



# Regional Growth Strategy

## Water Resources Discussion Paper

*Planning for the Future*

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Regional District of Central Okanagan  
District of Lake Country  
District of Peachland  
City of Kelowna



## ***Planning for the Future***

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District of Lake Country  
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City of Kelowna**

The Central Okanagan Regional Growth Strategy is a coordinated plan by local governments and provincial agencies to manage future growth by using resources wisely and supporting a high quality of life.

Water Resources is one of seven key regional issues examined through Discussion Papers.

This Discussion Paper contains two reports

### **Water Resources Plan of Action**

By Regional District of Central Okanagan  
Planning Department, December 2000  
With subsequent actions to June 2001

### **Water Resources in the Central Okanagan**

By Dobson Engineering Ltd.  
June 2000

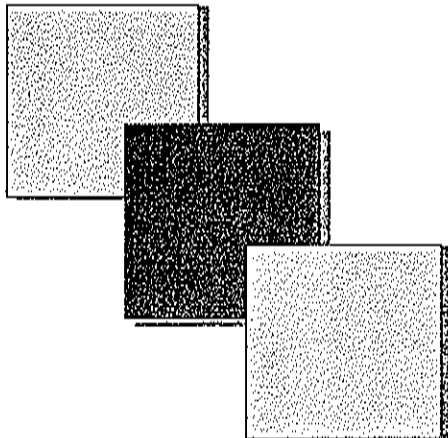
Copies of the Discussion Paper are available from

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[www.regionaldistrict.com](http://www.regionaldistrict.com)



# Regional Growth Strategy

## Water Resources Plan of Action



December 2000

Regional District of Central Okanagan  
District of Lake Country  
District of Peachland  
City of Kelowna

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Appendix A - Details of Water Models

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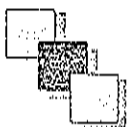
## *1.0 Summary*

The Central Okanagan is a region of sustained growth and development that presents both challenges and opportunities to the local and provincial government. Although growth can be beneficial to the community, poorly managed growth can have undesirable impacts on the water resources, land base, air quality, in fact all of the unique features that make the region so attractive.

Regional Growth Strategies offer opportunity for communities to coordinate planning and to manage components of growth and development on a regional basis. In the Central Okanagan, municipalities and the regional district have committed to address water issues related to growth. Staff was commissioned to work with other stakeholders in defining actions that will sustain the health of water resources within the Central Okanagan. Concurrent with this work, the three regional districts of the Okanagan Valley have explored opportunities for an Okanagan Basin initiative in partnership with all agencies involved water management.

In June 2000, the Central Okanagan Regional District board and councils of Kelowna, Lake Country and Peachland received a Discussion Paper entitled "Water Resources in the Central Okanagan". At that time, elected officials requested further information to be brought forward in advance of local governments undertaking any regional commitment or partnership relating to water. The purpose of this report is to provide the requested information and to provide opportunity for advice from provincial and municipal partners of the Intergovernmental Advisory Committee (IAC).

A number of regional models are described in this report and represent several different policy options. The Water Resources Discussion Paper documents the complexity of water management, and identifies that there are both overlaps and gaps in the present system. From perspective of the regional growth strategy, staff advises that there is little advantage in becoming "one more player" in what is already a complex web of water mandates, roles and responsibilities.



There is however considerable value in demonstrating leadership on behalf of water users. The most effective participation is likely to come from a future Okanagan Basin (valley-wide) partnership. There would be added value in the Central Okanagan communities working collectively on issues relative to streamside development and to regional water use planning as these issues are closely related to urban growth and development.

The regional models presented in this report and the recommendations made by Dobson Engineering were considered by the IAC and the following recommendations were made.

*As a first priority, it is recommended that there is considerable value in managing water resources at a basin level and this could be through an Okanagan Basin initiative. IAC members give full encouragement to the proposed basin wide partnership. While it is not yet clear what the Basin initiative will focus on, it will likely start with broad based water stewardship activities.*

*As a second priority, communities in the Central Okanagan should take action of their own, to complement the Basin initiative. The Board and Councils should instruct staff to take action in an incremental manner, supporting greater coordination of water delivery, linking major land use decisions to water use planning, and supporting stewardship or restoration of individual streams and watercourses.*

This report was presented for information to the Regional District's Planning and Environment Committee in the fall of 2000 together with an offer from Fisheries and Oceans Canada and BC Environment for the creation of a regional Habitat Steward position. At the same time, the Okanagan Basin Water Board was developing a proposal for "A New Partnership for Water Management in the Okanagan Basin". Outcomes of these activities are detailed in Section 6.2 and 6.3 of this report and include the following:

*Creation of a Regional Habitat Steward position within the Central Okanagan supported by an initial three-year partnership agreement with Fisheries and Oceans Canada and BC Environment;*

*Decision by the Okanagan Basin Water Board to convene a State of the Okanagan Basin Conference in the spring of 2002, to establish a central water related data clearinghouse at Okanagan University College, and to promote coordinated and cost effective water management actions among Okanagan communities.*



## 2.0 Purpose and Background

In June 2000, the Regional District of Central Okanagan received a report by Dobson Engineering Ltd. entitled "*Water Resources in the Central Okanagan – A Discussion Paper within the Growth Management Strategy*". In considering the Discussion Paper, members of the Regional Board requested further information to be brought forward in advance of local governments undertaking any new role or responsibility for assisting in the management of provincial water resources.

The Regional Board directed staff to report on potential regional role(s) in water resource management in respect of the following:

- There is concern about the sustainability of water resources. The Central Okanagan is an area of rapid population growth and is an important regional economic centre of the province. The Okanagan Valley has limited water supply and has over allocated water or compromised habitat in some stream tributaries. This has been detrimental to the health of the water resource and to fish populations, such that water quality itself is at times the subject of public concern and debate.
- There is commitment from Central Okanagan member municipalities (Kelowna, Lake Country and Peachland) and from electoral areas to work together through the "Regional Growth Strategy" on meeting a common objective of "...improv(ing) regional water quality, and generally promoting development that sustains and enhances the environment."<sup>\*\*</sup>
- The Regional Board received recommendations from the City of Kelowna's Water Committee in 1999 that the City Watershed Improvement Program be expanded to the Regional District.

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\* Water Resources in the Central Okanagan – A Discussion Paper within the Growth Management Strategy; June 2000; prepared by Dobson Engineering Ltd; received by Regional Board of Directors June 26, 2000.  
 \*\* Extract from Regional District of Central Okanagan Bylaw 851 – "The Growth Management Strategy for the Regional District of Central Okanagan"; June 26, 2000.



- The Regional District has been informed of pending provincial “Streamside Protection” directives, and has received an offer from provincial and federal authorities to undertake a Habitat Steward partnership.
- While water resource management is generally good in the Okanagan, a number of provincial initiatives (including the Okanagan Shuswap Land and Resource Management Plan and the provincial Auditor General’s Report on Drinking Water) have concluded that a more integrated approach to water resource management is required to ensure effective source protection.

