

**Designing with Nature:  
Implementing Sustainable  
Community Design Using the  
Water Balance Model**

June 30<sup>th</sup> 2004

**Federation of Canadian Municipalities**

When you think of Athens,  
you think of democracy,  
when you think of Vienna,  
you think of music...  
more and more,  
when people think of  
sustainable, livable cities,  
they think of  
**Greater  
Vancouver.**

**WATER  
Balance  
MODEL  
FOR BRITISH COLUMBIA**

**www.waterbalance.ca**

## Our Objectives Are To...

1. Set the Scene
2. Introduce the Inter-Governmental Partnership
3. Provide a big picture context for "What Does Sustainability Look Like"
4. Demonstrate the *Water Balance Model*, a tool for 'Designing with Nature'
5. Show how the City of Chilliwack is implementing this approach
6. Ask how the FCM Green Fund can help the Inter-Governmental Partnership "go national" with the tool



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## Connecting the Dots

**Issue:** How We Manage Population Growth

**Impact:** Growth Resulting in Densification

**Need:** More High Rise Buildings!

**Sustainability:** Means Design with Nature

**Built Environment:** We Can Improve It

**Natural Environment:** We Can Protect It

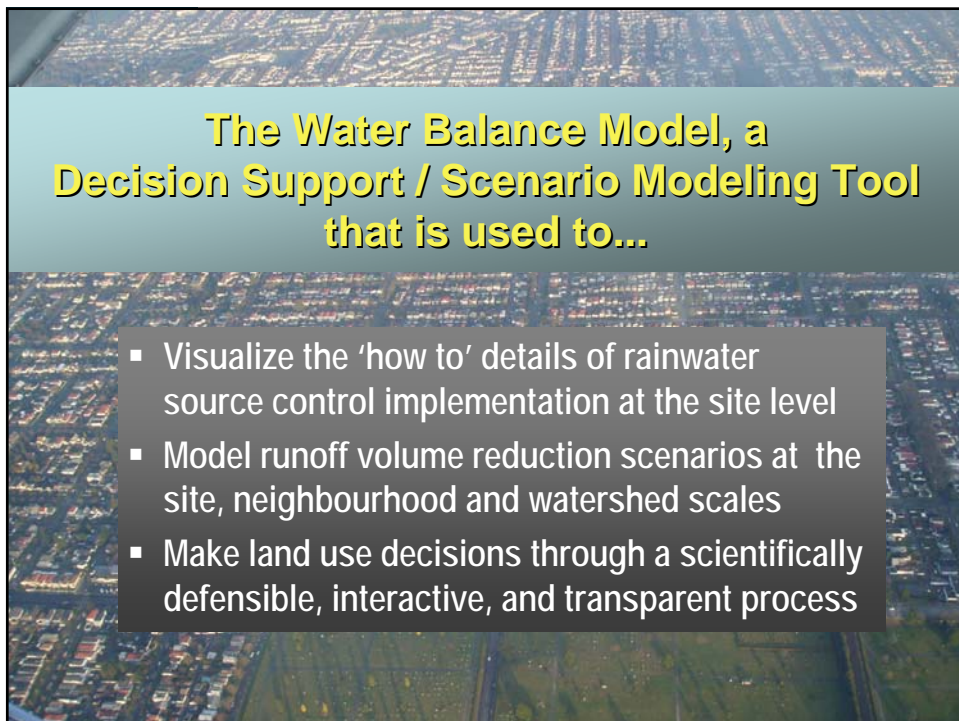
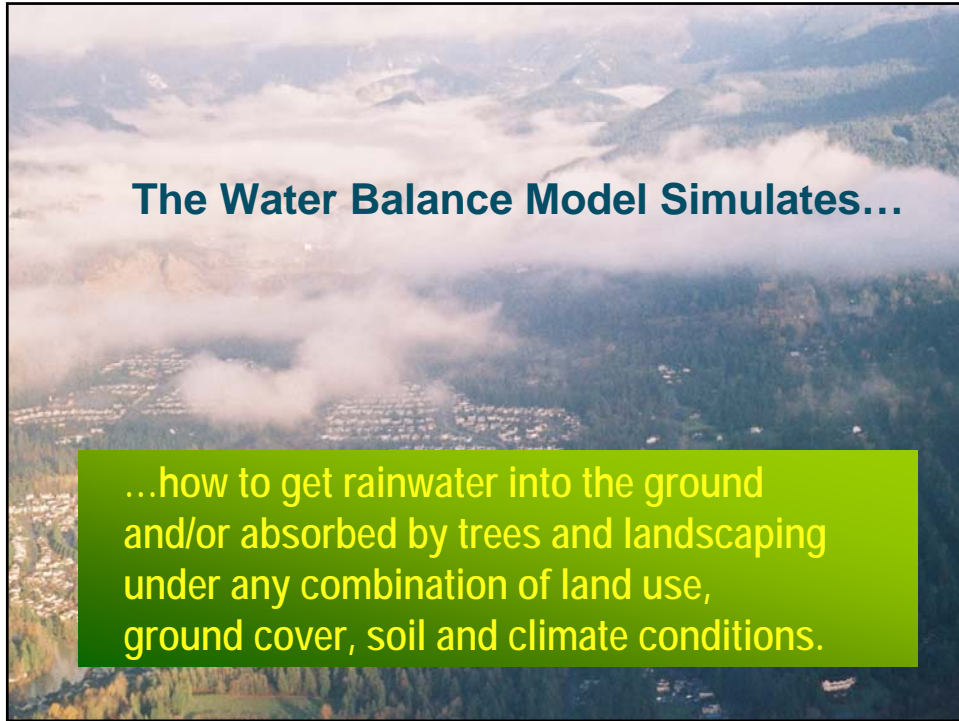
**Cumulative Benefits:** Accrue Over Time

