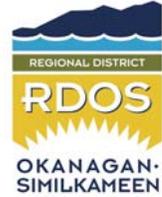




THE REAL ESTATE
FOUNDATION
OF BRITISH COLUMBIA



Convening for Action in the South Okanagan

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

A Synthesis of Outcomes
Arising from a Working Session on March 30, 2006
Organized By

**Water Sustainability Committee of the
British Columbia Water & Waste Association**

In Collaboration With The

**The Town of Oliver
Province of British Columbia
Oliver & District Community Economic Development Society
Real Estate Foundation of British Columbia
Regional District of Okanagan-Similkameen
Okanagan Basin Water Board**

First Release: April 2006

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

FOREWORD

DURING THE FIRST WEEK OF NOVEMBER 2005 representatives of the Real Estate Foundation of British Columbia and the Water Sustainability Committee of the BCWWA spent three days meeting informally with a diverse group of Okanagan residents. The objective in conversing was to gain an on-the-ground understanding of how communities in the Okanagan view settlement, economic growth and water issues.

WHAT WE HEARD AND LEARNED is documented in *Convening for Action in the South Okanagan: Moving Towards a Water Balance Way-of-Thinking and Acting*, released in February 2006. This document can be downloaded from the WaterBucket Website by following this link: <http://www.waterbucket.ca/cfa/>

THE FIRST ROUND OF CONVERSATIONS created the momentum for additional conversations with an expanding group about a 'water-centric' approach to planning. During the period November 2005 through February 2006, these additional conversations led to a decision by the Town of Oliver and the Oliver & District Community Economic Development Society to co-host a water-centric working session on March 30, 2006. The purpose of this document is to synthesize the outcomes arising from the working session.

CONVENING FOR ACTION is one of six elements that comprise the *Water Sustainability Action Plan for British Columbia*. It is aimed at building capacity that leads to action.



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Attachment A – Agenda for March 30/06 Session

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EXECUTIVE SUMMARY

KEY MESSAGES: Convening for Action is one of six inter-connected initiatives that comprise the **Water Sustainability Action Plan for British Columbia**. Key messages contained in this report are distilled as follows to provide a seamless storyline.

Water Stewardship: Under the Action Plan umbrella for advancing on-the-ground initiatives, the purpose in *Convening for Action in the South Okanagan* is to inform governments and others by engaging with “communities of interest and place” on the topic of water stewardship and sustainability. What we have learned through the Town of Oliver case study is presented as follows:

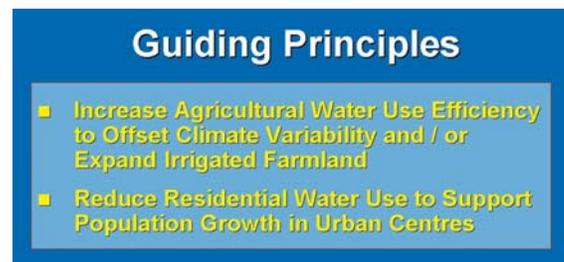
- **Section 1** introduces the convergence of local, regional and provincial interests that provided the impetus for organizing a ‘water-centric working session’ in the Town of Oliver on March 30, 2006.

There is a myriad of water and related initiatives underway in the Okanagan. Thus, a goal of the Convening for Action program is to ‘connect the dots’ and thereby help bring these initiatives into alignment...so that they can meet the water-centric needs of communities.

- **Section 2** then describes how the March 2006 working session was designed. Brainstorming themes are introduced and the set of desired outcomes in convening for action are identified.

It was crucial that three elected officials were among the participants - at the end of the day, they are the ones who have the authority to act in the best interests of their constituents by making water-centric policy decisions.

- **Section 3** follows with a comprehensive synopsis of each brainstorming theme, with an emphasis on understanding what the two guiding principles below mean for the Town of Oliver and surrounding Rural Area:



The first principle means that agricultural water savings would not be used for residential purposes. The second principle anticipates that new development will be designed to use less water, and that over time existing development will reduce its use.

- **Section 4** concludes with a list of ten incremental steps that will help guide the Town and the Regional District of Okanagan-Similkameen on their journey to get from “there to here” along the *soft path to water sustainability*.

Ensuring a safe and adequate water supply depends on understanding the science behind the **Water OUT = Water IN** equation, as well as understanding what this means operationally on the ground.

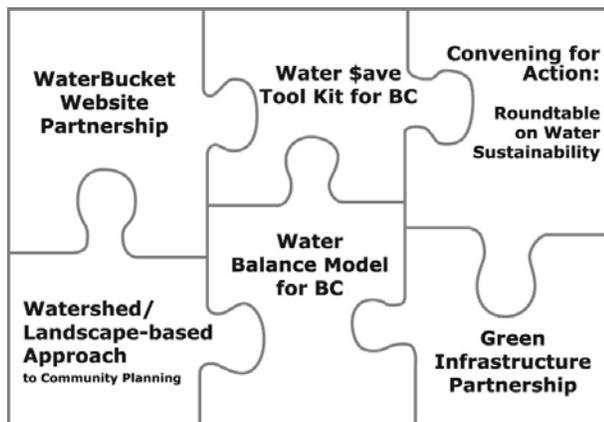
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SECTION 1

Context for Working Session

1.1 Water Sustainability Action Plan for British Columbia

The *Water Sustainability Action Plan for British Columbia* provides a partnership umbrella for an array of on-the-ground initiatives that promote a 'water-centric' approach to community planning. Through partnerships with three provincial Ministries --- Environment, Agriculture and Lands, and Community Services --- program delivery is being carried out by the Water Sustainability Committee (WSC) of the British Columbia Water & Waste Association (BCWWA).



Water Sustainability Committee: Within the BCWWA framework, the WSC is a broadly based roundtable of organizations that have a specific interest or mission in implementing the Action Plan. The roundtable encompasses government organizations, non-government associations, the private sector, and universities. One of the criteria for WSC membership is that individuals will feed back the Action Plan outcomes into their organizations. For more information, follow this link to the *WaterBucket Website*: <http://www.waterbucket.ca/wsc/>

What is Water-Centric Planning? Water-centric planning means planning with a view to water – whether for a single site or the entire province. At the core of the approach is a water balance way-of-thinking and acting.

A water-centric approach puts water stewardship and sustainability front and centre on the agenda of comprehensive land use, development, or resource planning initiatives. Water-centric planning considers the amount of water available, the amount of water needed, innovative efficiency strategies, the quality of water leaving an area, how rain and snow water are managed, and the impact on the natural environment.

Implementation of water-centric strategies and solutions ultimately requires integration of missions, mandates and accountabilities of participating agencies.

Convening for Action in the South Okanagan: The WSC is informing governments and others by engaging with 'communities-of-interest and place' on the topic of water stewardship and sustainability. For background information, follow this link to the *WaterBucket Website*: <http://www.waterbucket.ca/cfa/>

The purpose in *Convening for Action in the South Okanagan* is to deliver a highly transparent process where everyone gets a voice, everyone sees their interests recorded and considered, and everyone is proactively engaged to focus on results.

