

CONFERENCE SUMMARY

One Watershed - One Water

Co-hosted by the
BC Branch of the Canadian Water Resources Association and the
Okanagan Basin Water Board

October 21 to 23, 2008
Kelowna, BC

Introduction

The “One Watershed – One Water” conference was held in Kelowna between October 21 and 23, 2008. The aim of the conference was to bring together scientists, policy makers, First Nations, and the public to share new innovations in water science, identify issues and priorities, strengthen communication, and develop recommendations to improve water management and governance in the Okanagan. The conference attracted over 220 delegates from British Columbia and other areas of Canada, as well as the United States. This report summarizes the conference. A complete record of the conference proceedings is available from the OBWB website (www.obwb.ca).

The conference was organized by the BC Branch of the Canadian Water Resources Association (CWRA) and the Okanagan Basin Water Board (OBWB). The CWRA is a national organization committed to the wise use and sustainable management of Canada’s water resources. The OBWB is dedicated to delivering water science, management and governance in the Okanagan watershed.

Six main action categories were identified at the One Watershed – One Water conference.

1. **Ensure vigorous, widespread, and strategic communication of water science.** A communications strategy is needed that synthesizes and simplifies science so it can be understood by many audiences. The Basin-wide water budget (once completed) should be the key consideration when making any type of important water allocation decision and must be effectively communicated to decision-makers.
2. **Improve water governance and increase alignment between jurisdictions.** Aligned governance consists of high collaboration and trust, shared goals, and clear distribution of decision making responsibilities and authority.
3. **Define future water demand and availability scenarios.** Clearly defined future scenarios will enable us to quantify the rate of adaptation that is required and to launch the task of proactively tackling risk. Hydrometric and climate data collection, water use plans, drought management plans, Agricultural Water Reserves, groundwater monitoring, conservation flows, and Environmental Water Reserves were all identified as tools for future planning.
4. **Balance focus on water quantity issues with research on emerging water quality threats.** Research on endocrine disrupting chemicals, pharmaceuticals, and personal care products in wastewater discharges must be given high priority.

5. **Clarify implementation details of water action plans.** Living Water Smart, the Okanagan Sustainable Water Strategy, and other water-related action plans must be clarified and work begun on implementing the actions.
6. **Continue to hold regional forums on water.** Water conferences, workshops and other events are crucial to strengthening communication between various water interests, identifying issues and priorities, and making recommendations to improve water management.

Background

The Okanagan Basin is located in the south-central interior of British Columbia. It is almost 200 km long, running from the community of Armstrong in the north to Osoyoos in the south, and incorporating almost all of the North Okanagan, Central Okanagan, and Okanagan-Similkameen regional districts. The Basin is characterized by a north-south valley with high plateaus to the east and west. It is a semi-arid watershed, with minimal annual precipitation and high evaporation and evapotranspiration rates. Six large lakes form a chain along the valley floor of the Basin – Kalamalka, Wood, Okanagan, Skaha, Vaseux, and Osoyoos. The Okanagan River connects Skaha, Vaseux, and Osoyoos lakes before flowing into the Columbia River in the United States.

The economy in the Okanagan Basin includes forestry and mining (primarily in the upper plateau areas), agriculture (particularly tree fruits and vineyards), tourism, aviation, knowledge services, recreation, and residential/commercial development (primarily in the valley bottom areas).

The water resources of the Okanagan Basin were extensively studied in the early 1970s 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 includes eleven main recommendations focused on sustainable water management for the Okanagan. Several of these recommendations are yet to be implemented.

The water resources of the Basin are 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. The Ministry of Environment has designated approximately 90 percent of the main tributaries to Okanagan Lake and the Okanagan River as "fully allocated", meaning that no new licences 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 grown 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. Population growth is predicted to continue, meaning an increased demand for water. In addition, global climate models indicate that in the future summers will be longer, warmer, and drier than they are now (continuing the climate trends that have been recorded in recent years). More water will be required to grow food and support tourism (e.g., golf courses). In addition, the global climate models predict that the streamflows that replenish the Basin's water reservoirs will become smaller. 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. Presentations and discussions at the One Watershed – One Water conference focused on current research being conducted to quantify these trends and identified actions that must be implemented immediately to avoid a water crisis.

Conference Summary

The conference was held over three days – October 21, 22, and 23, 2008. The first day was comprised of twenty-four technical presentations. Eleven invited speakers provided presentations to the delegates on the second day. The third day included the launch of the Okanagan Sustainable Water Strategy and a panel discussion on building consensus and multilateral collaboration. The conference also included poster presentations and exhibitors.

A list of the technical and invited presentations is included in Appendix A. Most of the presentations were supported by a written paper in the Conference Proceedings, which is available from the OBWB website (www.obwb.ca).

