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CAPITAL news

SUNDAY, MARCH 28, 2010 | WEEKEND CLOSE-UP

RENASCENCE DEVELOPMENTS PROJECTS MAKING AN IMPRESSION ON WEST KELOWNA
B4

Is there a DROP to Drink?

It's taken $3 million and three years of intensive, multi-disciplinary study to create the framework and flesh it out with the first information, but the Okanagan Water Supply and Demand Study was finally unveiled Friday.

It is unique in the country, but then, so is this arid valley's enclosed watershed unique in its rapid growth and scarcity of water to service that growth—particularly considering that agriculture is a vital industry underpinning both the valley's economy and its attractive landscape, and it requires water to survive.

More data needs to be added, so work will continue on that, and on making it a tool that's available for the use of the general public, but it will provide a foundation for water managers to plan for the future.

They'll have more and better information about water resources in the valley—for use not only in the drought years such as now, but also in the normal and the wet years.

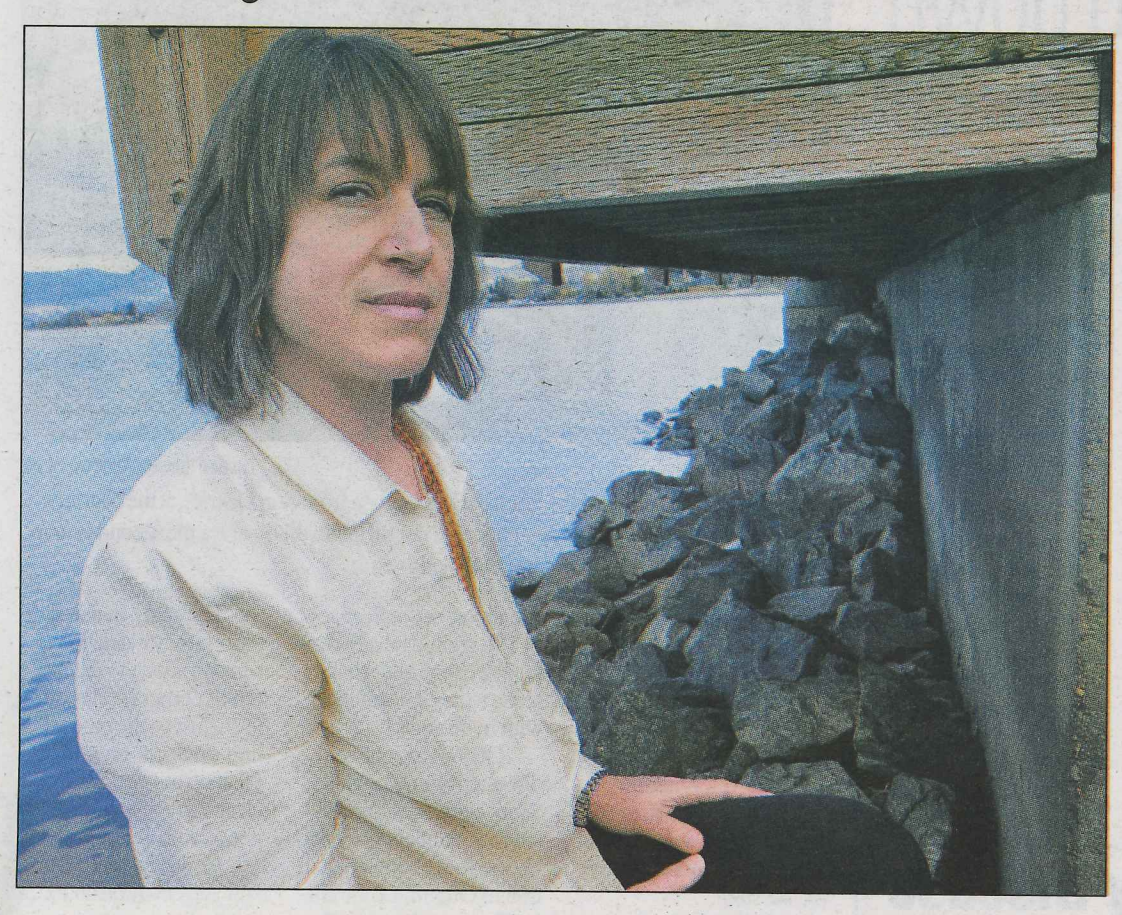
Capital News reporter Judie Steeves talked to those we depend on to ensure water flows from the tap when it's turned on, about what the study means.

