CONFERENCE SUMMARY

"Water - Our Limiting Resource"
Towards Sustainable Water Management in the Okanagan

a conference hosted by the
B.C. Branch of the Canadian Water Resources Association
February 23-25, 2005
Kelowna, B.C.

Introduction

Between February 23 and 25, 2005, 180 people gathered in Kelowna to discuss the past, present, and future of water management in the Okanagan. The purpose of the conference was to advance the cause of improved water management in the Okanagan by inviting speakers to lead discussion of the issues, and to conclude by developing a series of practical recommendations for decision-makers. The conference was organized by the B.C. Branch of the Canadian Water Resources Association (CWRA), a national organization dedicated to the wise use and sustainable management of Canada's water resources.

This report summarizes the conference and the recommendations made by the delegates. A complete record of the conference presentations is contained in the Proceedings, which are available from the CWRA bookstore (www.cwra.org).

Background

The Okanagan watershed, covering 8,000 km^2 in the south-central interior of British Columbia, is characterized by a north-south running main valley with elevations ranging from approximately 300 m at the valley bottom to 1,500 - 2,000 m on the surrounding plateau's to the east and west. It is a relatively small and arid watershed, with annual precipitation averaging about 300 mm in the dry valley-bottom to over 700 mm in the higher elevation plateau areas. The main valley contains several significant lakes (e.g. Kalamalka/Wood, Okanagan, Skaha, Vaseux, and Osoyoos), that provide storage and remove pollutants, and the Okanagan River that flows out of Okanagan Lake, connecting Skaha, Vaseau and Osoyoos lakes before flowing into the Columbia River in the United States. These lakes, the Okanagan River, and tributary streams, provide essential habitat for a large number of aquatic and terrestrial species. The economy includes forestry, mining, and recreation (primarily in the upper plateau areas), and agriculture (particularly tree fruits and vineyards), tourism, and residential and commercial development (primarily in the valley bottom areas).

The water resources of the Okanagan Basin were extensively studied 35 years ago as part of the Okanagan Basin Study - the results of which were summarized in a report titled *Main Report of the Consultative Board*, released in March 1974. The report included eleven main recommendations focused on sustainable water management for the

Okanagan. Thirty-one years later, only a few of these recommendations have been acted on.

The water resources of the Basin are now heavily licensed, primarily for agriculture and domestic water supply. There are some licences and other agreements in place in a few sub-basins to preserve minimum flows for fisheries and aquatic ecosystems. Land and Water B.C. Inc., the Crown corporation responsible for allocation and licensing of water, has designated about 90% of the main tributaries to Okanagan Lake and the Okanagan River as "fully allocated", meaning that no new licenses for offstream water use will be issued unless supported by storage. Water suppliers are beginning to experience shortages in drought years, and flows in some streams frequently drop below levels required to meet minimum survival requirements for some aquatic species.

The demand for water continues to increase. Since 1974 the population has increased at a faster rate than even the highest of the projections made in the Okanagan Basin Study, and is now nearly triple what it was in 1974. The population growth is predicted to continue, meaning an increased demand for water. In addition, three global climate models indicate that in the future summers will tend to be longer, warmer, and drier than they are now (continuing the climate trends that have been recorded in recent years). Thus more water will be required to irrigate gardens, golf courses, and agricultural fields. In addition, the global climate models predict that the streamflows that replenish the Basin's water reservoirs will become smaller in the future. The result will be increasing demand with a decreasing supply of water.

If these trends continue, the economic and environmental well being of the Okanagan basin will be seriously threatened within the next several decades, and action on several fronts is required in the short term to avoid a crisis.

Conference Summary:

The conference took place over three days - February 23, 24, and 25, 2005. On February 23, the delegates attended a series of technical presentations highlighting water management initiatives underway in the Okanagan. These included presentations on:

- an Okanagan Lake foreshore inventory and mapping project being completed by the Regional District of Central Okanagan;
- the physical limnology of Okanagan Lake;
- the history of regulation of Okanagan Lake;
- recent changes in the climate of the Okanagan;
- recent and potential future changes in crop water demand related to climate change;
- the Trepanier Landscape Unit water management plan;
- research on implementation of land use and water management plans;
- research on the use of a hydrologic model to predict changes in streamflows due to large-scale forest removal (e.g. following a forest fire or beetle infestation);
- a new research project involving the building of a water management decision support tool for the Okanagan;
- post-wildfire landscape rehabilitation in the Kelowna area;

- recent trends in water use in the Glenmore-Ellison Improvement District;
- the use of the Water Use Plan approach to resolve water management issues on Trout Creek in Summerland;
- a review of the experience and successes of the agricultural water conservation program in the South-East Kelowna Irrigation District;
- recent advances in the use of information technology for demand and supply management in Vernon;
- the status of an experimental program to re-introduce sockeye to Skaha Lake;
- the Okanagan Fish-Water Management Tool - an Internet accessible software application that helps set the water releases at Okanagan Lake Dam to better balance multiple objectives;
- an approach to wellhead protection based on risk assessment;
- water quality trends and proposed new water quality objectives for Okanagan Lake;
- a new project of the Municipality of Summerland to build a water intake in Okanagan Lake; and
- a proposal to eliminate water rights and replace them with tradeable water allocations, and to create a market for water in the Okanagan.