**Outcome:** Sustain Regional Livability



'Designing with Nature' means...

- Create a Greener Community
- Achieve a Higher Level of Stream Protection





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## Inter-Governmental Partnership: Steering Committee and Development Team

### Co-Chairs

BC Ministry of Agriculture, Food & Fisheries  
Environment Canada

### Focus Group

City of Chilliwack  
City of Surrey  
District of North Vancouver  
Greater Vancouver Regional District

### Project Team

KSA Consultants Ltd  
Lanarc Consultants Ltd  
CH2M HILL Canada Ltd



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## Inter-Governmental Partnership: History

Formed in 2002 as a result of a GVRD-sponsored project on the effectiveness of rainwater source control

Desire was to develop an internet-based, public-domain scenario modeling tool for rainwater management





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## Inter-Governmental Partnership: Vision

To promote changes in land development practices so that:

- The built environment will preserve and/or restore the natural water balance over time
- Performance targets will be achieved for runoff volume and flow rate reduction



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## Inter-Governmental Partnership: Key Partnerships

Real Estate Foundation of BC

Urban Development Institute

BC Water and Waste Association





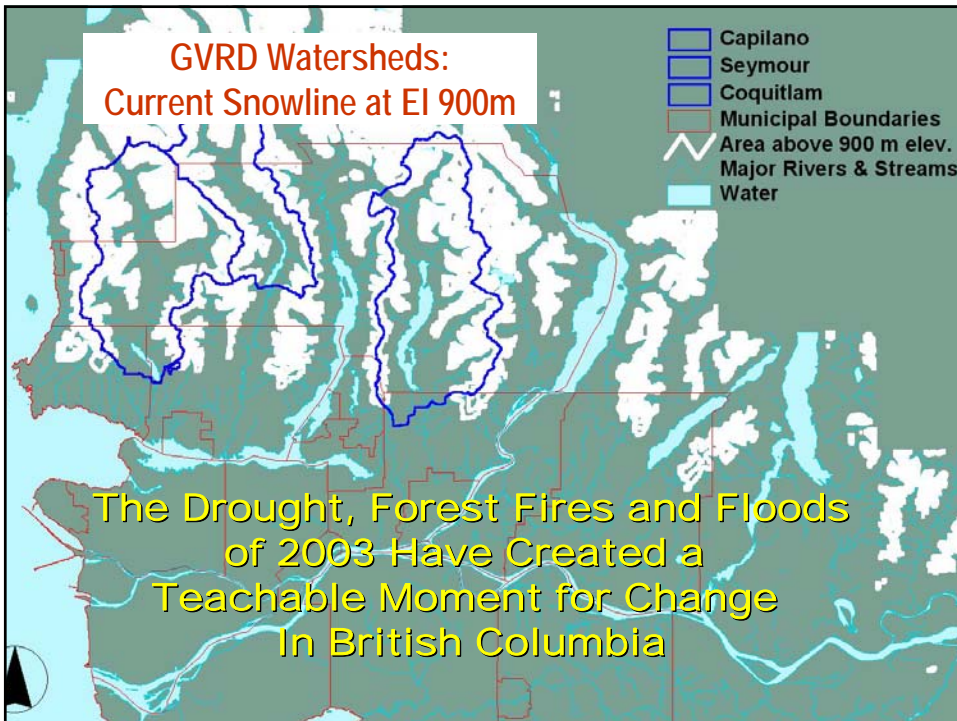
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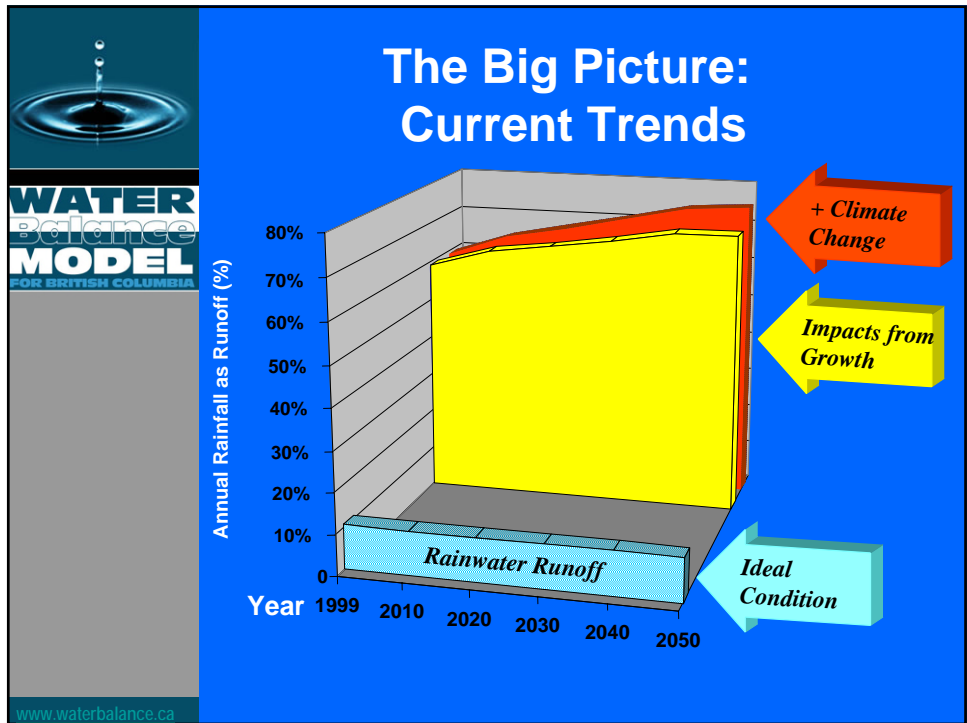
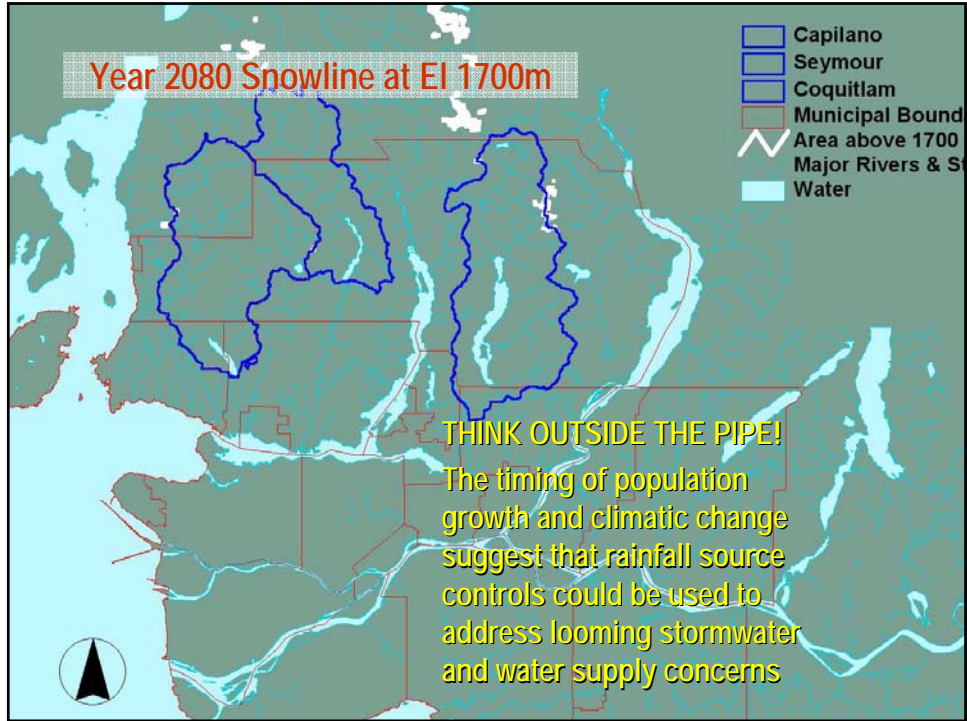