See story A3

JUDIE STEEVES/CAPITAL NEWS

CLOSE-UP

Study shows we're water pigs



OKANAGAN Basin Water Board executive director Anna Warwick Sears would be underwater beside the Manteo Resort's dock at high water in a normal year. This is shaping up to be the second consecutive year of drought in the Okanagan as the lake level is at a near-record low.
SEAN CONNOR/CAPITAL NEWS

Watering our lawns is a big drain on our ongoing limited water resources

JUDIE STEEVES
STAFF REPORTER

Individuals in the Okanagan use an average of 675 litres of water a day, double what the average is across Canada, 329 litres, and nearly six times that of people in France, 150 litres, and Israel, 135 litres.

Yet the Okanagan is the most water-short area of the country, considering precipitation and demand.

Water use by those living in the Oliver and Osoyoos areas where their water use is not metered, is even higher, yet it's even drier there than in the central and northern parts of the valley.

That's just some of the information to be gleaned from the Okanagan Water Supply and Demand Study unveiled Friday.

Of the total water use in the valley, the second highest amount used is domestically, for outdoor use. In other words, most of it is sprayed onto residential lawns.

The highest use is for agriculture, at 55 per cent, while outdoor domestic use makes up 24 per cent of the total.

Domestic indoor use is next, at seven per cent, followed closely by golf courses, at five per cent, commercial, at four per cent, then industrial and parks and open spaces, each at two per cent, and institutional at one per cent.

Both agriculture and golf course use contribute to people's livelihoods and the valley's economy, but that can't be said of green lawns, notes Anna Warwick Sears, executive-director of the Okanagan Basin Water Board.

"We could provide water for double the population if we took out just a third of our lawns," she commented.

Adding more storage and infrastructure for water is costly and environmentally damaging when instead we could conserve water by changing our concept of landscaping, she adds.

In the entire basin, 80 per cent of the total precipitation on average is lost to evapo-transpiration, either directly from open water surfaces, or drawn up by the roots of trees and plants and transpired away to the atmosphere, according to Brian Guy of Summit Environmental, project manager for the study.

The study contains a huge amount of data that will be used in planning future water management in the valley, notes Sears.

There are 101 known water suppliers in the basin, who supply about 82 per cent of the total water used.

There are more than 4,000 water licences for storage or use, including 443,000 megalitres (1,000 litres) for off-stream use and about 351,000 megalitres for in-stream, or conservation use.

About 95 per cent of the volume used is by 57 main water suppliers, who hold 88 per cent of the licensed storage.

There are 36 large upland reservoirs, capable of storing a total of 133,000 megalitres.

Surface water sources account for 67 per cent of the water used, while groundwater is the source for 22 percent; imported water, eight per cent; and recycled wastewater, three per cent.

Okanagan Lake, Mission Creek and Kalamalka-Wood Lake are the three main surface water sources.

The study is an unprecedented collaboration of the basin's regional districts through the OBWB; provincial ministries of environment, agriculture, and community development; federal ministries of environment, fisheries and agriculture; the Okanagan Nation Alliance; UBC-Okanagan and Vancouver; SFU; University of Victoria; the Water Supply Association of B.C., B.C. Agriculture Council and others.

It was funded through the OBWB, provincial environment ministry, the Gas Tax Fund, the Canada-B.C. Water Supply Expansion Program, Natural Resources Canada's Regional Adaptation Collaboratives program and in-kind contributions from partner agencies.

Drought survival one goal of water study

JUDIE STEEVES
STAFF REPORTER

Normally, McCulloch Lake—the main water reservoir for the South East Kelowna Irrigation District—would fill and spill with melting snow in spring.

But this is not a normal year.

This is shaping up to be the second consecutive drought year in the Okanagan Valley, and SEKID, with its relatively-small, low-elevation watershed is in the most precarious position of the less than a dozen major water utilities in the Central Okanagan.

Another key reservoir, Okanagan Lake, did not fill last year and will not fill again this year. In fact, it is at near-record low levels for the nearly a century it has been controlled by man, using dams.