In addition to these presentations, six posters describing ongoing water management-related research relevant to the Okanagan were on display over the course of the three-day conference.

Most of the presentations were supported by a written paper in the conference Proceedings, which are available from the CWRA (via the website - www.cwra.org). Although each of the papers reports on a specific situation, many of them conclude with a valley-wide perspective.

On Thursday, February 24, delegates listened to a series of invited presentations designed to review the state of knowledge of Okanagan water resources and to identify the key water-related issues in the Basin. Presentations included the following:

- a review of the 1974 Okanagan Basin Study findings and recommendations, focussing on water supply and demand, and concluding with a summary of which of these recommendations have been implemented in the intervening 31 years;
- a review of an ongoing project intended to comprehensively update the water supply and demand analysis for the Okanagan Basin last done on a basin-wide basis in 1974;
- a review of groundwater knowledge in the Basin, and of a recently-initiated large-scale project involving several partners, intended to provide a great deal of new information on groundwater resources and groundwater use in the Okanagan Basin over a 7 to 10 year time frame;
- a summary of the role of natural and anthropogenic influences on lake and stream water quality, and of the very important role of the main valley-bottom lakes (e.g. Okanagan, Kalamalka/Wood, and Osoyoos) in removing pollutants and improving water quality;

- a review of the status of basin-wide knowledge of fisheries and aquatic resources, and of several large-scale fisheries projects being led by the Okanagan Nation Alliance (ONA) - this presentation coincided with the release of an ONA report entitled "*The State of Fish and Fish Habitat in the Okanagan and Similkameen Basins*";
- an analysis of the potential effects of population growth on water demand, assuming various possible future land-use scenarios;
- a review of recent research on climate change and the implications for both water demand and water supply - which has concluded that demand for agricultural and outdoor domestic water will increase, and water supply will decrease, and that the key challenges facing us now are finding ways to adapt to these changes; and
- a review of several other key water-related issues facing the Okanagan, from the perspective of local governments.

A keynote banquet speech on February 24 by retired former academic and federal cabinet minister Dr. Tom Siddon used personal experiences to illustrate the gulf that frequently exists between scientists and politicians, and highlighted the need to bridge the gap in order to achieve more effective water management policy and practice.

The February 24 presentations set the stage for the morning of Friday February 25, at which invited speakers focussed on both the challenges facing the Okanagan and possible solutions. Presentations included:

- an overview of the key land and water-related challenges facing planners and managers in the Okanagan;
- an overview of several basin water management models in use in Canada, the U.S. and around the world, including the essential common attributes of these models required for success;
- a detailed review of demand management strategies in use in the Okanagan and elsewhere, and of the need for wider adoption of demand-side management in the Okanagan to help in the adaptation to population growth and climate change;
- an introduction of an approach to achieving a balance between water supply and demand in the Okanagan; and
- a review of information requirements for water-related decision-making, including a recommendation to establish an Okanagan information clearinghouse.

On Friday afternoon, participants were divided into five groups, and each group considered the insights and recommendations provided by the conference speakers under one of the following topics:

- governance;
- water quality and fish;
- water supply and demand;
- information management; and
- communication and trust building.

Each group also developed recommendations for improved water management relevant to their assigned topic. The five groups then assembled in a full plenary session to share their recommendations. In this plenary session, several of the key recommendations were simplified and agreed to by consensus amongst all the delegates. The plenary session was followed by a press conference, in which a brief summary of the conference and the list of simplified recommendations were presented to the media.

Summary of Discussion Group Recommendations:

The recommendations made to the full plenary session by the five discussion groups are presented here. There was insufficient time for a full debate on each recommendation at the conference, so the detailed recommendations were circulated for review to all conference delegates following the conference. Comments received were very supportive of the recommendations of each group. There is no implied priority to the order of presentation.

Governance

- Build on a resolution of the three Okanagan Regional Districts to form an Okanagan Basin Water Council with a mandate to coordinate basin-wide water management.
- Assign a local MLA and local government elected official to champion and seek partnerships and advance the development of the new governance model.
- Commit skilled staff and adequate financial resources to develop and implement this new model (through cost sharing with local governments).