The purpose of this report is to provide the information requested by the Regional Board of Directors as a basis for considering any new course of action. On reviewing the *Water Resources Discussion Paper*, the Regional Board identified four areas where additional information was required in order to evaluate the recommendations.

1. What are the roles and responsibilities of regional water authorities, such as the Greater Vancouver Water District?
2. What specifically are the key actions that local governments need to take in order to ensure sustainable water resources?
3. What actions will be undertaken through an expanded role of the Okanagan Water Basin Board?
4. What resources are required to do the work? Are additional financial resources required?

The information on alternative regional water models is contained on pages 6 to 9 of this report. Advice and recommendations are provided on pages 12 to 15.



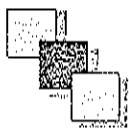
## 2.1 *Key Facts*

The following are used in this report as the basis for analysis.

- Water quality monitored in the Central Okanagan was rated as “Fair” in five creeks, and “Good” in two of seven creeks ranked in the British Columbia Water Quality Status Report, April 1996. Two of the three major lakes in the Central Okanagan were ranked as “Good” and one as “Fair”.
- Loss of aquatic habitat along streams and waterfronts has caused concern for residents and provincial authorities in the region. Low flow is an issue affecting fish in four watercourses.
- The population of the Central Okanagan (including three municipalities and first nation reserves) is now estimated at 152,000 persons (year 2000) and is estimated to grow to 250,000 by the year 2020.
- The total combined size of designated Community Watersheds in the Central Okanagan now is 1,500 square kilometres. This represents half of the region’s land base (refer to Appendix B maps).
- In 1994, the gross municipal and domestic consumptive uses in the Okanagan Basin were estimated at 48,870 acre-feet (equivalent to 60.3 million cubic meters). At current rates of consumption, it is estimated that “the current water supply may just be sufficient to support that population” (as reached in 20 years time, per Dobson report).

## 2.2 *Key Assumptions*

- It may be assumed that local governments and water purveyors in the Central Okanagan will ultimately instigate water conservation in order to provide service during dry years, to provide additional flows for fish, or to service new development nodes beyond that now planned for.



## *3.0 Regional Models and Expenditures*

In evaluating possible regional functions, two questions need answering. First is the cost to regional district taxpayers as compared to today and second is the effectiveness of regional functions as compared to federal, provincial or municipal functions. In this section, several regional models are outlined, representing an approach to water stewardship, to regional water delivery, and to management of watersheds.

### *3.1 Models*

The first three models represent a regional approach to water stewardship.

One regional model is identified by work underway at the Okanagan Basin level. A report by Summit Environmental recommended that Okanagan Basin Water Board evolve to take on more water stewardship functions within the Okanagan Basin, through a "Management Alliance". The proposed basin alliance would be comprised of Okanagan Basin regional districts working in partnership with provincial and federal agencies and other water management stakeholders.

A second model applicable to the Central Okanagan is contained in the 1998 Kelowna Water Quality Task Force report on Watershed Management. Consideration was made to expanding the City's Environmental Division water programs to the region. The core program in water stewardship, education and coordination could be expanded, similar to the approach taken on regional air quality.

A third approach is proposed through the Okanagan Shuswap LRMP, whereby it is proposed that each community watershed be set up with an Advisory Committee representing all water users within the watercourse. Further, the LRMP proposes an "Enhanced Watershed Advisory Committee (EWAC)" for Mission Creek. The EWAC is proposed to have an advisory function to provincial resource managers and to local land use decision makers and initial cost estimates for the EWAC are contained in Appendix A. While the City of



Kelowna and the Regional Board have identified concerns with the proposed EWAC, the general model of a watershed advisory committee represents another possible regional approach.

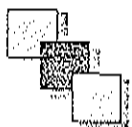
The above three models relate to enhanced water stewardship and provide a base from which watercourse restoration activities or water use allocations may be planned and coordinated. They exclude water purveyor expenditures on water supply and distribution, and the provincial water licensing function.

In the following models from other regional districts, water stewardship activities are undertaken as a part of a long term cost saving to the water supply and delivery function. In the case of Greater Vancouver Water District, Capital Regional District, and parts of North Okanagan Regional District, the responsibilities for watershed management, water supply and distribution are combined. The three models differ in that they represent a "closed watershed", "partially closed", and "open watershed" approach to water resource management. Additional details of each model are provided in Appendix A.

Greater Vancouver Water District (GVWD) represents the "closed watershed" model whereby the region assumed a 999-year Crown Land Lease of three community watersheds and chose to exclude most public access and resource development activities. GVWD supplies wholesale water to 16 municipalities representing 1.9 million persons.

The Capital Region District operates two types of water delivery system. One, a wholesale water system provides bulk water to four municipalities and two water commissions. The regional Water Department operates one of the water commissions, providing water to property owners in another five municipalities and parts of an electoral area. One of the two main watersheds is owned by the Regional District and has been closed to resource development in order to protect the quality of water.

The North Okanagan Water Authority supplies bulk water to two municipalities and parts of electoral areas surrounding Vernon and Coldstream. The watersheds are open to public access and resource use; some water stewardship activities are taken in association with the water license. This is a new function for the Regional District. Management details are outlined in Appendix A but program costs are not available.



### 3.2 *Cost Estimates*

The question of costs for regional actions cannot be clearly answered but anecdotal information was compiled from several sources. These figures are provided to show the "order of magnitude" costs, and should not intended to reflect fixed budgets associated with any particular regional action.

In recent years, the City of Kelowna annual expenditure on watershed protection has been \$180,000., supplemented by external funding of approximately 1/3 that amount. Typically, the City investment is assisted by project grants from other sources for water quality monitoring and stream restoration. At an estimated local government cost of \$300,000., to cover all communities in the Central Okanagan region, a core program in water stewardship, education and coordination could be achieved. This expanded program could access project grants from external sources for additional monitoring and restoration work. The expanded program covering the entire Regional District of Central Okanagan could then realize up to approximately \$2.67 per capita annually for watershed initiatives.

The District of Peachland provides an example of expenditures on water supply and distribution in hillside development areas. Serving a population of 5,000, the District is operating two water systems at a total budget expenditure of \$518,000 in the year 2000 (equivalent to \$ 104.00 per population, although the District notes that \$ 58,000 is attributable to agricultural and golf course irrigation).

Other regional models are detailed in the Appendix and the variety of costs associated with different roles is shown below. They generally indicate the order of magnitude costs, more importantly they reflect how the costs associated with water delivery (including treatment) are substantially more than that typically allocated to water stewardship.