Communities are seeking ways to address challenging priorities for land and water. The Town of Oliver has emerged as an on-the-ground case study opportunity for testing the application of a water balance way-of-thinking and acting.

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1.2 Connecting the Dots

There is a myriad of water and related initiatives underway in the Okanagan. Thus, a goal of the Convening for Action program is to ‘connect the dots’ and thereby help bring these initiatives into alignment...so that they can meet the water-centric needs of Okanagan communities.

Key Messages that define the Convening for Action program are synthesized as follows:

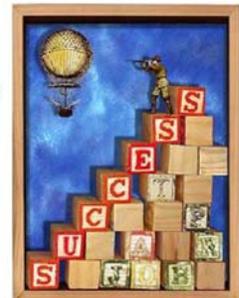
- **Key Message #1** - Water balance management and green infrastructure can be viewed as one and the same, in that: both start at the site level; and both revolve around how we develop the landscape.
- **Key Message #2** – The terms of provincial infrastructure capital grant agreements result in expectations that open the door for other BC municipalities to replicate or adapt the ‘Town of Oliver template’ for integrated water management.
- **Key Message #3** – The content for *Water-Centric Planning: A Guidebook for British Columbia* will flow from case study experience in the Okanagan as well as other regions, and will evolve in the coming months as Convening for Action unfolds.
- **Key Message #4** – In ‘convening for action’, capacity is being built from the ground up through a process that gives local government and practitioners the tools and experience to do things differently.
- **Key Message #5** – An emerging theme is captured by the phrase *Water for Life and Livelihoods* because this provides an overarching context for a water-centric approach to settlement and economic growth issues.

For more on what has been accomplished to date, refer to the document titled *Convening for Action in the South Okanagan: Moving Towards a Water Balance Way-of-Thinking and Acting*.

Building Blocks: The intent is that Convening for Action in the South Okanagan will be cross-fertilized by other processes and will also inform those processes. A desired outcome in building on case study experience is that a chain of events will be triggered that will ultimately result in implementation of well-grounded sustainability policies and practices that can be adapted province-wide. Building blocks comprise:

Building Blocks

- Water-Centric Planning:
A Guidebook for British Columbia
- South Okanagan
Regional Growth Strategy
- Convening for Action
in the South Okanagan
- Town of Oliver:
Smart Growth on the Ground



Town of Oliver Working Session: The first water-centric building block is the Town of Oliver case study experience. On March 30, 2006 a working session was held in Oliver. Guided by the ‘mind map’ on the next page, the event was community-based and was informed by outside expertise and provincial program people.

The ‘mind map’ laid out a framework for everyone’s interests and it moved from the general to the specific – that is, the bottom-line is that this session was about the Town of Oliver and it will be their plan.

**CONVENING FOR ACTION IN OLIVER:
Mind Map for Water-Centric Working Session on March 30, 2006**

BROAD THEME:	Water-Centric Planning in the Community of Oliver
SPECIFIC THEME:	Water OUT = Water IN: Dealing with Uncertainty and Managing Risk
CONTEXT:	<p>Water Sustainability Action Plan for British Columbia</p> <p align="center">Building Blocks</p> <ul style="list-style-type: none"> ■ Water-Centric Planning: A Guidebook for British Columbia ■ South Okanagan Regional Growth Strategy ■ Convening for Action in the South Okanagan ■ Town of Oliver: Smart Growth on the Ground 
OVER-ARCHING PURPOSE:	<p>Establish a case study precedent for a ‘Water Balance Way-of-Thinking and Acting’ that:</p> <ul style="list-style-type: none"> ▪ informs other Okanagan initiatives; and ▪ becomes the cornerstone of the provincial Guidebook.
CORE GOAL:	Bring provincial and federal government ‘water initiatives’ into alignment with the ‘water-centric needs’ of the Town of Oliver
OVER-ARCHING OBJECTIVE:	<p>Turn ideas into action through a 3-step process that builds capacity:</p> <ol style="list-style-type: none"> 1. Challenge practitioners and others to step back from their paradigms 2. Inform them regarding alternatives 3. Give them the tools and the experience to do things differently
APPROACH TO ACHIEVE THE GOAL:	<p>Seek to understand in order to be understood:</p> <ol style="list-style-type: none"> 1. What is the Town doing now? 2. Where does the Town wish to get to over time? 3. How can the various ‘water initiatives’ help the Town get there?
DESIGN OF WORKING SESSION:	<p>These core on-the-ground considerations shaped the agenda design:</p> <ol style="list-style-type: none"> 1. How the realities and practicalities of the Town’s water system configuration and operation have driven recent innovation(s). 2. How the Agricultural Component of the <i>Okanagan Basin Water Strategy</i> is being implemented in the Oliver Region. 3. How the <i>Groundwater Assessment in the Okanagan Basin</i> (GAOB) project will help the Town achieve ‘aquifer sustainability’. 4. How the <i>Soft Path for Water</i> can be applied in an Oliver context, especially give the Wine Village Vision to ‘lead by example’. 5. How the Province’s expectation for a “Council-endorsed water conservation plan that is a working document” can be fulfilled.
DESIRED OUTCOME:	This was the first step in a process to educate the community and elected officials about the full potential of demand management by changing water-use habits, technologies, and practices.

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SECTION 2

Design of Working Session

2.1 Seek to Understand

Convening for Action is aimed at building capacity that leads to action. In launching *Convening for Action in the South Okanagan* in October 2005, we decided we would first have informal discussions with a diverse group of individuals – because we believed this approach was an effective way to gain an on-the-ground understanding of how communities in the Okanagan view settlement, economic growth and water issues.

Seek to Understand:

To Build Trust & Respect,
It Starts with a Conversation.

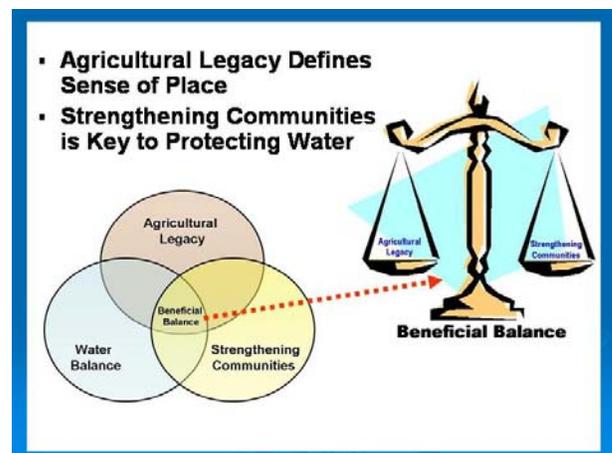
Listen, Listen, Listen.

Because...