[www.waterbalance.ca](http://www.waterbalance.ca)

## Inter-Governmental Partnership: Outreach & Continuing Education Program

- Elected Officials
- Local Government Staff
- Development Community
- Municipal Advisory Committees
- Community Stewardship Groups
- Professional Journals





## Key Message: Recognize that the Built and Natural Environments are Connected!!



## ***cities<sup>PLUS</sup>* provides context for changing water management practices at the site level**

"Cities are all about choices – choices that become reality very quickly, with lasting consequences. Over the 21<sup>st</sup> century – the urban century – much will depend upon getting the choices right."

- Mike Harcourt  
Vice-Chair, *cities<sup>PLUS</sup>*





**Redevelopment and Densification  
Create Opportunities to  
Improve the Built Environment**

A vertical strip of icons on the left side of the slide, including a mountain, clouds, water, a dam, a water treatment plant, and a city skyline.

**We are moving from talk to action!**

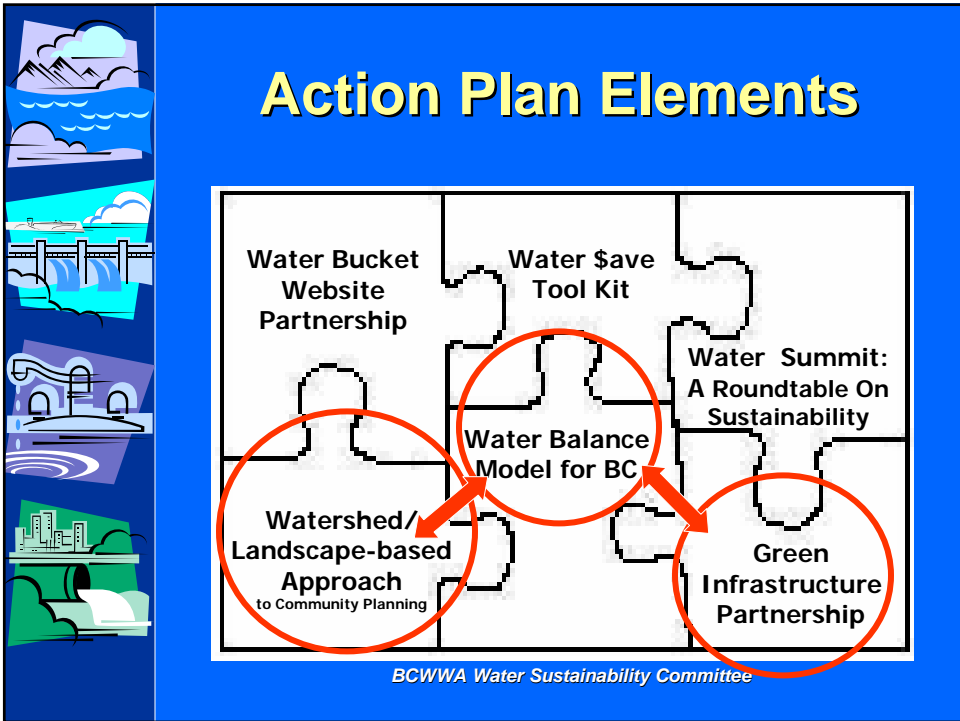
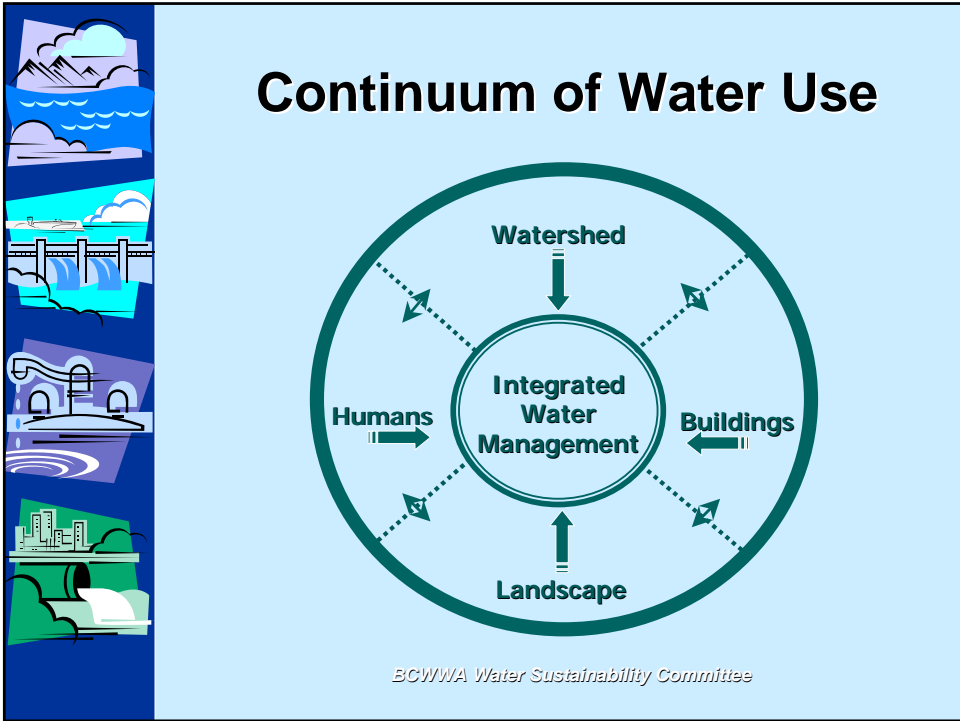
**Water Sustainability Action Plan  
for British Columbia:  
Framework for Building Partnerships**