## Regional Models - Expenditures

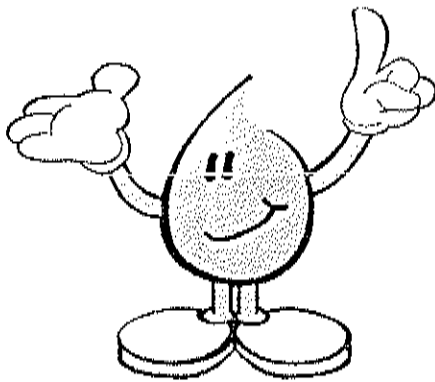
Functions	Examples	Expenditures Per Capita *
Baseline Stewardship Functions (today)		
	Water stewardship activities in the Okanagan	\$ 7.00 +
Water Stewardship – Central Okanagan Proposals		
	Kelowna Program Projected to the Region	\$ 2.67
	Okanagan Basin Water Board Projected Management Alliance	Up to \$3.15
	Projected Mission Creek Watershed Advisory Committee	\$ 10.00
Baseline Water Delivery Functions		
	Greater Vancouver Water District (wholesale water)	\$ 43.00
	District of Peachland (delivery to individual properties)	\$ 104.00

\* The size of population served is different in each model. Details of each function are included in Appendix A. Expenditures include provincial grants.



## 4.0 *How to Move Forward*

At this juncture, the Central Okanagan Regional Growth Strategy partners face several options representing a wide range of policy approaches to water management. The models from other regions vary from regional water delivery and/or watershed management, to coordination of stewardship activities. These options are not necessarily mutually exclusive, and the Region may want to move forward in an incremental manner over the course of a number of years.



The Intergovernmental Advisory Committee (IAC) reviewed the models selected as examples from other regions. Some models appeared to have less immediate impact in addressing issues common to the Central Okanagan region.

For instance, the water delivery function (wholesale or retail) is attractive in that it combines water stewardship and conservation with management and delivery of community water. However, in the Central Okanagan, municipalities or irrigation districts serve the major development nodes (and this is expected to continue in the future). These “water purveyors” are generally of a sufficient size to be well managed and to have funds in reserve to handle emergencies.

The concept of a “closed” watershed may also be compelling. However, the Greater Vancouver situation where three watersheds total 586 square kilometres is unlikely to be supported as a model elsewhere in the province. As a comparison, community watersheds in the Central Okanagan region total 1,500 square kilometres. It may be more reasonable to consider the example set by Capital Regional District whereby an individual community watershed may be closed (fully or partially) on an “as needed” basis.

When considering leadership in water resources, the question was raised whether or not to defer all regional water stewardship activities to be undertaken as an expanded role of the Okanagan Basin Water Board. The feasibility and details of a partnership are being examined more closely through analysis conducted by OBWB (including a stakeholder



workshop held October 31, 2000). While there could be considerable value in managing water resources at a basin level, it is not yet clear what the Basin initiative will focus on. Communities of the Central Okanagan could take action on their own, complementing the Basin initiative and working in an incremental manner on issues most closely related to growth and development.



## *5.0 Regional Action Areas*

Communities in the Central Okanagan are encouraged to enter into common agreements directed at land use, water delivery and/or stream and watercourse protection. As an example, the following policy directions applied throughout the region would be considered valuable:

### *5.1 Policy Directions*

#### Stream and watercourse policy directions:

- Apply BC Environment published guidelines as a baseline for the protection of aquatic habitat in all land development and public sector investments;
- Participate in watershed advisory committees that will allow coordination of management practises on crown and private lands;
- Follow “best management practices” for septic fields and wastewater management, as recommended by Okanagan Basin Water Board and Ministry of Health policies;
- Solicit and accept partnership offers relating to stream or watercourse stewardship and restoration activities.

#### Land use and water delivery policy directions:

- Work toward reducing per capita water consumption rates by requiring water meters in all new homes;
- Work collectively as water purveyors through regional forums such as Kelowna’s Joint Water Committee or the Water Association of BC; and / or
- Establish working relationships with Water Management Branch staff to coordinate land development forecasts with water license allocations and water conservation targets.



## 5.2 *Implementation*

Any or all of the above commitments may be framed as voluntary agreements (implemented through an MoU or Regional Context Statements) or as a new regional function (implemented through regional budget allocations).

A more formal option was outlined in the Water Resource Discussion Paper by Dobson Engineering and would entail “coordination” of stewardship activities and financial resources through a regional Implementation Agreement. Or, as a variation on these approaches, the Central Okanagan could offer to house staff of provincial and federal water management authorities within the Regional District offices, thereby bringing functions such as streamside development referrals “closer to home” and streamlining the referral process.

Upon selection of a course of action, municipal councils and the Regional Board of Directors would give direction to timelines, the allocation of staff or financial resources, and possibly enter into negotiations around roles, responsibilities and funding with the province and other relevant partners.

Provincial agencies have indicated interest in entering into financial or working partnerships directed at certain outcomes. The three-year “Habitat Steward” financial partnership offer extended by Department of Fisheries and Oceans and BC Environment is directed at management of riparian (lake and streamside) habitat. A regional “Habitat Auxiliary” partnership could be available upon request, directed at the streamside development referral process.

Ministry of Forests indicates that it will invite local government participation in the year 2001 updating of “Interior Watershed Assessment Plans” (IWAPs) on major watercourses in the Central Okanagan. Ministry of Forests and BC Environment have indicated interest in working with local governments in the implementation of objectives and strategies contained within the Land and Resource Management Plan (LRMP), which relies on watershed advisory committees to bring about better management when considering all interests within a community watershed.



## *6.0 Recommendations*

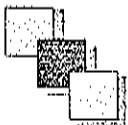
### *6.1 Advice from the Intergovernmental Advisory Committee*

At a meeting of November 1, 2000, agencies participating in the Intergovernmental Advisory Committee examined the regional models and referred this report to elected officials with the following comments.

The concepts of closed community watersheds, or regional bulk water delivery are considered neither critical nor immediately feasible in the Central Okanagan region. There is however considerable value in regional approaches to the management and protection of water resources.

As a first priority, it is recommended that the Central Okanagan continue its efforts with other regional districts in building an Okanagan Basin partnership. IAC members give full encouragement to the proposed basin wide initiative. While it is not yet clear what the partnership will focus on, it will likely start with broad based water stewardship activities.

As a second priority, communities in the Central Okanagan should take action of their own, to complement the Basin initiative. The Board and Councils should instruct staff to take action in an incremental manner, supporting greater coordination of water delivery, linking major land use decisions to water use planning, and supporting stewardship or restoration of individual streams and watercourses.



## 6.2 *Subsequent Decisions of the Regional District*

Following receipt of this report, the Central Okanagan Regional District Board of Directors supported an incremental approach to water resource management with initial actions outlined below:

### **Habitat Stewardship Partnership**

The Central Okanagan Regional District supported the partnership arrangement proposed by the Federal Department of Fisheries and Oceans and the BC Ministry of Environment, Lands and Parks for the creation of a Habitat Steward position at the Regional District (Regional Board, November 20, 2000 following recommendation of the Planning and Environment Committee, November 8, 2000).

The position was filled in early year 2001, and is subject to review at the end of the funding period (March 31, 2003)

### **Water Resources – A Plan of Action**

The report entitled “Plan of Action” was received for information. (Planning and Environment Committee, December 13, 2000)

### **Greater Coordination**

The Planning and Environment Committee recommended that the Regional District and member municipalities coordinate annual workplans and existing staff resources to achieve the following in an incremental manner:

- Support greater coordination of water delivery throughout the Central Okanagan;
- Link major land use decisions to water use planning;
- Support stewardship and restoration of individual streams and watercourses.”