Conversations →
will lead to Dialogue →
will lead to Consensus

The initial round of conversations in late 2005 provided a starting point for a follow-on series of ‘conversational meetings’ with the Town of Oliver and others. The decision to focus on the Town was a logical one because the Oliver region is the focal point for a *Smart Growth on the Ground* community planning initiative; as well, numerous provincial and federal agencies are concentrating their program efforts in the South Okanagan.

Achieving the ‘Beneficial Balance’: In 2005, we created the graphic below to help Okanagan communities visualize how to address challenging priorities for land and water. The three circles represent core concepts emerging from the discussion of settlement, economic growth and water supply pressures. We define the intersection of these circles as the *beneficial balance*.



This communication tool provided the backdrop for design of the March 2006 Working Session in Oliver. Because water is the common link between the agricultural and residential communities, our objective was to explore how the following principles can be applied in the Oliver region:

Principles Underpinning an Okanagan Water Balance Strategy

1. Understand that Natural and Built Environments are Connected
2. Embrace Water as the *Unifying Element* for Sustaining Livability
3. Increase Agricultural Water Use Efficiency to Offset Climate Variability and / or Expand Irrigated Farmland
4. Reduce Residential Water Use to Support Population Growth in Urban Centres

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2.2 Event Design

Included as Attachment A is the detailed Agenda that guided the March 2006 working session. This is complemented by Table 1 which identifies individuals who participated in the session. It was crucial that three elected officials were among the participants - at the end of the day, they are the ones who have the authority to act in the best interests of their constituents by making water-centric policy decisions.

Event design was based on an approach that we call 'structured flexibility' - because it keeps participants on topic while enabling them to be creative in working towards a set of desired outcomes. To guide each discussion topic, a context presentation established a working theme. The emphasis was on a conversational approach that engaged participants, encouraged roundtable brainstorming, and contrasted with an approach that too-often "presents at" participants.



Themes: The comprehensive scope of the working session is underscored by the topic themes listed below:

- Water OUT = Water IN: Context and Expectations
- Wine Village Vision: A Place or A State-of-Mind?
- Water System Tutorial: Celebrating Success
- Okanagan Agricultural Strategy: Saving Water in Oliver
- Applying the *Soft Path for Water* in Oliver – What Does Leading by Example Mean?
- BC Community Water Improvement Program: What are the Implications of the Ministry's Expectations?
- Moving Forward with the *Soft Path for Water* in the Town of Oliver – So, What are the Next Steps?

The Town is the accountable level of government, and it is the Town's choices that will make or break water-centric planning over the long-term.

Outcomes: The working session was designed to provide participants with a common understanding of:

1. Constraints and opportunities associated with accommodating future population growth through land use densification;
2. On-the-ground realities that are shaping implementation of a pragmatic approach to 'integrated water management' in the Town;
3. How the Agricultural Component of the *Okanagan Basin Water Strategy* is being implemented in the Oliver region;
4. How the *Soft Path for Water* can help achieve the Wine Village Vision to 'lead by example';
5. What is meant by a "Council-endorsed water conservation plan that is a working document"; and
6. How provincial government programs can be aligned with the 'water-centric needs' of the Town of Oliver.

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TABLE 1 – List of Working Session Participants

	NAME	POSITION	REPRESENTING
1	Pat Hampson	Councillor	Town of Oliver
2	André Miller	Water Councillor	Oliver Rural Water Customers
3	Rick Machial	Water Councillor	Oliver Rural Water Customers
4	Tom Szalay	Town Manager	Town of Oliver
5	Bruce Hamilton	Director of Operations	Town of Oliver
6	Arvid Bensler	Waterworks System Operator	Town of Oliver
7	Les Lawther	Economic Development Officer	Oliver & District Economic Development Society
8	Kim Stephens	Program Coordinator	Water Sustainability Action Plan for British Columbia
9	Ted van der Gulik	Senior Engineer, Resource Management Branch (Abbotsford)	Ministry of Agriculture & Lands
10	Glen Brown	A/Director, Municipal Engineering Services Branch (Victoria)	Ministry of Community Services
11	Des Anderson	Regional Groundwater Hydrologist (Penticton)	Ministry of Environment
12	Oliver Brandes	Senior Research Associate & Project Leader	POLIS Project on Ecological Governance (at University of Victoria)
13	David Arsenault	Regional Growth Strategies Coordinator	Regional District of Okanagan-Similkameen
14	Greg Armour	Program Manager	Okanagan Basin Water Board

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SECTION 3

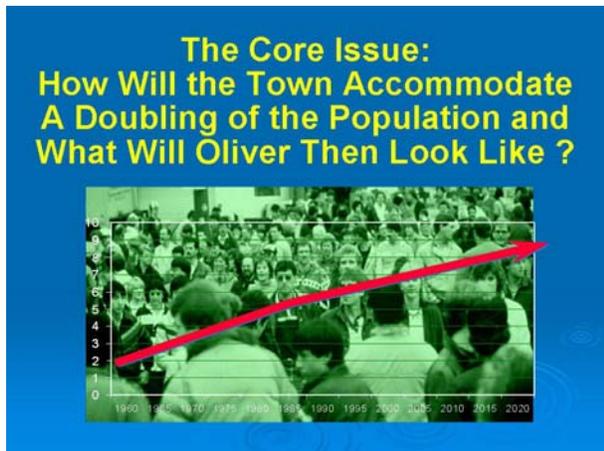
What We Learned

3.1 Setting the Scene

Population growth in the South Okanagan is being fuelled by people moving into the region, seemingly in search of a lifestyle. In particular, the population of Greater Oliver is projected to increase from 9,000 to 15,000 within a matter of a few decades.

Defining Questions: Because there is a limited area of land available for intensive residential settlement, most of the projected population increase will need to be accommodated within the existing Town boundaries. In view of the four ‘water balance principles’ introduced in Section 2, the land constraint leads to four fundamental questions that will ultimately define a ‘water-centric growth management strategy’:

1. How can a doubling of the Town’s population be physically accommodated?
2. What would the Town look like with double the existing population?
3. Can the service population be doubled without developing new sources of water supply?
4. How can agricultural water use efficiency be achieved?



Wine Village Vision: The Greater Oliver region presents itself as the Wine Capital of Canada:



The Masterplan adopted by community stakeholders in 2002 described the Wine Village vision as follows:

The Town of Oliver is the quintessential wine village, presenting a welcoming arbour-motified, grape-laden, sunny face to the world. Honouring wine production, but being true to itself – maintaining its 30’s look and other aspects of an historic element, providing a sophisticated shopping experience while meeting the retailing needs of its farm and wine based industry. Not sprawling, but neatly self-contained, well laid out, user friendly, with attractive townhouse type of developments nestling amongst the older housing tracts, with sufficient services to meet the area’s professional needs.