Developed by the  
Water Sustainability Committee of the  
British Columbia Water & Waste Association

In Partnership with the  
British Columbia Ministry of Water, Land and Air Protection

February 2004

**The Action Plan Elements are comprehensive in scope,  
ranging from 'governance' to 'site design'**



A GUIDEBOOK FOR BRITISH COLUMBIA

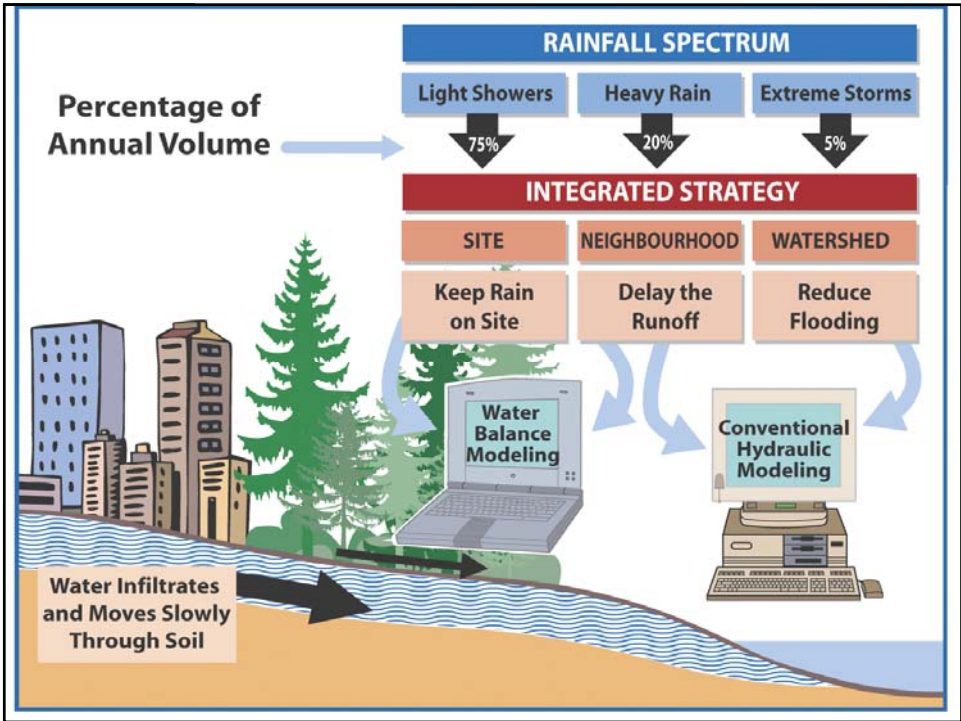