Specific actions would be subject to allocation of staff and program resources and coordination with activities undertaken at the Okanagan Basin level.

(Planning and Environment Committee, December 13, 2000)



### **Support for an Okanagan Basin Water Management Partnership**

The Planning and Environment Committee supported in principle the proposed Okanagan Basin partnership.

Details of the partnership are outlined in a December 2000 report by Westland Resource Group entitled "A proposal for A New Partnership for Water Management in the Okanagan Basin", transmitted to Central Okanagan Regional District on March 15, 2001.

## **6.3 Subsequent Decisions of Other Agencies**

### **Okanagan Basin Water Board:**

The water management partnership proposal was initially unable to reach the necessary agreement by three regional districts of the Okanagan Basin. A subsequent decision by the Okanagan Basin Water Board was to convene a State of the Okanagan Basin Conference in the spring of 2002, to establish a central water related data clearinghouse at Okanagan University College, and to promote coordinated and cost effective water management actions among Okanagan communities (Okanagan Basin Water Board, March 2001). This proposal was supported by Regional District of Central Okanagan (Regional Board, April 9, 2001).

### **Province of British Columbia - Drinking Water Protection Act:**

Early in the year 2001, the Province of BC circulated a "Drinking Water Protection Plan" Discussion Document for public comment. On April 1, 2001 a new provincial "Drinking Water Protection Act" and changes to the provincial Water Act were brought into effect.

Details of the Act and of pending regulations are under review by the Regional District of Central Okanagan and member municipalities.



## *7.0 Information Sources*

Capital Regional District, website and staff correspondence, August - October 2000.

City of Kelowna Environmental Division, Report on the Watershed Approach, Prepared for the Water Quality Task Force, October 1998.

City of Kelowna Environmental Division, Watershed Health Program Update and staff correspondence, Fall 2000.

District of Peachland, website and staff correspondence, "Five Year Financial Plan, Year 2000-2004", Sept 2000.

Greater Vancouver Regional District, website and staff correspondence, June - October 2000.

Ministry of Environment, Lands and Parks, British Columbia Water Quality Status Report, April 1996.

Ministry of Finance and Corporate Relations, BC Stats. – PEOPLE25 population projections to year 2020, June 2000.

North Okanagan Regional District, Memorandum of Understanding re: Creation of Regional Water Service, May 2000.

Okanagan Basin Water Board, Review of Water Stewardship in the Okanagan Valley, by Summit Environmental Consultants Ltd., February 2000.

Okanagan Basin Water Board, October 31 2000 workshop materials by Westland Resource Group.

Regional District of Central Okanagan, Water Resources in the Central Okanagan- A Discussion Paper within the Growth Management Strategy, by Dobson Engineering Ltd, June 2000.

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# *Appendix A*

## **Details of Water Models**

Greater Vancouver Water District

Capital Regional District

North Okanagan Water Authority

Okanagan Basin Water Board “Alliance” Model

Mission Creek “EWAC” Model

Appendix A

<b>Greater Vancouver Water District Water Delivery and Stewardship</b>
<b>Partners</b>
<ul style="list-style-type: none"><li>▪ Greater Vancouver Water District (GVWD) is a separate legal entity.</li><li>▪ Supplies water on a wholesale basis to 16 member municipalities and part of Electoral Area A</li><li>▪ (21 municipalities are members of the Regional District)</li></ul>
<b>Description</b>
<ul style="list-style-type: none"><li>▪ Three source watersheds: Capilano, Seymour and Coquitlam</li><li>▪ Total combined size of watersheds: 586 sq. km.</li><li>▪ Population supplied: 1.9 million</li></ul>
<b>Roles and Responsibilities</b>
<ul style="list-style-type: none"><li>▪ Incorporated in 1926 under the Greater Vancouver Water District Act (see also 1967 Amending Indenture)</li><li>▪ Granted a 999-year Crown Land Lease for the purpose of protecting community water resources in Capilano and Seymour Watersheds. (Coquitlam Watershed added in 1942).</li><li>▪ An administration board comprised of elected representatives of the water district municipalities determines policies and direction.</li></ul>
<b>Staffing</b>
<ul style="list-style-type: none"><li>▪ 227 staff positions (1993)</li><li>▪ Operates 6 dams, 6 storage lakes, 22 reservoirs, 15 pumping stations, 550 km supply mains</li><li>▪ Delivers one billion litres of water a day</li><li>▪ Manages and operates water conservation, conservation reserve, water quality improvement plans etc.</li></ul>
<b>Program Costs</b>
<ul style="list-style-type: none"><li>▪ Budget \$ 82.5 million (year 2000). Equivalent to \$ 43 per person (supplied).</li></ul>



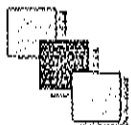
Appendix A

<b>Capital Regional District – Water Delivery and Stewardship</b>
<b>Partners</b>
<ul style="list-style-type: none"><li>▪ Capital Regional District Water Department</li><li>▪ Supplies wholesale water to 4 municipalities and to two water commissions - the Saanich Peninsula Water Commission and the Juan de Fuca Water Distribution Commission.</li><li>▪ Operates the Juan de Fuca Commission delivering water within another 5 municipalities and parts of an electoral area. (13 municipalities total in the R.D.)</li></ul>
<b>Description</b>
<ul style="list-style-type: none"><li>▪ Two source watersheds: Sooke and Goldstream.</li><li>▪ Sooke Watershed is owned and protected by the Capital Regional District.</li><li>▪ Total combined size of watersheds: 111 sq. km.</li><li>▪ Population supplied: 310,000</li></ul>
<b>Roles and Responsibilities</b>
<ul style="list-style-type: none"><li>▪ Capital Region Water Supply and Sooke Hills Protection Act and Regulation (1997)</li><li>▪ Regional Water Supply, Protection and Conservation Advisory Committee</li><li>▪ Regional Water Supply Commission (19 commissioners, with votes weighted per population)</li><li>▪ Water Distribution Commission</li><li>▪ Saanich Peninsula Water Commission</li><li>▪ Supply, treatment and delivery of bulk water to wholesale customers. Water quality monitoring in Greater Victoria and Sooke, in house laboratory.</li></ul>
<b>Program &amp; Staffing Costs</b>
<ul style="list-style-type: none"><li>▪ Operates 350 km distribution water mains, 12 balancing reservoirs, 31 pumping stations, 1500 retail water meters.</li><li>▪ Water Department 1998 Actual total expenditures = \$22 million (including functions other than those listed above)</li><li>▪ 126 Water Department employees</li></ul>