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3.2 Form of New Development

A doubling of the Town's population can only be accommodated by means of high density land redevelopment. Construction of *The Wine Village* will initiate the densification process; and will also establish the standard for all future large-scale commercial and residential development in the Town, especially from a water use perspective.

The first project is now in the negotiation phase, with key features of this \$75M to \$100M development on 4.2 acres captured succinctly as follows: *green, wired* and *pedestrian-oriented*. The project will follow 'smart growth' principles; and will integrate technology that is state-of-the-art.

Smart Growth on the Ground: Both the Town and the Regional District have contracted *Smart Growth on the Ground* to carry out a community planning process for the Town and the surrounding Area C. The expectation is that the process will 'build capacity' consistent with the intent of the Education Strategy as stated in the Wine Village Masterplan; also, that the process will generate answers to the first two questions introduced on the previous page, namely:

1. How can a doubling of the Town's population be physically accommodated?
2. What would the Town look like with double the existing population level?

The deliverable is a Development Concept Plan. This is being created through a public involvement process. The plan will provide a 'picture' of the possible future Oliver, and should help answer the question: *Is the Wine Village a place or state-of-mind?*

Implications for Water Management:

From a water-centric perspective, the Wine Village vision creates the opportunity for Oliver to 'lead by example' through an integrated strategy – that is, one that combines:

- installation of water saving technology indoors; and
- implementation of landscape-based approaches for saving water outdoors.

Given an identical service population, a reasonable expectation is that total water use in the Wine Village will be considerably less than that for a single family residential area. So, could the service population be doubled without developing new sources of water supply (*Question #3*)?

Yes, as the existing housing stock is replaced and converted to high density development over time, this creates an opportunity to regulate a difference. For example, developers could be required to achieve a building/site design objective such as this: *Limit total annual water use after redevelopment to half that before redevelopment (i.e. on an equivalent area or per capita basis)*. In other words, do more with less.

Current residents need not be asked to save water in order to accommodate newcomers. They should, however, be asked to do their part to eliminate wasteful water use.

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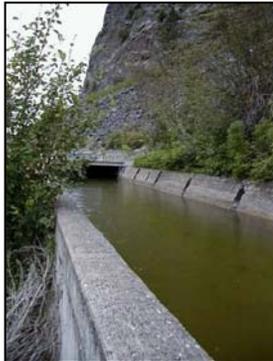
3.3 Water System Overview

This section highlights key information regarding water supply in the Greater Oliver region. The purpose is to provide readers with a basic understanding of operational concepts. This is a fundamental building block in terms of assessing constraints and opportunities for integrated water management. For more detailed information on the Oliver Water System, the reader is referred to the PowerPoint presentation by Bruce Hamilton that is posted on the WaterBucket Website.

<http://www.waterbucket.ca/cfa/>

History: Prior to 1990, the Town and the surrounding Rural Area were served by separate water supply systems. In 1990, the systems were amalgamated and the Province gave the Town responsibility for system operation. The Town made the decision to treat the combined system as one utility. Under the current governance system, the Town's rural water customers elect two water councillors to represent their interests at the Council table.

The historical source of water supply for the Rural Area is a diversion canal from the Okanagan River; whereas the Town pumps from groundwater wells. The canal was built in the 1920s, and has been rehabilitated over the past 12 years. Oliver has a 1908 water licence that has the #2 priority for water allocation in the Okanagan Basin.



Operation: The amalgamated water system comprises eight historical systems, many of which are inter-connected. Although this results in a complex system to operate, complexity in fact leads to flexibility. A snapshot of the eight systems is presented below:

In-Town System
Year-round:

- All customers supplied by wells

Rural System
During Irrigation Season (April thru October):

- 4 systems – Surface water / canal supply
- 1 system – Pumps direct from Okanagan River
- 1 system – Wells
- 1 system – Wells for domestic; Canal for irrigation

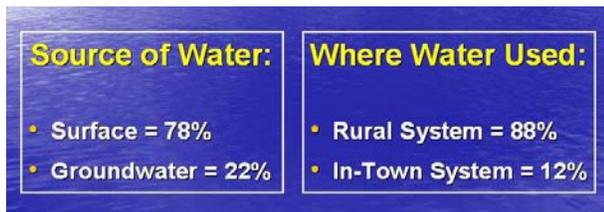
Rural System
During Non-Irrigation Season (November thru March):

- All customers supplied by wells

During the November through March non-irrigation season, the canal is shut down and all users are supplied with groundwater.

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Water Use Data: Key statistics are synthesized as follows to provide context for water supply and usage patterns within the area served by the Oliver Water System. The annual volume of water used for agricultural and domestic purposes within the rural area is eight times the volume consumed within the Town boundaries. In broad-brush terms, more than 90% of Greater Oliver water use is for agricultural and turf irrigation purposes.



Water Twinning Project: At present, a single pipe supplies customers with water for both indoor and outdoor purposes in seven of the eight service areas. New public health protection and drinking water treatment requirements have provided the driving force for implementation of the Town's *Water Twinning Project*. This means that a second pipe will be installed exclusively for indoor uses.



When the project is completed, 100% of the Town's rural and in-town residential customers will be supplied year-round with high quality groundwater. Currently, 18% of the service population is supplied with lower quality canal water during the irrigation season. This surface source is especially vulnerable to contamination.

Integrated Water Management: The Town has embraced 'integrated water management' as follows:

- ☑ **Wastewater Management** – 100% of sewage effluent is used for irrigation purposes.



- ☑ **Rainwater Management** – Drywells are used for ground discharge of rainwater runoff, to the extent that is feasible.



- ☑ **Universal Water Metering** – Commencing in 2003, all new service connections within the Town have been metered. The long-term plan is to retrofit all residential connections. Currently, agricultural irrigation connections are not metered; peak demand is regulated by means of a flow control valve at each irrigation connection.

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Groundwater Supply: The Oliver Water System currently comprises eight groundwater sites, some of which have multiple wells. The service area within the Town boundaries is supplied from four wells. An additional well source is being developed in Phase 1 of the pending Water Twinning Project.



There is insufficient groundwater to supply the large volumes required for agriculture.

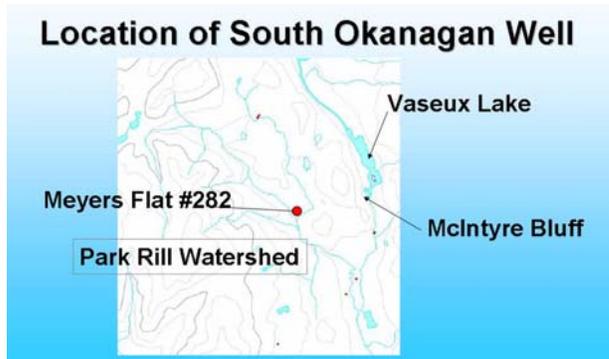
The Town's wells are effectively drawing from the alluvial deposits underlying the Okanagan River, and are comparatively shallow in depth. Water levels in the wells fluctuate with the rise and fall of the river. The aquifer is unconfined.