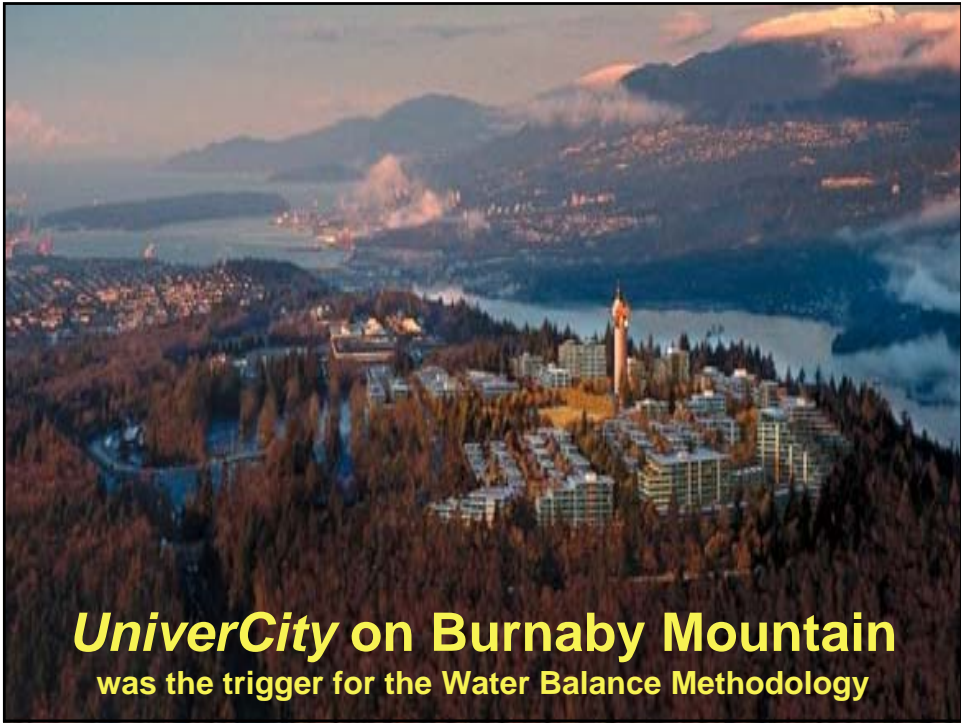
# Stormwater Planning

*The Water Balance Model has been developed as an extension of the Guidebook methodology*

<http://wlapwww.gov.bc.ca/epd/epdpa/mpp/stormwater/stormwater.html>

BRITISH COLUMBIA  
Ministry of Water, Land and Air Protection

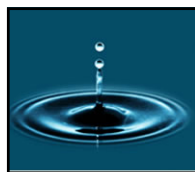
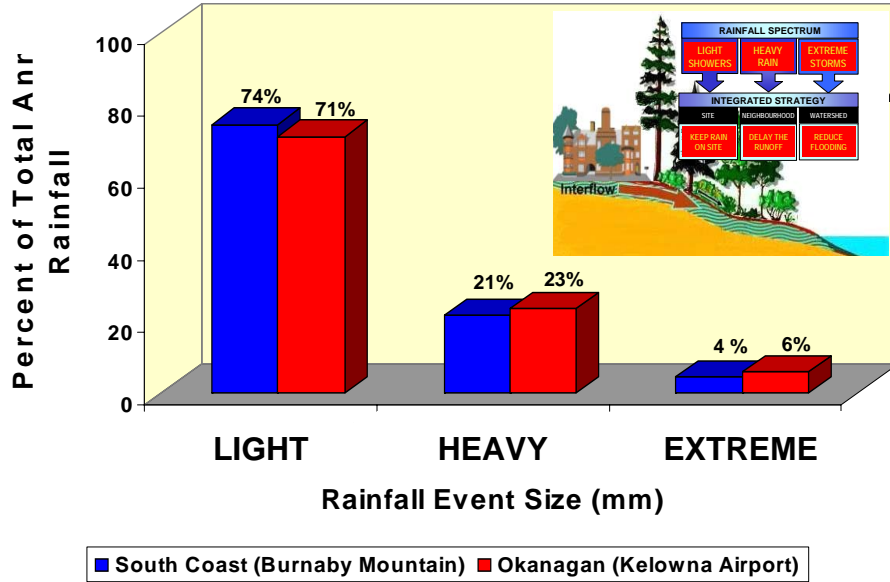






