposed in Westwater's report, they were fully compatible with the ideas outlined in it. As the new arrangements were implemented, staff members of Westwater were consulted and Westwater continued to pursue the kind of research program recognized in the *Uncertain Future of the Lower Fraser* as being important.

Of major importance, Westwater has expanded the scope of its program from a focus on the Lower Fraser to embrace the entire basin of the Fraser River. In 1991 it provided a follow-up to its publication *The Uncertain Future of the Lower Fraser* by publishing a volume that deals with the Fraser Basin as a whole, entitled *Water in Sustainable Development – Exploring our Common Future in the Fraser River Basin*. In addition, Westwater

sought to enrich public understanding of the task faced in managing the resources of the Fraser Basin by publishing a volume of papers prepared by water management experts from around the country entitled *Perspectives on Sustainable Development in Water Management: Towards Agreement in the Fraser River Basin*.

These later developments demonstrate that the kind of multidisciplinary research program with public interaction that we designed in the mid-70s set in train a dynamic political process that is ongoing today. At the same time, this process has evolved over the past three decades, Westwater has continued to provide an intellectual environment and input that cannot be ignored by the political institutions in making water management

decisions in the region. As I look back over my career, this is one of the most gratifying activities with which I have been associated.

As we enter the Third Millennium, conditions around the world indicate that we must manage water resources with particular forethought and intelligence if very serious consequences for humanity are to be avoided. Limitations on the supply of water to meet future human requirements is a matter of global concern. It is my view that programs, such as the multidisciplinary research on water quality in the Fraser River that I have described in this brief paper, will be needed on a broad scale around the world to provide a basis for sound water management in the coming millennium.