Groundwater Quality: The wells close to the river are of good quality. The wells located away from the river are characterized as 'hard' such that some customers add water softeners. Although there is currently no water quality problem, the resulting increase in salt level leads to a potential concern about the long-term viability of using reclaimed water for irrigation.

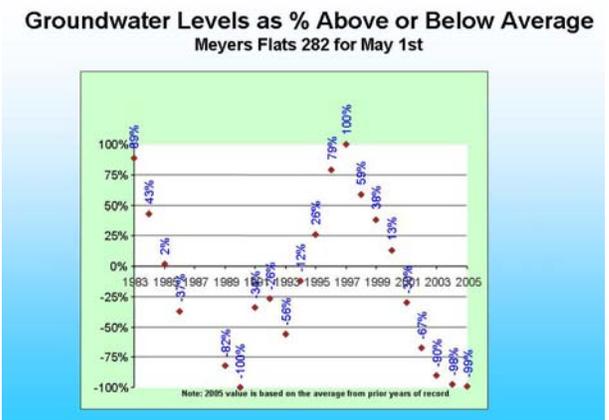
Population Support Capacity: The supply of high quality groundwater is not unlimited. Therefore, it may be a potential limiting factor in terms of population growth when combined with current rates of water use. Thus, population growth must be accompanied by meaningful conservation measures to extend current supplies. These could include retrofitting of water saving measures in existing developments; as well as making sure new developments are designed to conserve indoor and outdoor water use through water saving fixtures, increased development density and reduced lawn and garden areas.

Groundwater Assessment in the Okanagan Basin: Due to a lack of regional data, there is uncertainty about the influence of surface and groundwater withdrawals. There is also concern regarding the current groundwater deficit. For these reasons, the *Groundwater Assessment in the Okanagan Basin* (GAOB) project was initiated in 2003 to assess and characterize groundwater resources in the Okanagan. One of the expected outcomes is a regional groundwater budget.

Monitoring Results: Presented below are data for the Meyers Flat Monitoring Station.

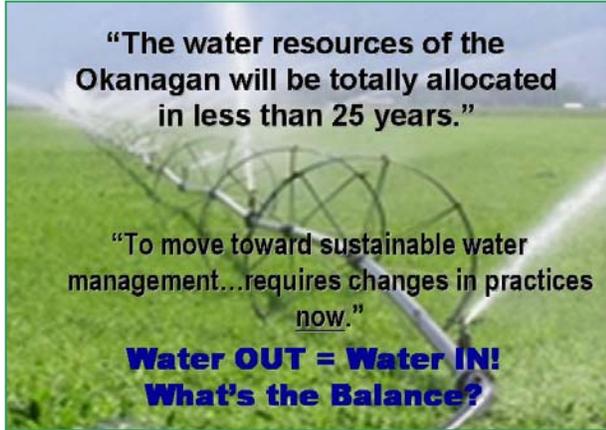


As shown in the graph below, there have been eight years of groundwater decline. The 2005 level was 9% lower than during the same period for the 2003 drought year. During the same period, there has been no apparent decline in the Town's wells.



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3.4 Okanagan Basin Water Strategy



Ted van der Gulik of the Ministry of Agriculture and Lands presented information on two topics:

- Agriculture Water Model
- Irrigation Metering & Scheduling

Both his presentations can be downloaded from the WaterBucket Website:

<http://www.waterbucket.ca/cfa/> .

Agriculture Water Model: The agricultural community will make changes to irrigation systems and water use practices when farmers can be shown that the need for action is founded on commonsense plus conclusive data. The Ministry is building a database that comprises land use, crop types, irrigation systems and soil conditions for each and every property in the Okanagan Basin.

Agriculture Water Model

Use Geographic Info Systems (GIS) to:

Goal: Develop Property-by-Property Understanding of Water Use and Needs

Objective: Make Informed Decisions on Water Management

Result: Planning Tools that Secure Water for Current and Future Agricultural Needs

Climate Change: A key message is that the Okanagan does not have as much water as in the past, and this is happening more often than not. Warming trends means there is less snowpack in the uplands to re-fill water storage reservoirs; at the same time, the annual rainfall is decreasing. Yet agriculture will need more water in future, mainly because of a longer growing season due to a warmer climate. It is for this reason that the Ministry has launched its water balance approach to the Agricultural Component of the Okanagan Basin Water Strategy.

Figure 1 illustrates the impacts of climate change on the Okanagan.

Another key message is that the combination of uncertainty and risk due to climate change is driving the need to use water more wisely and efficiently.

GIS at Work

- Querying an individual property for cropping, irrigation system etc.
- Determining the land base that is irrigated
- Summarizing how much land can still be irrigated