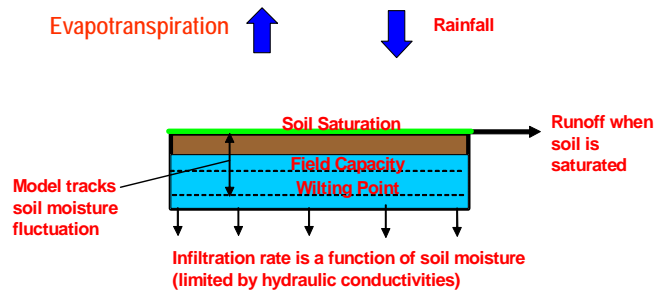
# Typical Volume Distribution of Annual Rainfall

British Columbia South Coast and Okanagan



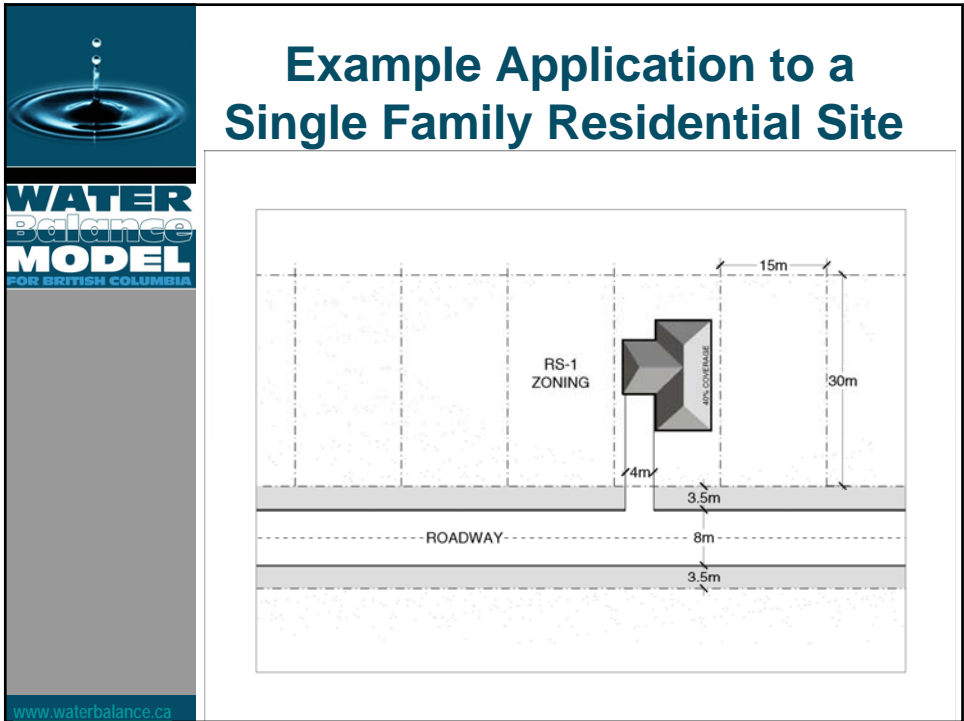
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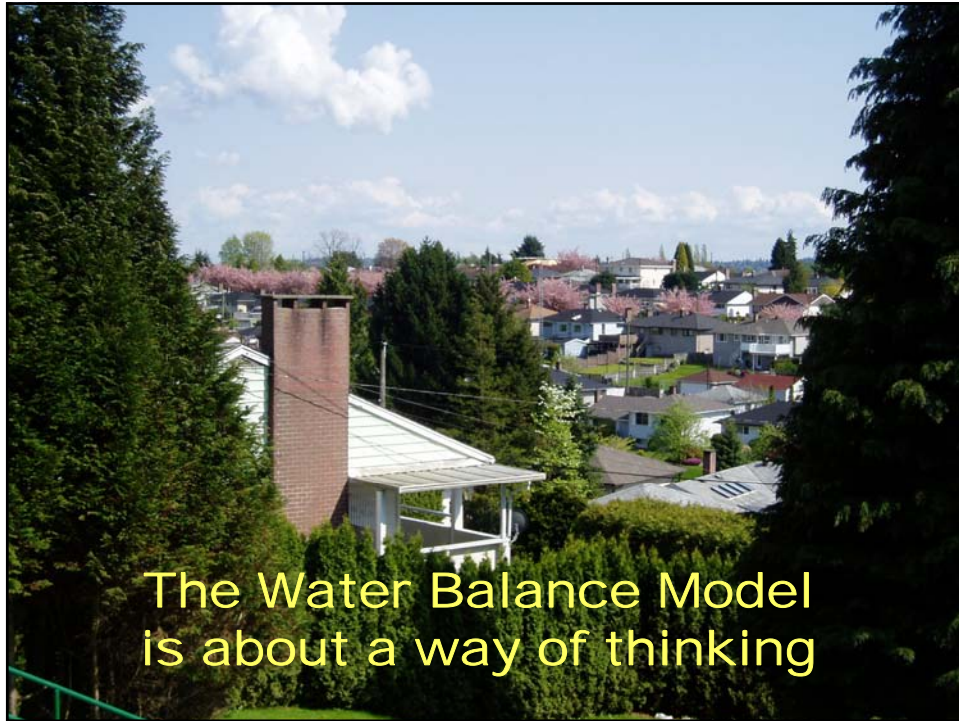
## The hydrology engine is built around a continuous Soil Moisture Simulation