Water Quality and Fisheries

- A comprehensive ecosystem sustainability strategy should be developed that incorporates a shared vision and basin-wide thinking.
- The sustainability strategy should address conservation, water supply, water quality and limits to growth, should assure baseflows for aquatic ecosystems, and should address the protection and restoration of aquatic habitat.
- Increased demand management by all sectors (particularly agriculture and outdoor domestic use) is urgently needed.
- Public education should be a key strategy to achieve success in demand-side management.

Water Supply and Demand

- Citizen groups should be convened to establish broad water use policies for supply and demand, as a re-working of public process in the 1974 Okanagan Basin study.
- Demand management should be a priority for all economic sectors, for both existing and new development.
- A realistic per capita target for water use should be established for the Okanagan;
- Water pricing should be based on volume used, premiums should be paid for excess volume used, and rewards should apply for conservation.

- Education should focus on elected officials and children, but demand-management should also make use of other tools such as volume-based pricing and universal metering.
- Adequate water should be reserved for agricultural use in the valley, and the best use of water should be promoted within the Agricultural Land Reserve.
- It should be recognized that surface water, lake water, and groundwater are all the same resource and should be managed together - for example groundwater use should be licensed.
- It is necessary to balance existing water supply and demand both now and into the future through better management, including understanding the proportion of water being permanently removed from the Basin via consumptive use, and promoting the retention of as much water as possible.
- Water allocation decisions should be based on the best use appropriate to the source.
- Urban planners should consider infiltration of water in making land-use decisions, for example, rainwater harvesting should be considered, subdivision planning should be improved, and more permeable surfaces should be promoted.
- Up-to-date land use data need to be made available to water allocation decision-makers.
- It is critical for decision-making that the hydrometric network be maintained and expanded.
- Options should be investigated for reform of the water licensing system, including consideration of market-based trading.
- Certified designers should be utilized for designing both agricultural and domestic irrigation systems.

Information Management

- The Okanagan Basin Water Board should initiate or facilitate the creation of a management or Steering Committee to establish a single Okanagan Information Centre to link existing data sources, and manage and disseminate data and other information to decision-makers and stakeholders.
- This committee should consider a needs assessment data quality standards and gap analysis; should assess current data sources; and should develop a long-term funding plan.
- The committee should include broad-based representation from stakeholders throughout the Okanagan.
- Existing data should be compiled to create an initial data inventory.
- The Information Centre should ensure continuous stable operation to provide data and information that all users could utilize.

Communication and Trust Building

- Through a participatory process, a "water vision" should be developed and adopted for the Okanagan Basin that gives residents attachment to place.

- A basin-wide education strategy that promotes understanding of all needs in the Basin should be developed and implemented - the messages should be positive, simple, and tailored appropriately to audiences.
- A water educator network should be developed in the Basin. The network should promote the sharing of resources, facilitate the design of common messages, should be strongly connected to the underlying science, should utilize existing information infrastructure such as web sites, and should promote coordination of activities throughout the Basins and access to information.
- Recommendations from this conference should be conveyed to local and senior levels of government.

Summary of Plenary Session:

In the full plenary session that followed the small group discussions, several of the key recommendations of the five discussion groups were simplified and agreed to by consensus of all conference delegates. These key consensus-based recommendations are as follows:

- A forum should be created for all those with an interest in the future of the Okanagan to develop a common and sustainable vision for Okanagan water that can be used to guide the development of public policy.
- Improved demand-side management should be a primary focus of efforts to improve water management in the Okanagan.
- Public education on water values should become a cornerstone of efforts to promote water conservation in the Okanagan.
- It should be recognized that all water (in streams, groundwater, and lakes) in the Okanagan is connected, and should be managed as a single resource.
- Water management should ensure the sustainability of aquatic ecosystems.
- Collection of the water information needed for decision-making should be a high priority, and the housing and dissemination of this information should be better co-ordinated.
- Existing organizations should more effectively coordinate water issues of basin-wide interest.
- The existing model for basin-wide governance of water (represented by the Okanagan Basin Water Board) should be improved to facilitate more effective basin-wide water management.

Concluding Comment:

These recommendations represent the combined contribution of many people who care about the Okanagan. The sustainability of the economy, the environment, and the social fabric of the Okanagan is at stake. Implementation of these recommendations and development of an action plan will require leadership. Federal, provincial, First Nations, and local governments all share in this responsibility. Clearly, additional financial and human resources will be required. Actions will need to reflect a long-term commitment to sustainability, and co-ordination of the activities of the many agencies and stakeholders involved. The future is in our hands.