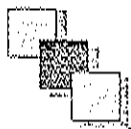
Appendix A

<b>North Okanagan (Greater Vernon) Water Authority – Water Delivery</b>
<b>Partners</b>
<ul style="list-style-type: none"><li>▪ Regional District of North Okanagan (on behalf of two electoral areas)</li><li>▪ City of Vernon and District of Coldstream, and</li><li>▪ “Representative of the Agricultural Community”</li></ul>
<b>Description</b>
<ul style="list-style-type: none"><li>▪ Establishment of a regional water service called the North Okanagan Water Authority (NOWA) to “ensure the economical supply and distribution of a sufficient quantity and quality of water in the interests of both the agricultural and non-agricultural users in the Greater Vernon community”.</li><li>▪ Replaces the Vernon Irrigation District.</li></ul>
<b>Roles and Responsibilities</b>
<ul style="list-style-type: none"><li>▪ Bulk water supply (distribution and sale will remain the exclusive right of the respective municipalities, and electoral areas may establish their own water utility or extend service from a municipality)</li><li>▪ NOWA will be responsible to develop, operate and maintain a water supply system including water treatment and watershed stewardship. Will hold water licenses previously held by the two municipalities and two electoral areas.</li><li>▪ A Committee of four elected municipal &amp; electoral area officials and one agricultural representative appointment will govern supply function.</li><li>▪ Provincial and federal agencies perform similar operational roles as today. North Okanagan Regional District takes on some roles previously held by two municipalities and the Vernon Irrigation District.</li></ul>
<b>Staffing &amp; Program Costs</b>
<ul style="list-style-type: none"><li>▪ Details unavailable</li></ul>



Appendix A

<p style="text-align: center;"><b>Okanagan Basin Water Board</b> <b>Proposed “Alliance of Strategic Partners”</b> (extracts from Summit report to OBWB)</p>
<p><b>Partners</b></p>
<ul style="list-style-type: none"><li>• Regional Districts of North Okanagan, Central Okanagan and Okanagan Similkameen (on behalf of electoral areas and 11 municipalities situated within Okanagan Basin)</li><li>• Environment Canada, Department of Fisheries and Oceans</li><li>• BC Environment, Ministry of Forests, BC Lands</li><li>• First Nations</li><li>• NGO's, or public representatives, industry, tourism</li></ul>
<p><b>Description</b></p>
<ul style="list-style-type: none"><li>• "The intention of this approach is to establish a high-level co-operative partnership between local and senior governments, in order to focus program planning and implementation efforts on the Okanagan basin. The Fraser Basin Council, Georgia Basin Ecosystem Initiative, and the Lake Champlain Basin Council are similar models."</li></ul>
<p><b>Roles and Responsibilities</b> (extracts from Summit report to OBWB)</p>
<ul style="list-style-type: none"><li>• High-level, inclusive board of strategic partners is established</li><li>• Functions include policy-setting, planning, prioritising, directing funding and program evaluation</li><li>• Includes clearinghouse role</li><li>• High level representation enables and authorizes agency co-operation</li><li>• May create advisory sub-committees</li><li>• Work towards eco-system-based management approach</li></ul>
<p><b>Staffing</b></p>
<ul style="list-style-type: none"><li>• Estimated at 5.5 full time employees (3 scientific positions).</li></ul>



## Appendix A

### Program Costs

- Staffing and board costs total approximately \$380 k/year ( \$1.20 per person in the Basin)
- Long-term program costs - \$100k to \$1M/yr (up to \$3.15 per capita), depending on scope, and transfer of existing government positions and funding.

An estimate of the annual expenditures on water stewardship activities in the Okanagan Basin was estimated as follows: "In summary, expenditures in the order of \$ 2,170,000 per year are presently being committed to water stewardship activities within the Okanagan basin. This represents about \$ 7 per year per resident"<sup>1</sup> (see footnote below).

<sup>1</sup> The estimate included expenditures from Habitat Conservation Trust Fund (HCTF), Forest Renewal BC (FRBC), Fisheries Renewal BC (FsRBC), BC Environment Wildlife Branch, municipalities, and other public agencies with a role in water stewardship in the Okanagan Basin, but excluding the water delivery function, BC Environment's Water Management Branch, and Okanagan Basin Water board (OBWB) expenditures.



<b>Mission Creek Proposed Enhanced Watershed Advisory Committee</b>
<b>Partners</b>
<ul style="list-style-type: none"> <li>▪ Regional District of Central Okanagan (on behalf of City of Kelowna and Electoral Area I)</li> <li>▪ BC Environment, Ministry of Forests, crown land industry</li> </ul>
<b>Description (extracts from the Okanagan Shuswap LRMP Draft 9)</b>
<ul style="list-style-type: none"> <li>▪ Manage the Mission Creek watershed for sustainability of both consumptive (<i>e.g.: water license allocations</i>) and in stream uses (<i>e.g.: fish, natural flows</i>) in an integrated manner for both Crown land activities and private land activities.</li> <li>▪ Create and support an Enhanced Watershed Advisory Committee (EWAC) that will provide advice on the management of land use activities (resource extraction, urban development etc.) A memorandum of understanding will be put in place to establish the respective support roles and to ensure the success of this process.</li> <li>▪ Develop an integrated monitoring program for the Mission Creek watershed (i.e.: consolidate monitoring now done on eight individual "Community Watersheds" in the Mission Creek drainage basin).</li> <li>▪ Provide advice to Statutory Decision Makers, provincial water managers, local government and other interests on actions for watershed restoration.</li> </ul>
<b>Roles and Responsibilities (extracts from the Okanagan Shuswap LRMP Draft 9)</b>
<p>EWAC will:</p> <ul style="list-style-type: none"> <li>▪ Provide an ongoing monitoring function.</li> <li>▪ Provide an overarching role for integration of technical and community concerns for the of the Mission Creek watershed.</li> <li>▪ Integrate the information between agencies, resource development companies and non-government organizations</li> <li>▪ Provide strategic direction (advice) to major land use interests on both Crown and private land.</li> <li>▪ Seek funding for remedial works and special projects</li> <li>▪ Provincial agencies perform similar operational roles as today. Municipal and regional district (electoral area) roles would be consolidated.</li> </ul>



## Appendix A

<b>Staffing</b>
<ul style="list-style-type: none"><li>▪ RDCO estimates that this function would require one full time employee (scientific and committee support) and administrative support staff relative to a 0.5 fte.</li></ul>
<b>Program Costs</b>
<ul style="list-style-type: none"><li>▪ Estimated at \$120k/yr, to be cost shared between affected municipality (Kelowna) and Electoral Area I. ( \$ 10 per capita based on a population of approximately 13,000 residents in the Mission Creek basin)</li></ul>