The hydrology engine reflects the wisdom of an international Expert Panel, incorporates established soil science principles, and provides a full accounting of the 'water balance'

[www.waterbalance.ca](http://www.waterbalance.ca)





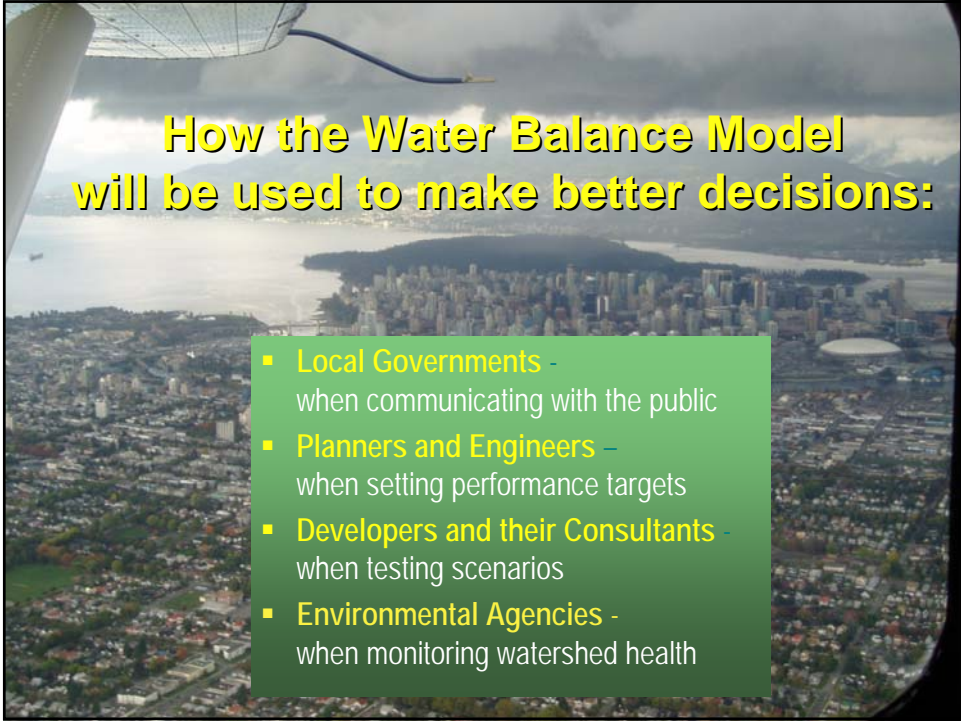
The Water Balance Model  
is about a way of thinking



## Long-Term Vision

Use of the model will become standard practice in  
British Columbia for land development decisions





## How the Water Balance Model will be used to make better decisions:

- **Local Governments** -  
when communicating with the public
- **Planners and Engineers** –  
when setting performance targets
- **Developers and their Consultants** -  
when testing scenarios
- **Environmental Agencies** -  
when monitoring watershed health



Over time, we can...

move from cumulative impacts  
to cumulative benefits

Graphic from Smart Growth BC