McCulloch Lake was only about two hectares in size and a half-metre in depth 90 years ago. Today, that storage capacity of 7.5 acre feet has been increased to 13,475 acre feet.

The reservoir was created historically to serve agricultural users downstream; to permit the growth of Kelowna's first orchards on the benchland above the city: SEKID was born.

It's a similar history to that of local utilities such as the Peachland, Westbank and Lakeview Irrigation Districts on the Westside; to the Glenmore-Ellison and Black Mountain Irrigation Districts in Kelowna; and to the Lake Country water utility.

All source their water from reservoir lakes at higher elevations, created in the early years of the last century to turn the valley from brown to green with orchards.

Downtown Kelowna's water source is Okanagan Lake, as it is for several smaller Westside utilities, and it is an auxiliary source for some of the other irrigation districts, including Peachland's Trepanier source. GEID and Lake Country have some water rights on Okanagan Lake as well as their main upland sources.

Some, including SEKID, also have wells from which they source some of their water. Rutland Waterworks is based entirely on well water, or groundwater rather than surface water. Groundwater sources are inextricably linked to surface water.

All depend on snow stored over winter at high elevations around the valley to fill their reservoirs in spring during runoff, for use during the dry months of summer, which is also the growing season.

And, that's where today's problem lies.

For the past two years, the snowpack levels have been well below normal around the Okanagan and last year there was a record low amount of precipitation during June, normally the wettest month in the valley, another blow to water utilities.

This year, for instance, the snowpack in SEKID's

SEE DROUGHT A4

CLOSE-UP

▼ IS THERE A DROP TO DRINK?

Water usage getting pared down

DROUGHT FROM A3

watershed is at 67 per cent of normal. Just a little to the north, Vernon's is at 56 per cent.

Ironically, that means that for the second year since it was built, the new Turtle Lake reservoir, constructed by SEKID to store an additional 1,700 acre feet, won't store a drop of water again this year, notes manager Toby Pike.

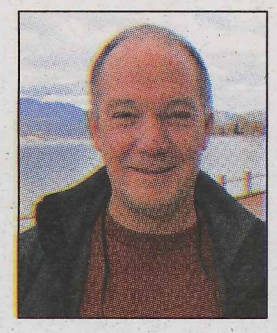
It also means it's likely the board of directors will decide it's necessary again this year to restrict homeowners to outside watering just two days a week, and to restrict the allotment for farm connections to 20 per cent less than usual.

It's a decision that won't be taken lightly, and it's one that will be opposed by many water users, but it's the only reason the district got through last year without running out of water, says Pike.

"We're releasing the minimum from McCulloch Lake and we're not doing our full water-main flushing program this spring. We're paring down water use everywhere we can," Pike said.

"It was really hard on people last year. You can't minimize that. If we have a wet spring or summer, we can ease up on the restrictions."

However, in the SEKID, there is a culture of scarcity; there has been since 1920, says Pike, adding, "We're used to it.



Don Dobson

We conserve."

It's because of that SEKID was the first irrigation district to begin metering agricultural use of water. You can't manage what you can't measure.

Others are now following suit.

Pike admits there were complaints last year from both homeowners and farmers about water restrictions. Some homeowners were warned about over-use, then fined, and some even had their water shut off.

So did some farmers, although Pike says those irrigating perennial crops like fruit trees would be the last to see further restrictions on water use, because of the financial hardship it would cause and the long-term damage that could result.

Agricultural water use benefits not only the farmer but the economy of the whole valley.

However, the Water Supply and Demand study is about managing water not just for the water-short years such as 2003, 2009 and 2010.

It's intended to provide a foundation for planning water management every year.

Pike sees it as the basis for determining where in the valley water supplies are available for future development.

"Those who manage growth need to know where the water capacity is," he said.

"When we look at growth, we should be looking at proven water resources, not at licences.