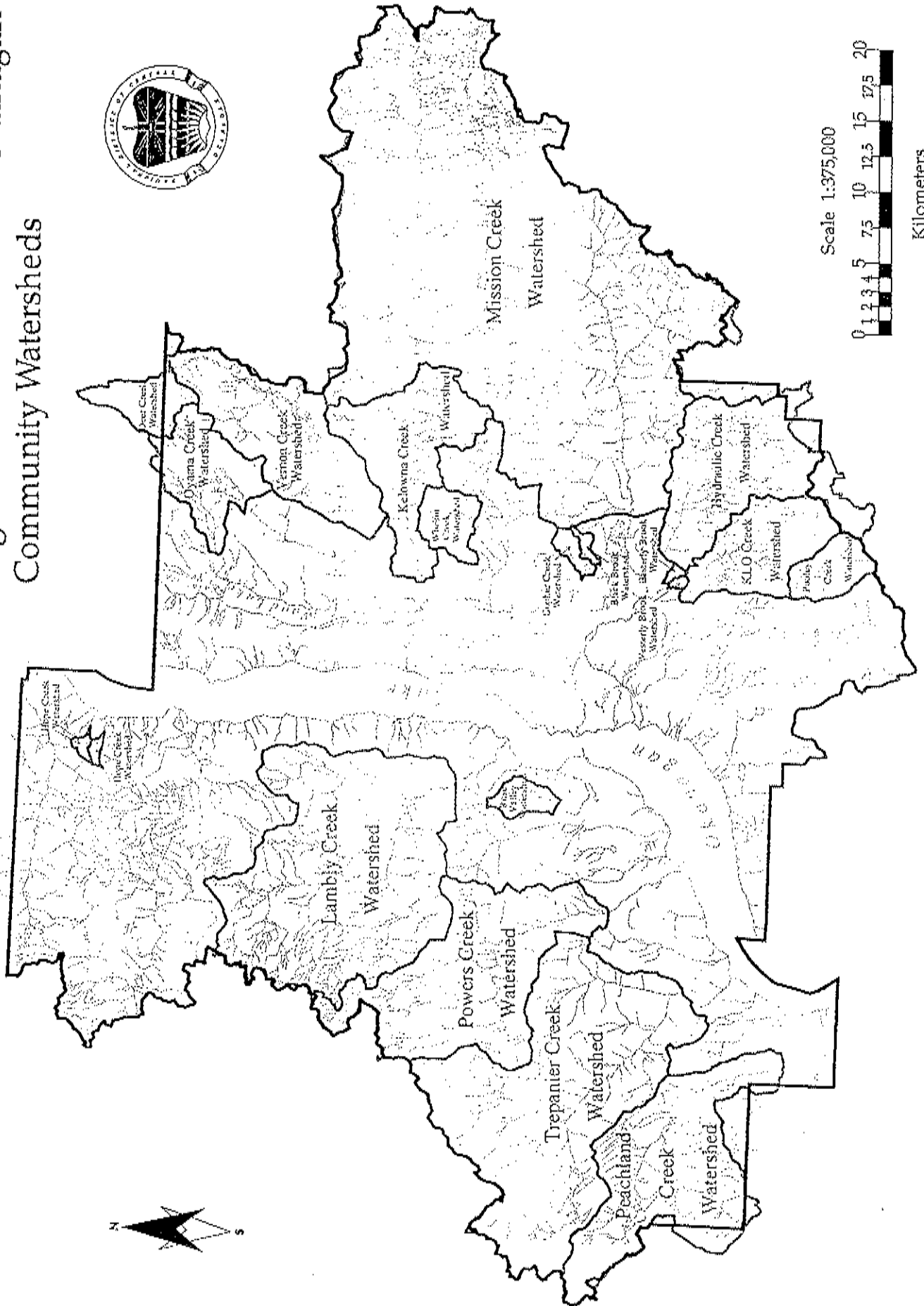


# *Appendix B*

## Maps

Community Watersheds  
RDCO Municipalities and Electoral Areas

# Regional District of Central Okanagan Community Watersheds

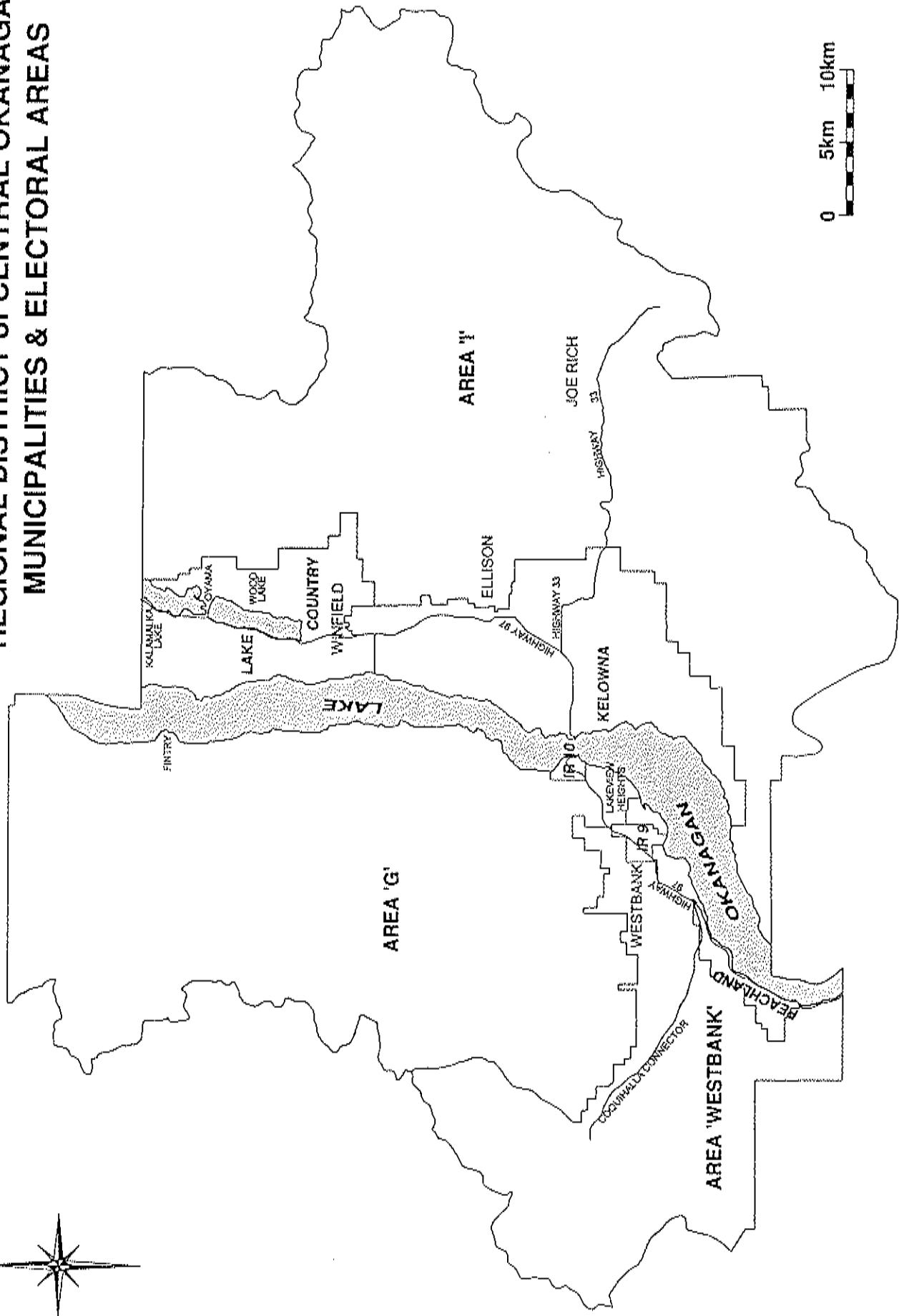


Scale 1:975,000



Kilometers

# REGIONAL DISTRICT of CENTRAL OKANAGAN MUNICIPALITIES & ELECTORAL AREAS









# **WATER RESOURCES IN THE CENTRAL OKANAGAN**

**A Discussion Paper within the  
Growth Management Strategy**

**FINAL REPORT**

Prepared for  
**REGIONAL DISTRICT OF CENTRAL OKANAGAN**

Prepared by  
**DOBSON ENGINEERING LTD.**  
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June 2000



