OKANAGAN WATER SUPPLY & DEMAND PROJECT

Frequently Asked Questions

What is the Okanagan Water Supply & Demand Project?

The Okanagan Water Supply and Demand project is the most advanced water resource assessment ever conducted in Canada, using the latest models and computer technology to estimate Okanagan water availability and to begin to look at how supplies will be affected by climate change and population growth. It includes studies on groundwater, stream flows, environmental water needs, and water use – balancing water supplies and water demands through a computer accounting model.

Who did the Project?

The project was lead by the Okanagan Basin Water Board (OBWB) and the BC Ministry of Environment. Other partners included: the BC Ministries of Agriculture and Lands, Community and Rural Development, and Forests and Range; Agriculture and Agri-Food Canada; Environment Canada; Fisheries and Oceans Canada; the Okanagan Nation Alliance; the BC Agriculture Council; the Water Supply Association of BC; UBC Okanagan and UBC Vancouver; University of Victoria; Simon Fraser University; and the University of Lethbridge, Alta. Individual studies were conducted by university and government researchers, and environmental consulting firms.

Who paid for the project? How much did it cost?

The project was funded by grants from the BC Ministry of Environment, the Canada-BC Water Supply Expansion Program (Agriculture and Agri-Food Canada), the Gas Tax Fund, and Natural Resources Canada. The OBWB acted as financial administrator for the project and provided local matching funds. Local water suppliers contributed by providing data. The total project cost was close to $2,300,000 and received an additional $900,000 of in-kind support from partner agencies.

Why was the project done?

The Okanagan has the lowest per person water supply in Canada, with a growing population and vulnerability to climate change. The economy and most of our major industries – including agriculture and tourism – depend on the health of water resources. The last comprehensive water assessment in the Okanagan was completed in 1974, and since that

time population growth has out-stripped all predictions and our water management technologies have greatly improved. During the 2003/2004 drought, it was apparent that a good understanding of the resilience of the water resource in the Okanagan Basin was urgent and lacking.

What do the results of this project mean for local government?

Local governments make planning and development decisions within their jurisdiction, and most Okanagan local governments manage their own water utility. The models produced through this project will provide new tools to help local governments understand water use within their jurisdictions and inform development plans. Development of drought response plans by each local government will reduce the impacts of water shortages on residents, farms and businesses. The results of this project reinforce the need for water conservation programs to reduce demand, including residential metering and shifts toward more drought tolerant landscaping and efficient irrigation practices. Currently, less than one quarter of domestic water is used indoors, which suggests that relatively minor changes in outdoor watering practices or lawn size will free up significant amounts of water for urban needs.

What will it mean for water managers?

Each of the Okanagan's 101 water supply districts is different, depending on their sources of water supply, their reservoir storage, and their location in the valley. These differences make some suppliers more vulnerable if dry periods occur with greater frequency. To reduce the risk of water shortages, water managers have a range of options from increasing reservoir storage to reducing water demands through conservation and improved efficiency. Many of these improvements will require additional investment, although in general, reducing demand is much more cost effective than expanding storage. The models produced through this project will provide new tools to help water managers optimize their systems. Development of drought response plans by each water supplier will reduce the impacts of water shortages on residents, farms and businesses.

What will it mean for Okanagan residents?

On average, Okanagan residents use 675 litres of water per person, per day – year round, on their residential properties. This is more than twice the Canadian average (329 litres), and much higher than that of other countries. Yet, the Okanagan has the lowest per person water availability in Canada. Most of this water is used for outdoor landscaping during the summer months. As many water suppliers and municipal governments increase water rates

to upgrade water infrastructure, reducing outdoor water consumption is the best way for residents to support the sustainability of valley water supplies.

What will it mean for agriculture?

Agriculture is the largest water use sector in the Okanagan valley, and this project shows that agricultural water use has become more efficient in recent years. In part, this is a result of shifts to grapes and other crops that require less water, and it also reflects improved irrigation practices such as the move to drip systems and irrigation scheduling. Because agriculture is completely dependent on water – natural precipitation or irrigation – it is the industry most vulnerable to persistent drought. The models and data developed and collected through this project will help farmers understand their vulnerability. The overall health of the industry will depend on development of agreements for how water will be shared during shortages – reducing uncertainty about water availability, and reducing competition between farmers and urban and environmental water needs.

What will it mean for fish?

This project shows that most Okanagan streams do not naturally provide optimal habitat for cold water fish such at kokanee and trout. As human development and water extraction levels become more alike throughout the basin, and are in addition to climate pressures, even more stresses are exerted on these fish populations. As fisheries regulators seek to protect fish populations, more conflicts are likely to arise between other water users. Field-based in-stream flow studies are needed to determine environmental flow regimes that sustain aquatic life and ecosystem function in any particular location.