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

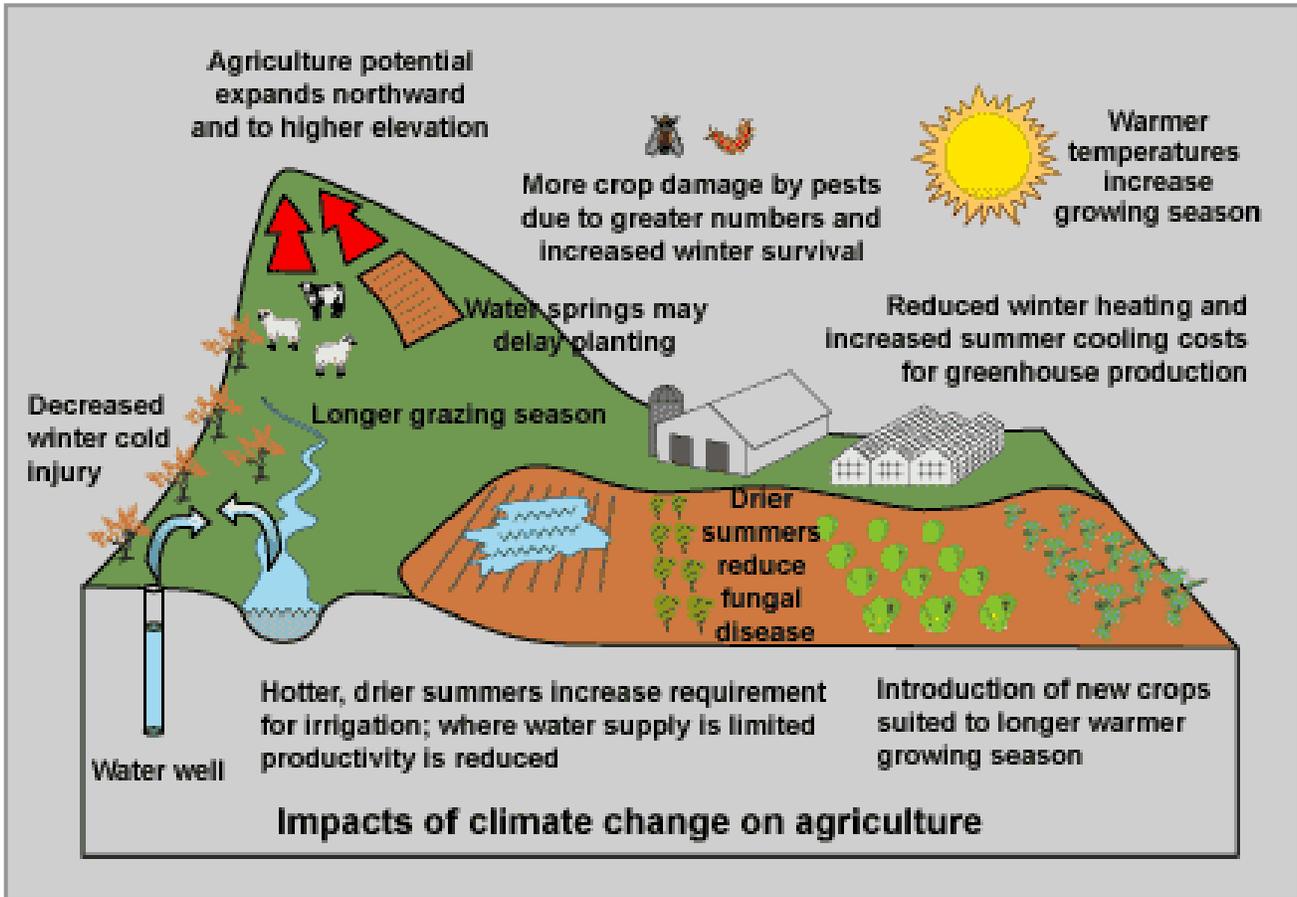


FIGURE 1

Graphic Credit: John Arber,
Water Stewardship Division, BC Ministry of Environment

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

Saving Irrigation Water: The National Water Supply Expansion Program (NWSEP) is funding on-farm initiatives that are designed to improve water supply, water conservation and irrigation scheduling. The program is also providing incentives for irrigation water purveyors to manage water more effectively.

Agricultural Metering: NWSEP is providing grants of up to \$200,000 for universal agricultural irrigation metering in six Okanagan districts, namely: Vernon, Glenmore, Westbank, Lake Country, Summerland and Black Mountain.

Irrigation System Design: A key message is that substantial water savings can be achieved through better system design. This is a 3-step process as synthesized below:

Metering Purpose

The meter does **NOT** save water.

The meter is only a tool to:

- Ensure a fair distribution of water
- Ensure that agriculture is allocated sufficient water to meet needs
- Assist districts to manage water and provide a useful tool in times of drought



Steps to Improving Irrigation Management

- **Efficiency:** select the most efficient system possible
- **Uniformity:** design the system to achieve the best uniformity
- **Scheduling:** apply irrigation to match crop and soil conditions



Results

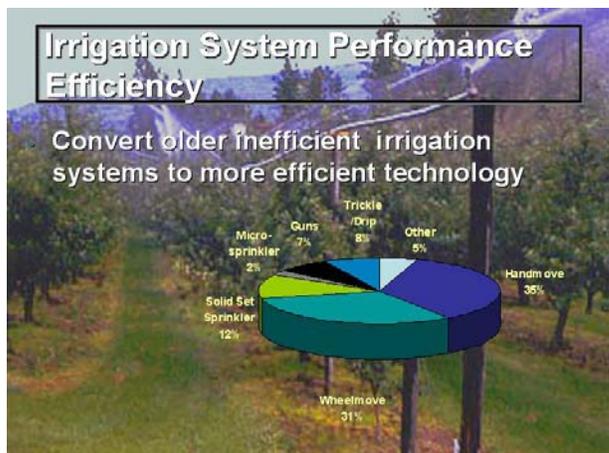
Water Use Reporting and Land-Use Database (WURLD) will incorporate data from:

- Metering
- Scheduling
- Climate
- Land use

A report can be generated for producers that shows actual water use compared to requirements based on climate.

Another key message is the need to get irrigation system designers certified. There are too many examples of poor designs and poor installations resulting in wasteful water use.

Water saved by agriculture will be used by agriculture in two ways: adapt to climate change; and provide opportunities for enhancing crop production and quality (i.e. frost protection, crop cooling, and fertigation).



Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

3.5 The Soft Path to Water Sustainability

The largest source of “new” water for the Town and Rural Area in the coming decades will be from greater efficiency and conservation. According to Oliver Brandes of POLIS, just as we have come to think in terms of “negawatts” (*Amory Lovins*) associated with the range of actions to reduce electricity demand, we will begin to think in terms of “negalitrres” as new water demands are met through efficiency and conservation.



Water Management Continuum: Water management can be viewed on a continuum (or spectrum) that includes three distinct approaches:

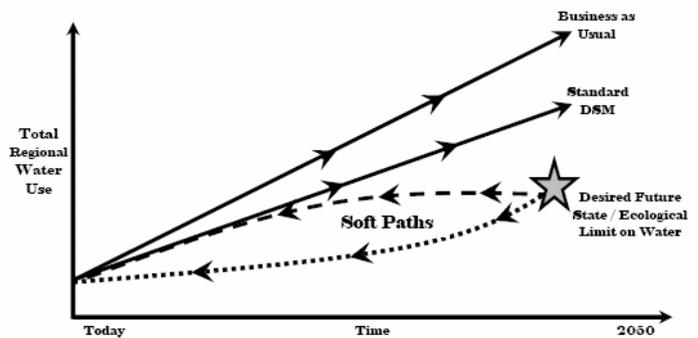
- supply-side
- demand management, and
- the 'soft path'

At one end of the spectrum, supply-side approaches seek to increase the capacity to withdraw water through large infrastructure. Demand-side management complements the supply-side approach and shifts thinking to cost-effective measures that aim to reduce the need for more supply.

At the other end of the spectrum, a "soft path" for water takes the management approach beyond traditional concerns to consider how we might redesign the underlying human systems that determine demand and our approach to supply.

Looking Ahead by Working Backwards:

Traditional planning starts from the present and projects forward to the future. Soft planning does just the reverse. First, it defines a desirable future state. It then works backward to identify policies and programs that will connect the future to the present. This technique is called ‘backcasting’ – in contrast to forecasting – and is illustrated below:



Oliver Case Study Applications: The Twinning Project illustrates the application of the soft path way-of-thinking. The design team first established what level of capital cost the Town could afford. The team then worked backward to develop a design philosophy and size the system components accordingly. This approach can also be applied to the Wine Village, as shown below, to determine how to cut water demand in half.



Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

3.6 Provincial Grant Programs

Glen Brown reported that his Ministry -- Community Services -- is developing new tools for use by local governments so that they can make informed infrastructure decisions. The Ministry's objective is to help local governments *add value* through grant programs. Two tools currently being pilot tested by a number of local governments are:

- Water Conservation Calculator
- Infrastructure Benchmarking Initiative

The output from these tools will also be used by the Ministry to evaluate the effectiveness of proposed program spending. This provides context for the 'fine print' in Grant Agreements, in particular the Ministry's expectation that local governments will develop and implement a *Council-endorsed water conservation plan that is a working document*.

Water Conservation Calculator: The WC² decision support tool illustrates how specific conservation measures yield both fiscal and physical water consumption savings. It is also designed to assist water managers in small communities present their conservation case to elected officials and/or other decision-makers. The tool will provide users with results in the form of comparison charts. The Ministry will then be able to complete a larger comparison analysis vis-à-vis all participating communities.

Water Conservation Calculator WC²

□ What is the WC²?

- Conservation planning/decision support tool
 - Provides current system overview
 - Forecasts future demand
 - Enables back casting

Infrastructure Benchmarking Initiative: Benchmarking is the process of recording operational data over time and then measuring that data against itself as well as other service providers to assist in identifying service and system performance improvements that could be made. The Infrastructure Benchmarking Initiative (IBI) promotes sustainable water management.

Infrastructure Benchmarking Initiative IBI

□ What is the IBI?

→ Best Practices within the following municipal service areas:

- drinking water systems,
- wastewater management,
- rainwater management, and/or
- energy efficiencies.

Population in Community Service	Cost per cubic meter per capita (\$/Cm3)
1	0.25
2	0.20
3	0.30
4	0.35
5	0.25
6	0.25
7	0.25
8	0.25
9	0.25
10	0.25

The WC² decision support tool is being developed by the Ministry in collaboration with POLIS.

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

3.7 What Does All This Mean?

At the end of the day, Oliver Brandes identified a set of five preliminary conclusions that provided a perspective on what the group had learned:

1. Water policy is a poor proxy for land use decisions. In other words: *“Water should not be an excuse for not having neighbours.”*
2. The Town of Oliver has already made substantial progress in moving along the water management continuum. In fact, the Town can take pride in celebrating its successes - because it is creating a showcase with on-the-ground applications of integrated water management: *“The earlier one starts, the easier it is.”*
3. The Wine Village is a great lever for change because it is creating the opportunity to do more with less water.
4. Urban design (redesign) is itself a conservation tool, especially as it parlays additional change.
5. So, what creates innovation? The short answer is necessity. This is the essence of the Town of Oliver experience to date related to integrated water management.

In summary, the decisions made today will create the future. There are many pathways to get from the present to the future. As the working session showed, there are many tools that the Town can use to achieve the *soft path to water sustainability*.

Innovation and Water Conservation:

Yes, the Town of Oliver has been innovative in terms of implementing an integrated approach to water management. At the same time, there has been little incentive for the community to take the need for water conservation seriously. There is a sense that water is abundant – for example, lawns remained green during the 2003 drought because there was no local water shortage. There has not yet been a truly ‘teachable moment’ that results in a lasting change in behaviour. The comparatively high water use is reflected in these preliminary statistics that the Town has compiled:

In-Town Per Capita Consumption Data
(in Litres per Day)

	2003	2004	2005
Oliver	1664	1335	1304
Osoyoos	1382	1328	1295
Penticton	703	639	675

A Look Ahead: The simple comparison above indicates that there is considerable potential to use less water per capita in the Town of Water. The challenge is in moving from talk to action.

Final thought

“As we peer into the twenty-first century, water conservation is looking far more like an imperative than an option.”

A. Vickers (2001)
Handbook of Water Use and Conservation

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

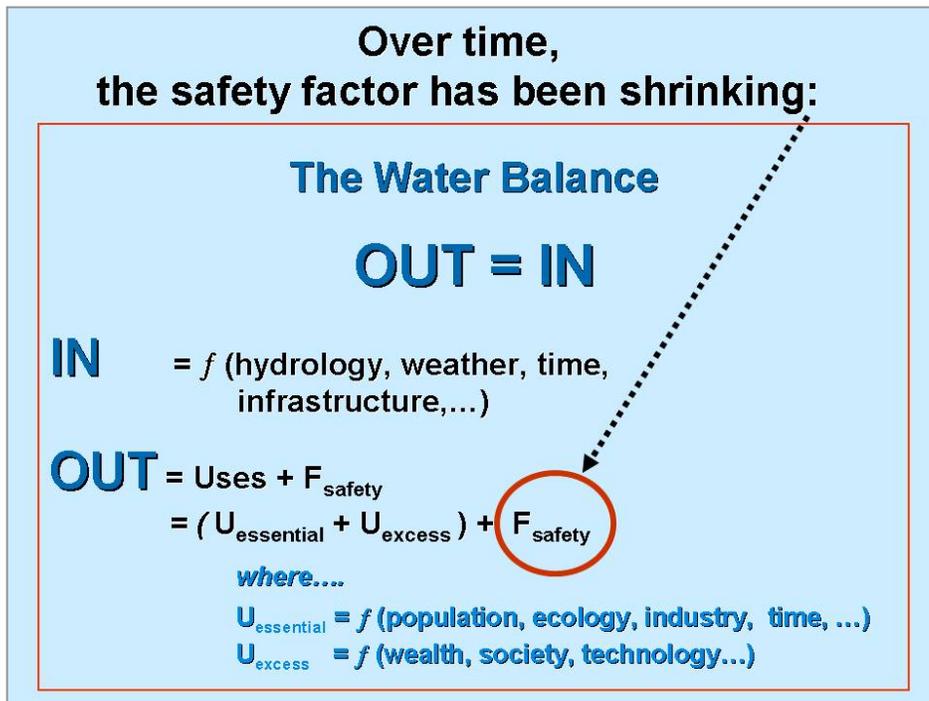
SECTION 4

Getting from “There to Here”

4.1 Context

To build on what was accomplished on March 30th, it is necessary to think incrementally about how to get from “there to here”. The objective is to identify the series of actions that can or will happen in the next three, six or twelve months. These incremental actions also need to be viewed in the context of the local and regional building blocks that are providing the case study foundation for *Water-Centric Planning: A Guidebook for British Columbia*.

Dealing with Uncertainty and Managing Risk: Context is provided by the water balance equation as presented on Figure 2. This illustrates the essence of water-centric thinking. A core message is that the **Water OUT = Water IN** equation is variable on both sides. To understand the equation in an engineering context, we need to think in terms of a safety margin (or factor of safety) and what that actually means in practice.



In a nutshell, when the service population is small and the safety factor is large, climate variability may be inconsequential. As population and water demand grow, however, the safety factor shrinks. Eventually we reach a condition of vulnerability where a small shift in the water balance can trigger a supply crisis. Ensuring a safe and adequate water supply depends on understanding the science behind the **Water OUT = Water IN** equation, as well as understanding what this means operationally on the ground. Over the past 20 years, we have effectively used up the safety factor because we have not understood climate variability.