The technical presentations given on the first day of the conference highlighted research on the impacts of climate change, increasing demand, economic growth and the mountain pine beetle infestation on Okanagan water supply; characterization of groundwater in the Okanagan Basin; and the protection of surface drinking water sources. Other presentation topics included water efficiency, agricultural water management, water markets and water governance, and restoration of the Okanagan River. Several presentations showcased research being undertaken for the Okanagan Water Supply and Demand Project – which will provide a best estimate of present and future water need and availability, taking into account present water use, population growth, climate change, land use change and preservation of the environment.

Presentations given by invited speakers on the second day of the conference focused on four themes:

1. **Progress and status of water issues** since the “Water – Our Limiting Resource” Conference, held in 2005, and the Osoyoos Lake Water Science Forum, held in September 2007.
2. **The international dimension**, which included a description of coordinated binational activities that might be feasible in the Osoyoos area and of the steps that would be required to establish an international watershed board, and an overview of the challenges faced in the bi-state, multijurisdictional watershed of Lake Tahoe.
3. **New science**, which included an overview of the Okanagan Water Supply and Demand Project, and a discussion of human disturbance regimes and the future of aquatic ecosystems and fisheries resources in the Okanagan.
4. **Visions for the future**, which included a discussion about the impacts of emerging contaminants on aquatic resources, a review of the social, economic and political changes occurring in the Okanagan region today and an analysis of these changes in relation to water allocation practices and future policy options. An overview of delegated water governance, including barriers, advantages and disadvantages, and a discussion about communication

and trust building with a focus on water resource management were also included under this theme.

A keynote banquet speech by former federal cabinet Minister Dr. Tom Siddon drew parallels between the Okanagan and other areas of the globe facing water management challenges, and focussed on the need for collaborative planning and action to identify and solve Okanagan water issues.

The Okanagan Sustainable Water Strategy was launched on the final day of the conference. The Strategy was developed by the Okanagan Water Stewardship Council, a technical advisory committee to the Okanagan Basin Water Board. The Strategy is a comprehensive guide to water management practices that will support adaptation to climate change and population growth being faced in the semi-arid Okanagan.

Following the launch of the Strategy, a panel session entitled “*Building Consensus and Multilateral Collaboration – What Does it Take to Succeed in the Okanagan?*” was held. The panel included guest speakers: Jack Blaney, Commissioner, International Joint Commission; Jim Mattison, Assistant Deputy Minister, BC Ministry of Environment; Howie Wright, Interim Fisheries Program Manager, Okanagan Nation Alliance; John Slater, Chair, Okanagan Basin Water Board; Toby Pike, Manager, South East Kelowna Irrigation District; Russ Boals, Past President, Canadian Water Resources Association; and Alaa Abd-el-Aziz, Vice-Provost, UBC Okanagan.

Panel members provided their thoughts on the challenges facing sustainable water management in the Okanagan and what is needed for the successful implementation of the Sustainable Water Strategy. The panel identified the need for local people to take ownership of the Strategy – accountability and responsibility rests at the community level. Incorporating the needs and aspirations of Okanagan First Nations people into water use planning was also identified as being very important to sustainable water management. Education was seen as key for implementation of the Strategy.

Several commitments were made by the panel members on behalf of their organizations:

- Jim Mattison committed that the Ministry of the Environment will partner with the OBWB to implement the Sustainable Water Strategy and improve water management in the Basin.
- Howie Wright committed to helping coordinate discussions between the Okanagan Nation Alliance, the OBWB, and provincial and federal jurisdictions on how to improve First Nations capacity to participate in implementation of the Sustainable Water Strategy.
- Russ Boals committed that the Canadian Water Resources Association would continue to support sustainable water use and management in the Okanagan Basin and will support the Sustainable Water Strategy implementation process.
- Alla Abd-el-Aziz committed to ensuring the actions and data requirements identified in the Sustainable Water Strategy are integrated into the research agenda of UBC-Okanagan.

Concluding Comment:

The Okanagan has become a centre for water science in western Canada. The One Watershed – One Water conference focused on sustainable water management and highlighted ongoing research and future needs in the Okanagan. The environment of the Okanagan combined with the cutting-edge Water Supply and Demand Project now underway framed conference discussions on regional, national and international issues – including rapid population growth, impacts of mountain pine beetle, and climate change. The conference provided an opportunity to celebrate successes accomplished over the past three years and identify strategic initiatives and actions that are required to support a sustainable, high quality water supply in the Okanagan. Additional financial and human resources and a high level of commitment from federal, provincial, and local governments, will be required to sustain the research projects and to ensure actions identified are implemented in a timely manner.