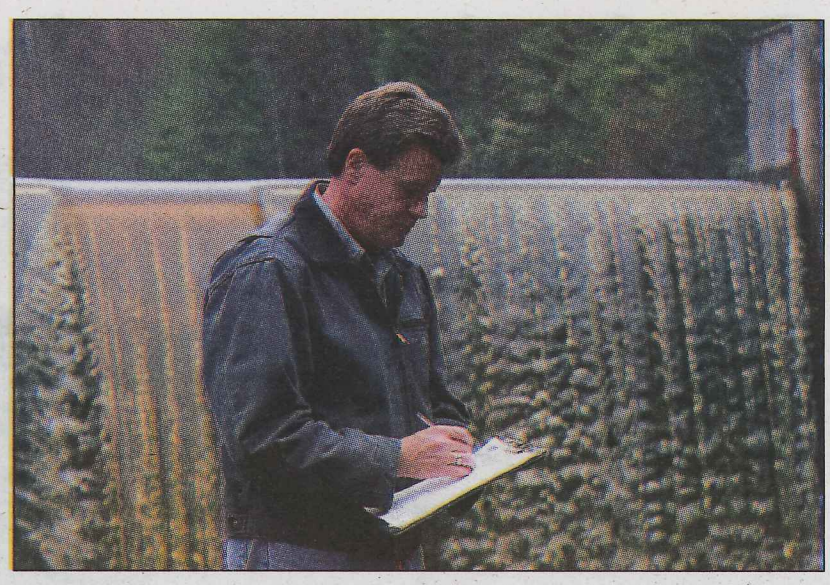
"It should be a hydrological exercise. It makes sense to mate licencing with hydrology."

OBWB executive-director Anna Warwick Sears agrees it's important that planners incorporate the study's information in Official Community Plans, so that growth occurs where water is available.

The study makes it clear how variable the supply of water is in different corners of the valley—just as the bare pilings on docks around Okanagan Lake make it clear there's isn't much of it available this year.

However, there are still gaps in information,

SEE DROUGHT A5



SEAN CONNOR/CAPITAL NEWS

TOBY PIKE, manager of the South East Kelowna Irrigation District, at the district's water intake. SEKID's main reservoir will not fill again this year for the second year in a row and severe water restrictions will likely result.

CLOSE-UP

DROUGHT FROM A4

as hydrologist Don Dobson notes it's important that a comprehensive network of hydrometric stations are re-instated throughout the watershed in order to monitor water flows.

That information can then be incorporated into the models to provide more-accurate and up-to-date scenarios.

"We have to measure it before we can manage it," he says. Without knowing what's going on in the watersheds, it's not possible to manage water wisely.

Bob Hrasko is manager of the Black Mountain Irrigation District and has been involved in gathering information for some of the models that form part of the study.

He says they are a very detailed and technical assembly of information.

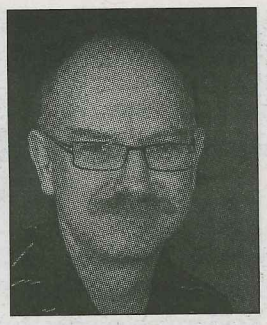
He envisions them ensuring water managers do the right things.

"It will take some time to learn to use and integrate this information into day-to-day and future management decisions," Hrasko said.

"We needed a handle on what is being used and what is available, in terms of water."

This is a landmark study, according to Brian Symonds, who has 20 years experience working in Okanagan water management for the environment ministry, and who is now director of regional operations for the water stewardship division.

He expects it will be used to run a lot of different sorts of scenarios and to make many different



Remi Allard

decisions about water in the coming years.

It's also likely it will be used as a model by other jurisdictions, he commented.

And, it's an initiative that was valley-driven, not top-down, so it's 'owned' by the valley it affects and if reflects what those in the watershed feel is needed.

Looking back, Symonds recalls when he began here there was an expectation that water would just flow from the tap when it was turned on.

It was taken for granted. That's beginning to change, he says.

"Water is fundamental to the economy, the social fabric and the environment of the valley," he commented.

MYSTERY GROUNDWATER

While surface water is visible and quite easily quantified, groundwater is quite the opposite, so the task of people like hydrogeologist Remi Allard in coming up with a groundwater balance for the Okanagan Basin was a challenging one.

"There are a lot of misconceptions about groundwater," he begins.

People generally visualize it as a motionless reservoir, or as a flowing river under the surface.

"However, neither vision begins to describe the complex movement and variability of groundwater flow, which is a function of the type of soil, sediment or rock it moves through (the aquifer) as well as the elevation differences between where water enters the aquifer and where it exits," he explains.

Many connections, both natural and man-made, exist between groundwater and the land's surface and people often don't understand the short and long-term implications on groundwater as a result of climate change and land development.

"The most important thing we can do to protect groundwater, is to pay more attention to it," he states.