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Regional District of Central Okanagan

# Water Resources in the Central Okanagan

*A discussion paper within the Growth Management Strategy*

## FINAL REPORT

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### 1.0 INTRODUCTION

This discussion paper has been prepared at the request of the Regional District of Central Okanagan (RDCO) to provide an overview of emerging water resource issues in the Regional District. It also offers suggestions for strategic options to address the issues within the proposed Growth Management Strategy for the Regional District of Central Okanagan. The terms of reference for this paper are provided in Appendix 1.

The intent of this paper is to initiate discussion regarding the water resources issues in the Regional District and to set the stage for a water resources workshop for elected officials and other relevant stakeholders proposed for early 2000. The focus of the paper is limited to water resources under the principal defined by the Growth Management Strategy.

### 2.0 BACKGROUND

In recent years the rate of growth in the Central Okanagan has presented both challenges and concerns to the provincial government and local governments. Although controlled growth can be beneficial to the community, rapid growth can have undesirable impacts on the water resources, landbase, air quality, in fact all of the unique features that make this region so attractive.

In response to these concerns on a provincial basis, the Ministry of Municipal Affairs assists local governments develop regional growth management strategies. The Okanagan Valley has been identified as one of three geographic areas in the province of special concern. Within the Okanagan the Central Okanagan RDCO has prepared a Growth Management Strategy (GMS) bylaw that received first reading in September 1999 [refer to Appendix 2].

As outlined in the bylaw there are seven key issue areas that the GMS intends to address. The issue of water management is a mutual concern to both the Province

and the Regional District of Central Okanagan. RDCO and its member municipalities are concerned, in part, about the sustainability of the water supply (surface and groundwater) that is essential for future growth. The Province has stated its commitment to manage the "provincial interests" in water, watersheds and watercourses on a "sound economic and environmental basis". It is also committed to working with local governments to develop complementary powers to protect the water resource within their boundaries.

In 1970 the area population was approximately 50,000<sup>1</sup>. In 1996 (date of last census) the population was 150,000<sup>2</sup> and it is projected that the population will increase to 250,000<sup>3</sup> by 2020. Since the climate of the Central Okanagan is classified as continental, with warm, dry summers and cool winters, and an annual precipitation of 300 mm, water is a limiting factor in the environment. With the rapid increase in population over the past 30 years and the expectation that it will increase a further 67% in the next 20 years, water quantity and water quality will be prime concerns. In addition to these two primary issues there is also increasing concern about the entire aquatic ecosystem of the watersheds that include aquatic habitat, fish, aquatic organisms etc.

Water related issues have become increasingly common throughout the province in recent years. The situation in the Okanagan Valley not only reflects the provincial trends regarding water, but is magnified by the limitations on the availability of the resource. The following statements from the Auditor General in the 1998/99 Report 5 titled *Protecting Drinking-Water Sources* reinforce this concern:

"Water quality is linked to land use. ... Effective water protection hinges on managing the land uses on the surfaces over or through which water flows. Accordingly, one key condition for successful water protection is integrated management of both water and the land uses that effect it."

The intent of the GMS initiative for the Central Okanagan is to establish a regional vision and common regional goals, with consideration for the provincial interests [refer to Appendix 3], to be reflected in the development plans and decisions made by Municipal Councils and the Regional Board. A clear vision of how the water resource should be managed within the strategy is critical to the future of the region.

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<sup>1</sup> Canada-British Columbia Okanagan Basin Agreement, Technical Supplement I, 1974

<sup>2</sup> Kelowna Chamber of Commerce

<sup>3</sup> Regional District of Central Okanagan, Growth Management Strategy, September, 1999

### 3.0 EMERGING WATER RESOURCE ISSUES FACING THE CENTRAL OKANAGAN

The emerging water resource issues in the region<sup>7</sup> relate not only to development and land use impacts on water quality, water quantity, habitat [and fish] within the boundaries of the Regional District, but also the overall water management of the Crown lands beyond. Table 1 provides a summary of the current issues believed to be concerns with additional discussion in the following sections.

#### 3.1 Water Quality

Water quality is not mandated in the *Water Act* but is an issue that has taken on a higher profile in the Okanagan since a cryptosporidium outbreak in Kelowna in 1996, concerns surrounding diminishing Kokanee fish stocks in Okanagan, Kalamalka and Wood Lakes, and ongoing problems with milfoil in the lakes. Water quality can be affected by most human activities on the landbase.

BC Environment is in the process of developing "water quality objectives" for streams within the Crown land portions of community watersheds as required under the Forest Practices Code. This is a complex and time-consuming process that is not yet complete. There is also a great need for these same objectives to be developed for entire watersheds, not just for community watersheds and not limited to Crown land, in order that the impacts of private land activities can be assessed.

#### 3.2 Water Quantity

Historically, the greatest consumptive use of surface water was for irrigation. With the continuing urbanization of land and the modification of irrigation systems within the Regional District, domestic use is increasing while irrigation use is diminishing. However, water, both surface water and groundwater, remain a limited or "finite" resource in the valley.

Although there are no readily available figures for water use specific to the Regional District, the relative uses can be derived from those for the Okanagan Basin. Based on the data in the *Main Report* of the Canada-British Columbia Okanagan Basin Agreement (1974), the gross municipal and domestic consumptive uses for the Okanagan Lake basin in 1970 for a population of approximately 114,000 were 24,870 acre-feet or 8% of the total consumptive requirements for the basin. By 1994 the gross municipal and domestic consumptive uses had increased to 48,870 acre-feet or 15.6% of the total consumptive requirements for a population of approximately 245,000 (Banera,

<sup>4</sup> Canada-British Columbia Okanagan Basin Agreement, Technical Supplement I, 1974

<sup>5</sup> Kelowna Chamber of Commerce

<sup>6</sup> Regional District of Central Okanagan, Growth Management Strategy, September, 1999

<sup>7</sup> The term "region" as used in this report refers only to the Central Okanagan Regional District

letter to B.Obedkoff file: 76900-10, dated February 3, 1994). The agricultural use over the period 1970-1994 was assumed to have remained constant.