Does the project show that we are running out of water?

The project shows that the risk of water shortages is increasing valley-wide, and some areas will be more vulnerable than others. Sustainable use is limited to what is replenished each year, and this is affected by changing climate patterns. The Okanagan naturally fluctuates between dry years and wet years, and some water supply areas already have more precipitation and better storage reservoirs than others. Climate change will increase the growing season and thus the demand for irrigation water while also decreasing snowpack – an essential form of water storage. There will be lower summer stream-flows when the majority of water use occurs, increasing competition between human water use and environmental needs. There are limits to drawing down the lake level, so even communities with lake intakes could have increased risk of water shortages.

What will climate change do to our water supply?

Climate change is likely to affect both our water supply and our water demand. This phase of the Okanagan Water Supply & Demand (WSD) Project considered one of 12 possible climate model and emission scenarios. According to this model, the Okanagan will have a longer growing season – increasing water demand from crops, landscaping, and natural areas. Although average annual precipitation will not change too dramatically, winter precipitation will come more often as rain and on average there will be less water stored as snow. Snow storage is an important component of water supply, so there may be less water available for summer use. Flood risk may also increase as a result of more intense storm events. The next phase of the WSD Project, which has received funding, will look at additional scenarios to better document the potential range of possible climate change effects so that communities can prepare to adapt.

Why don't we just build more storage?

Most of the best storage locations are in use. Historically storage in Okanagan Lake (the Okanagan's largest "reservoir) has taken place by managing lake levels within bounds set by the 1974 Okanagan Basin Study. Drawing the lake lower than these bounds is believed to increase risk of lake levels not recovering should the winter have less precipitation than normal; Raising the lake higher than these bounds risks flooding in low-lying areas. Some upland reservoirs can be expanded or improved, but costs are high.

How much water is available for licensing?

This decision depends on how much risk we are willing to bear with respect to water shortages, and the location of the water source. The project also compares the amount licenced to the amount that is actually used by those licensees.

Why is there a problem if we have more licence capacity than we use?

For agriculture, large licenses create a buffer for when there are dry conditions. For municipalities, large licences allow "room" for future development. But we don't always have the water to "prove out" the licences, especially for water utilities that depend on upland reservoirs. Many water suppliers also have to release substantial flows for fish and ecosystem flows.

How will the results be used?

Local planners are already beginning to make use of the WSD Project models. In Penticton, they are using it to refine irrigation plans. In the Regional District of Okanagan-Similkameen

they are creating indicators for their regional growth strategy and studying the water use in an area with depleted aquifers. Vernon will use the models for its liquid waste management plan update. The models and results are also already being used in studies by the International Joint Commission to renew the operating orders of Zosel Dam on Osoyoos Lake.

Do all watersheds need a project like this?

There is competition for water resources in many parts of B.C. and western Canada. The Okanagan Water Supply and Demand Project is one of the most ambitious and innovative efforts in Canada with models and tools that can be used elsewhere. However, because the essential data has never been collected, there are few watersheds in B.C. where such a project could be undertaken at this time. One of the components of the OWSD Project, the Irrigation Demand Model, has been nominated for a Premier's Award for Innovation and is already being replicated for the Similkameen, Nicola, and Lower Fraser.

What are the limitations of the project?

The project is based on best available science and data and provides a foundation of data and modeling, but in some cases the data was limited. For example, for lake evaporation and groundwater the project relied heavily on modeled values. Also, only one climate change model was used for the scenarios in this phase, and should not be considered a clear prediction of the future. In the next phase of the project, the potential impacts of climate change will be explored more extensively. This project is a scientific one and much of the data and models are targeted to expert users; however, the web reporting tool is designed to show information that might otherwise have become lost deep in technical reports and presents it in a user-friendly format.

What are the next steps?

We will be looking closely at all of the results and the processes that we have undertaken during Phase 2 and developing comprehensive recommendations. Phase 3 of the Okanagan Water Supply and Demand Project has already begun and is focused on:

- Turning results into policy by developing specific recommendations based on the Phase 2 outcomes;
- Selecting additional future scenarios to explore Okanagan water supply and demand based on input from key stakeholders;
- Making databases and models accessible to local government planners and decision makers; and
- Updating and improving the data and models.

Where can I get the results from the project?

All of the reports and a web reporting tool providing results will be available on the Okanagan Basin Water Board website as they are finalized over the coming days. Check out the website for further information (www.obwb.ca).