Above bedrock, groundwater is mostly in sediments. These are called alluvial aquifers.

Below bedrock, much less can be stored because of the solid rock, so it's only found in cracks or fissures in the rock.

Alluvial aquifers are mainly found in the valley bottoms or adjacent to streams above the valley bottom.

Prior to this study there was only very sparse data available on groundwater supplies in the Okanagan Basin, which meant there was very little information from wells accessing aquifers to assemble to come up with a groundwater balance for the basin.

After identifying the quantity of water that enters the basin from precipitation and how much runs off, they audited groundwater resources by using complex spreadsheets.

In the end, they couldn't completely reconcile the groundwater numbers, particularly in some parts of the valley he admits.

"There are still things we don't understand. We need to do more work to gather additional information to fill in those gaps," said Allard.

What was most surprising was that more groundwater is being used in the basin that was thought.

In all, 22 per cent of water used is from groundwater sources.

Along streams, groundwater can be recharged by surface water in places, while in others, the surface water in the stream can be recharged by groundwater, particularly in winter when surface sources are frozen.

Allard sees the impact of this study as very practical science which will identify areas of the basin that have issues, as well as elevating the general awareness of water supply and demand issues.

He does believe the results will underline the need for additional work.

In addition, he feels it will be interesting to see whether or not the Okanagan Basin Water Board uses this to leverage its ability to manage water in the basin.

He's hopeful that regional districts will look at the results of the study and the water balance in different areas and use the information available to assess where sufficient water is available for growth and development.

jsteeves@kelownacapnews.com

▼ WATER STUDY

Need for detailed data being recognized

JUDIE STEEVES
STAFF REPORTER

Funding to permit the Okanagan Water Supply and Demand Study to move toward the next level of improving access to the information for communities was announced Friday by Kelowna-Lake Country MP Ron Cannan.

The study was unveiled just prior to his announcement, along with some of the masses of data collected in the past three years about water resources in the valley.

The $201,300 comes from the B.C. Regional Adaptation Collaborative and is aimed at climate change action plans.

Water use in the Okanagan Valley is "close to the edge," commented Brian Symonds, director of regional operations for the environment ministry.

"Snowpacks are our early reservoirs for this valley. People need to be responsible. There's just not a lot of precipitation."

The study was a collaboration of local government through the Okanagan Basin Water Board, along with provincial and federal governments.

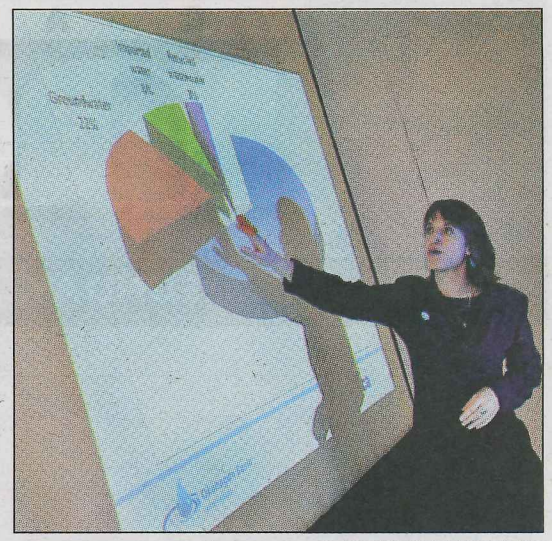
Executive director Anna Warwick Sears, in conducting a 'tour' of the study's results, said one of the most shocking discoveries was that domestic outdoor water use—water for lawns and gardens—is the second highest use of water in the valley, at 24 per cent of the total.

"It's just for cosmetics. When you think about the possibility of us running out of water, you have to consider how we value it when we use it that way," she said.

Data from the study will be available for the use of the public in the coming months through the OBWB website at: www.obwb.ca.

Access to it will be through a web-based reporting tool, and it will include such information as precipitation throughout the valley, water licences and who holds them and where, groundwater resources and streamflows.

It will be possible to create different scenarios, such as how much more water will be required in the next 20 years if everything remains the same, if there are population changes or if agricultural needs changed.



SEAN CONNOR/CAPITAL NEWS

ANNA WARWICK SEARS, executive director of the Okanagan Basin Water Board, explains the results of the Okanagan water study released on Friday.