The significance of this increase in municipal/domestic use can be put into perspective when it is recognized that based on the results of the March 1994 BC Environment report titled *Okanagan Basin Water Supply*, no more than 50,000 acre-feet of additional water should be licensed in the basin. This would be equivalent to 74,000 new domestic connections (based on 500 gallons/day/connection). Using the latest population projection for the Okanagan Basin of 500,000 residents by 2020, the current water supply may just be sufficient to support that population (at current consumption rates).

In the past the *Water Act* dealt with the "beneficial use" of water where uses such as water for aesthetic purposes was not recognized and water for fish was minimally recognized. In recent revisions to the Act, although water for fish, etc. are still not specifically mentioned, there is now a recognition of habitat protection and water quality protection in the *Water Regulations*.

Currently it is estimated that 90% of the streams in the Okanagan are already licensed to capacity, or are over-allocated (pers. com. R.Smith). This means that for those streams where more flow is required for habitat and water quality protection, it may be very difficult to re-allocate water to meet these needs. In addition the feasible opportunities to develop more storage in the upland lakes are also limited.

### 3.3 Floodplains

There are two primary concerns with regards to floodplains. The first is the issue of flooding that can occur along many of the streams and around mainstem lakes. While flood protection works have been constructed along some of the major streams, i.e. Mission Creek and Bellevue Creek, most streams and lakes remain in a "natural" state where flooding can affect adjacent property. The current floodplain development requirements in use within the region are presented in Table 2. Not only is the manner in which urban development occurs in the proximity of streams a concern, but so is any activity on the Crown land a concern if it increases the risk of flooding. Flooding can be an issue with regards to impacts on both water quantity and water quality.

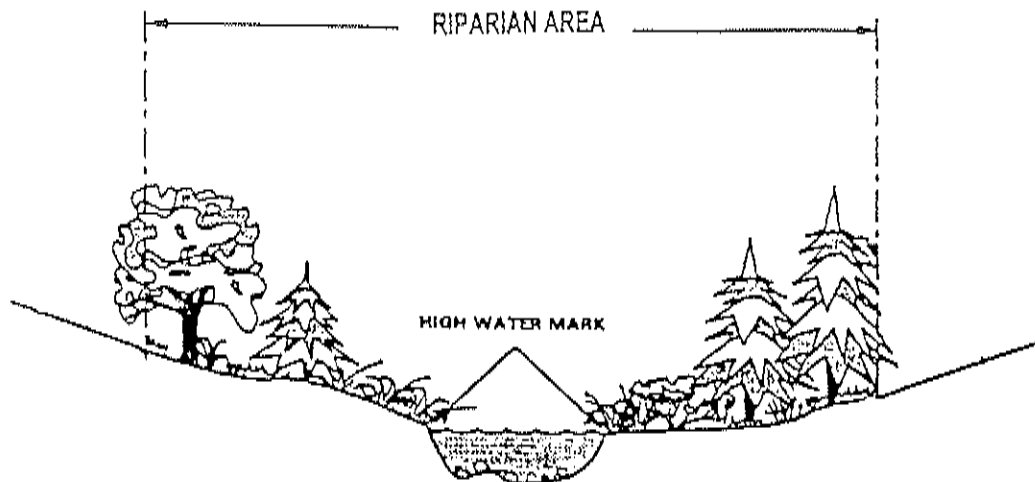
The second concern is the preservation of floodplains and the flooding processes that create them. Floodplains provide both fish and wildlife habitat and can have a positive impact on the overall health of the water resource, including water quality. Past activities on both private and Crown land have had a significant impact on the floodplains along many streams with the region. Those areas of floodplain that remain in tact should be protected.

### 3.4 Aquatic Habitat And Fish

Aquatic habitat and fish have been a concern in all the major streams in the region [Refer to Appendix 4 for map of major watersheds]. A study<sup>8</sup> completed in 1989 identified low flow issues affecting fish in Trepanier Creek, Powers Creek, Lambly Creek and Mission Creek. The Kokanee concerns in Okanagan Lake and specifically in Mission Creek are well documented by BC Environment. Rainbow trout spawning and rearing habitat is another concern with Mission Creek being the most important spawning tributary to Okanagan Lake. In addition to low flows, increased sedimentation, loss of riparian vegetation and loss of side channels has impacted the fishery.

#### 3.4.1 Riparian Protection

The riparian zone [refer to Figure 1] along both the streams and the lakeshore within the Central Okanagan Regional District should be considered as environmentally sensitive zones that require protection. These are areas that not only offer important habitat but also reduce erosion and act as sediment traps during high flows and water levels. Historically these areas have been subject to considerable disturbance resulting from development activities both on Crown and private lands. The *Fish Protection Act* and *Municipal Act* recognizes the objectives for streamside protection and includes opportunities for local governments to enact policies to protect riparian areas within OCPs, zoning bylaws, the use of development permit areas, etc. Refer to Table 2 for current measures in within the Regional District and member municipalities.



**Figure 1**  
Riparian Zone Adjacent to a Stream

<sup>8</sup> Low Flow Assessment of Selected Tributaries to Okanagan Lake, Dobson Engineering, 1989

### 3.5 Lakeshore Management

The lakeshores of Okanagan, Wood and Kalamalka Lakes, as well as upland lakes are considered major assets and important natural features. There are two primary issues regarding lakeshore management that might be considered. The first is the protection of the integrity of the lakeshore as a functioning part of the lake ecosystem, in particular as spawning habitat for Kokanee. The second is the balance between private and public ownership of the lakeshore as development pressures increase.

### 4.0 RESEARCH, STUDIES AND POLICY INITIATIVES COMPLETED OR UNDERWAY TO DATE DEALING WITH WATER RESOURCE ISSUES

Table 3 lists various provincial research, studies and policy initiatives that have been undertaken or are underway regarding water resources in the Okanagan.

Table 2 lists policy and regulatory procedures in place by local governments in the Central Okanagan region.

### 5.0 CURRENT ROLES AND RESPONSIBILITIES OF AGENCIES AND ORGANIZATIONS THAT MANAGE WATER

The general mandates of the various levels of government with regards to the water resource include the following:

- Federal - application of the Fisheries Act, Navigable Waters Act, Boundary Water Treaty Act, First Nations Treaties
- Provincial - application of the Fisheries Act, Water Act, Crown land and water use regulations
- Local - private land use regulations, land use planning.

The current roles and responsibilities for managing water and aquatic resources are listed in Table 1.

Within the Okanagan the federal government is primarily involved in initiating stewardship programs under the *Fisheries Act*. Application of the *Navigable Waters Act* relates primarily to the mainstem lakes.

There are numerous provincial government agencies that involve water issues. BC Environment is responsible for the *Water Act*, the *Fish Protection Act*, provincial application of the *Fisheries Act*, the application of the *Forest Practices Code Act* within community watersheds, and various water regulations. BC Environment is currently involved in an array of water related initiatives ranging from the Environmental Stewardship to a Freshwater Strategy, to a Non-Point Source