FIGURE 2

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

4.2 Local Actions

The Town has received a \$2 million grant from the Province for Phase 1 of the Water Twinning Project. As a condition of the grant, the Ministry's expectation is that the Town will prepare a Council-endorsed water conservation plan that will be a working document. The incentive for the Town to implement an Action Plan is the likelihood that this will improve its chances for obtaining additional funding for this \$9M project.

First Steps: Immediate actions arising from the March 30th working session include:

1. Tell the story of the working session to continue the process of informing and educating the community and elected officials about the long-term benefits of changing water-use habits, technologies and practices.
2. Inform the *Smart Growth on the Ground* process regarding the workshop outcomes.
3. Partner with the Province to pilot test both the Water Conservation Calculator and the Infrastructure Benchmarking Initiative.
4. Partner with the Province to apply the Agriculture Water Model to secure water for current and future agricultural needs.
5. Collaborate with POLIS to quantify the relationship between water use and development density (as envisioned for the Wine Village and beyond).

A Look Ahead: The Town's journey along the *soft path to water sustainability* will become a case study in the proposed Guidebook. For the purposes of telling the Town's story, the defining milestone will be when Council accepts a *Water-Centric Plan for Land and Water Use*. An important part of the story is the 'integrated water management' implemented to date, including: irrigation with reclaimed water; and ground discharge of rainwater runoff.

4.3 Regional Actions

The intent is that the Town of Oliver experience will provide a 'water-centric template' for other communities in the South Okanagan, in particular those seeking provincial funding for infrastructure projects. In terms of the building block process:

- *Convening for Action in the South Okanagan* is being informed by Oliver.
- Convening for Action will in turn inform the RDOS Regional Growth Strategy.
- Convening for Action will also inform the Okanagan Basin Water Board (OBWB).

Building Blocks

- Water-Centric Planning:
A Guidebook for British Columbia
- South Okanagan
Regional Growth Strategy
- Convening for Action
in the South Okanagan
- Town of Oliver:
Smart Growth on the Ground



First Steps: Immediate actions arising from the March 30th working session include making overview-type presentations that will inform:

6. Okanagan Water Stewardship Council
7. Inter-Governmental Advisory Committee for the RDOS Regional Growth Strategy
8. RDOS Regional Growth Strategy Steering Committee.

In addition, other early actions include:

9. Raise provincial awareness of the "South Okanagan case study" by holding a half-day mini summit in conjunction with the 2006 Annual BCWWA Conference.
10. Undertake water-centric working sessions in other South Okanagan communities.

Water-Centric Planning in Oliver: Dealing with Uncertainty & Managing Risk

Attachment A – Agenda

(For March 30/06 Working Session hosted by the Town of Oliver)

Water-Centric Planning in the Community of Oliver: Dealing with Uncertainty & Managing Risk

Theme	Lead	Scope of Information Sharing	Desired Outcome
PART A – MORNING SESSION (0900 – 1200)			
1 Water OUT = Water IN: Context & Expectations	Kim Stephens	<ul style="list-style-type: none"> ▪ Refer to the 'mind map' for an overview ▪ Self-introductions: who I am; why I am here; what I hope to achieve ▪ How the "Oliver experience" can serve as the cornerstone for the proposed <i>Water-Centric Planning: A Guidebook for British Columbia</i> 	There will be a shared understanding of individual expectations in sharing information and brainstorming how various 'water-centric initiatives' can help the Town achieve its 'water management vision' over time
2 Wine Village Vision: A Place or A State-of-Mind?	Les Lawther	<ul style="list-style-type: none"> ▪ The Wine Village Vision: "context is everything" ▪ Does the vision apply to a core area or the community as a whole? ▪ How will population growth from 9,000 to 15,000 be accommodated? 	There will be a common understanding of the constraints and opportunities associated with accommodating future population growth through land use densification
3 Water System Tutorial: Celebrating Success	Bruce Hamilton	<ul style="list-style-type: none"> ▪ Sources of water supply: canal (agriculture); groundwater (residential) ▪ Proportion of water use: agricultural (~90%) versus residential (~10%) ▪ Recent innovations: pipe twinning; reclaimed water; rainwater infiltration 	There will be a common understanding of the on-the-ground realities that are shaping implementation of a pragmatic approach to 'integrated water management' in the Town
4 Okanagan Agricultural Strategy: Part 1 on Saving Water in Oliver	Ted van der Gulik	<ul style="list-style-type: none"> ▪ How can and how will agriculture secure its water supply in the Okanagan? ▪ The Ministry of Agriculture is building a database that comprises land use, crop types, irrigation systems and soil conditions for every property ▪ The agricultural community will make changes to irrigation systems and water use practices when farmers can be shown that the need for action is founded on commonsense plus conclusive data 	There will be a common understanding of how the Agricultural Component of the <i>Okanagan Basin Water Strategy</i> is being implemented in the Oliver region
PART B – AFTERNOON SESSION (1300 – 1600)			
5 Okanagan Agricultural Strategy: Part 2 on Saving Water in Oliver	Ted van der Gulik	<ul style="list-style-type: none"> ▪ The <i>National Water Supply Expansion Program</i> is funding on-farm initiatives that are designed to improve water supply, water conservation and irrigation scheduling ▪ The program is also providing incentives for irrigation water purveyors to manage water more effectively 	There will be a common understanding of how the Agricultural Component of the <i>Okanagan Basin Water Strategy</i> is being implemented in the Oliver region
6 Applying the <i>Soft Path for Water</i> in Oliver – What does Leading by Example Mean?	Oliver Brandes	<ul style="list-style-type: none"> ▪ The continuum: from supply-side thru demand-side to the soft path ▪ Scenarios for changing water use habits, technologies and practices ▪ Tailoring an approach to reflect what is possible and do-able in Oliver 	There will be a common understanding of how the <i>Soft Path for Water</i> can help achieve the Wine Village Vision to 'lead by example'
7 BC Community Water Improvement Program: What are the Implications of the Ministry's Expectations?	Glen Brown	<ul style="list-style-type: none"> ▪ The fine print in the contract for the pipe twinning project ▪ Connecting the dots to create a plan ▪ Pilot municipality for the Ministry's Water Conservation Calculator 	There will be a common understanding of what is meant by a "Council-endorsed water conservation plan that is a working document"
8 Moving Forward with the <i>Soft Path for Water</i> in the Town of Oliver – So, What are the Next Steps?	Tom Szalay	<ul style="list-style-type: none"> ▪ Weaving a storyline that makes sense ▪ Have expectations been met? ▪ Where do we go from here? 	There will be a common understanding of how senior government programs can be aligned with the 'water-centric needs' of the Town of Oliver

This working session was organized in collaboration with the Town of Oliver under the umbrella of the outreach and continuing education program for the Water Sustainability Action Plan for British Columbia