APPENDIX A: LIST OF PRESENTATIONS GIVEN AT THE ONE WATERSHED – ONE WATER CONFERENCE

TECHNICAL PRESENTATIONS

1. Modeling evaporation from Okanagan Lake, mainstem lakes, upland lakes and reservoirs based on existing databases (William Schertzer)
2. Mountain pine beetle and watershed hydrology focused on the Okanagan Basin (Todd Redding)
3. Agricultural water management in the Okanagan Basin (Ted van der Gulik)
4. The Upper Penticton Creek watershed experiment: integrated water resource research on the Okanagan Plateau (Rita Winkler)
5. Regional characterization of groundwater in the Okanagan Basin (Remi Allard)
6. International Osoyoos Lake Board of Control and Osoyoos Lake Orders (Kirk Johnstone)
7. “State of the basin” regarding current water use and how it is managed (Don Dobson)
8. Potential impacts of climate change on life history events of salmonids (Kim Hyatt)
9. Climate surfaces for the Okanagan Basin Water Supply & Demand Project (Denise Neilsen)
10. Okanagan River Restoration Initiative (Kari Long)
11. Hydrologic networks in the Okanagan (Bruce Letvak)
12. Fish passage at McIntyre Dam, Okanagan River (John Van Der Eerden)
13. Use of stable isotope techniques to assess regional hydrology of the southern Okanagan Basin (Pana Athanasopoulous)
14. Endocrine disrupters in the Okanagan Basin (Jeff Curtis)
15. Evaluation of the hydrogeology of valley-fill aquifers in the northern Okanagan using geochemical and modeling methods (Craig Nichol)
16. Developing performance standards for nutrients, sediments, and instream flows for agricultural watersheds in Canada: an overview of the Okanagan (Daniel Peters)
17. Assessing one side of the water budget: how can groundwater recharge be predicted across the Okanagan Basin? (Brian Smerdon)
18. Source protection and the future of safe, clean, reliable tap water in the Okanagan Valley (Ivor Norlin and Mike Adams)
19. Water sustainability under climate change and increasing demand: a one-water approach at the watershed scale (Adam Wei)
20. Water markets and good watershed governance; an inherent conflict? (John Janmaat)
21. Cumulative effects of economic growth on watershed ecosystems in the Okanagan Valley (Barry Wilson)
22. A comparison of stormwater runoff reduction by green roofs in Kelowna and Vancouver (Daniel Roehr and Kevin Kong)
23. Using the Forest and Range Evaluation Program Water Quality Protocol to assist in the management of community watersheds (Brian Carson)
24. Landscape and irrigation standards for water efficiency (Neal Klassen)

INVITED PRESENTATIONS

1. Delegating Water Governance: Issues and Challenges in the BC Context (Linda Nowlan)
2. Water Quality and Fisheries (Kim Hyatt)
3. The Okanagan Water Supply and Demand Project (Anna Warwick Sears)
4. Water Information Management in the Okanagan Basin: Progress and Lessons (Clint Alexander)
5. Communication and Trust Building (Nelson Jatel)
6. The Osoyoos Lake Water Science Forum (Clint Alexander)
7. The International Watersheds Initiative: An Integrated Approach to Canada-US Transboundary Waters and its Potential Relevance to the Okanagan Basin
8. Lake Tahoe: Operating in a Bi-state, Multijurisdictional Watershed (Larry Benoit)
9. Wastewater Treatment Plants as Sources of Contaminants in the Aquatic Environment (Chris Metcalfe)
10. The Social Life of Water (John Wagner)

POSTER PRESENTATIONS

1. Beyond Conservation – Applying Sensitive Urban Design to Vernon, BC (Jennifer Miles)
2. The Use of Stable Isotopes to Assess the Origin and Fate of Nitrogen in Shallow Groundwater in Osoyoos (Pana Athanasopoulos)
3. Cumulative Effects Monitoring of Okanagan Streams Using Benthic Invertebrates, 1999 to 2004 (Vic Jensen)
4. The Soft Path for Water in a Nutshell (Oliver Brandes)
5. Changing the Game: Harnessing Consumer Trends to Restore Habitat and Improve Water Quality in the Okanagan (Michelle Boshard)
6. Salmonid Distribution in Relation to Stream Temperatures in Fortune Creek, BC – The Influence of Surface and Groundwater Interactions (Elinor McGrath)
7. Inventory and Mapping – Okanagan Lake, Creeks and Wetlands (Michelle Kam)
8. Managing Middle Vernon Creek for Humans and the Environment: Understanding a Highly Connected Surface and Groundwater System (Natasha Neumann)
9. What is Happening to Wild Salmon in Your Community? (Camille Rivard-Sirois)
10. Duteau Creek Watershed Assessment and Protection Plan (Tricia Brett)
11. Long-Term Water Quality Trends in Okanagan Basin Lakes (Michael Sokal)
12. Polybrominated Diphenyl Ether Flame Retardants in the Kelowna Wastewater Treatment Plant: Concentrations, Patterns, Influence of Treatment Processes, and Potential Effects on Okanagan Lake (Sierra Rayne)
13. Balancing Demand Side Management in a Semi Arid Climate (Carolyn Stewart)
14. Ellis Creek Flow Measurement Project (Brent Edge)