

Integrated Liquid Waste & Resource Management

*A liquid waste management plan for Metro
Vancouver and its members*

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Outline

1. Overview and Update on the LWMP
 - review of the 2002 LWMP
 - update on the draft LWMP
2. Stormwater to Rainwater
 - LWMP Actions and Context
 - Collaboration and Integration
3. Stormwater Interagency Liaison Group
 - accomplishments
 - evolution



1. Overview and Update on the Plan

- Approved in 2002
 - 5 year review & update
- Review in 2008
 - review and strategy
- Draft in 2009
 - consultation & edits
- Approval 2010 (target)
 - Metro Vancouver
 - Municipalities
 - Minister of Environment



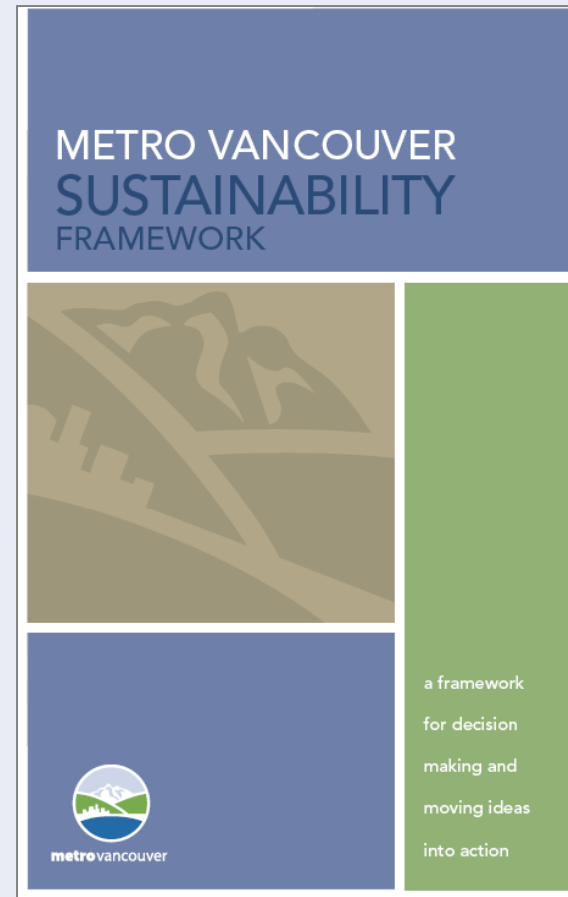
Aligning with New Directions

- National
 - Canada-wide Strategy for the Management of Municipal Wastewater Effluent
- Provincial
 - Climate Action Plan
 - Living Water Smart
 - Integrated Resource Recovery
- Regional
 - Sustainable Region Initiative



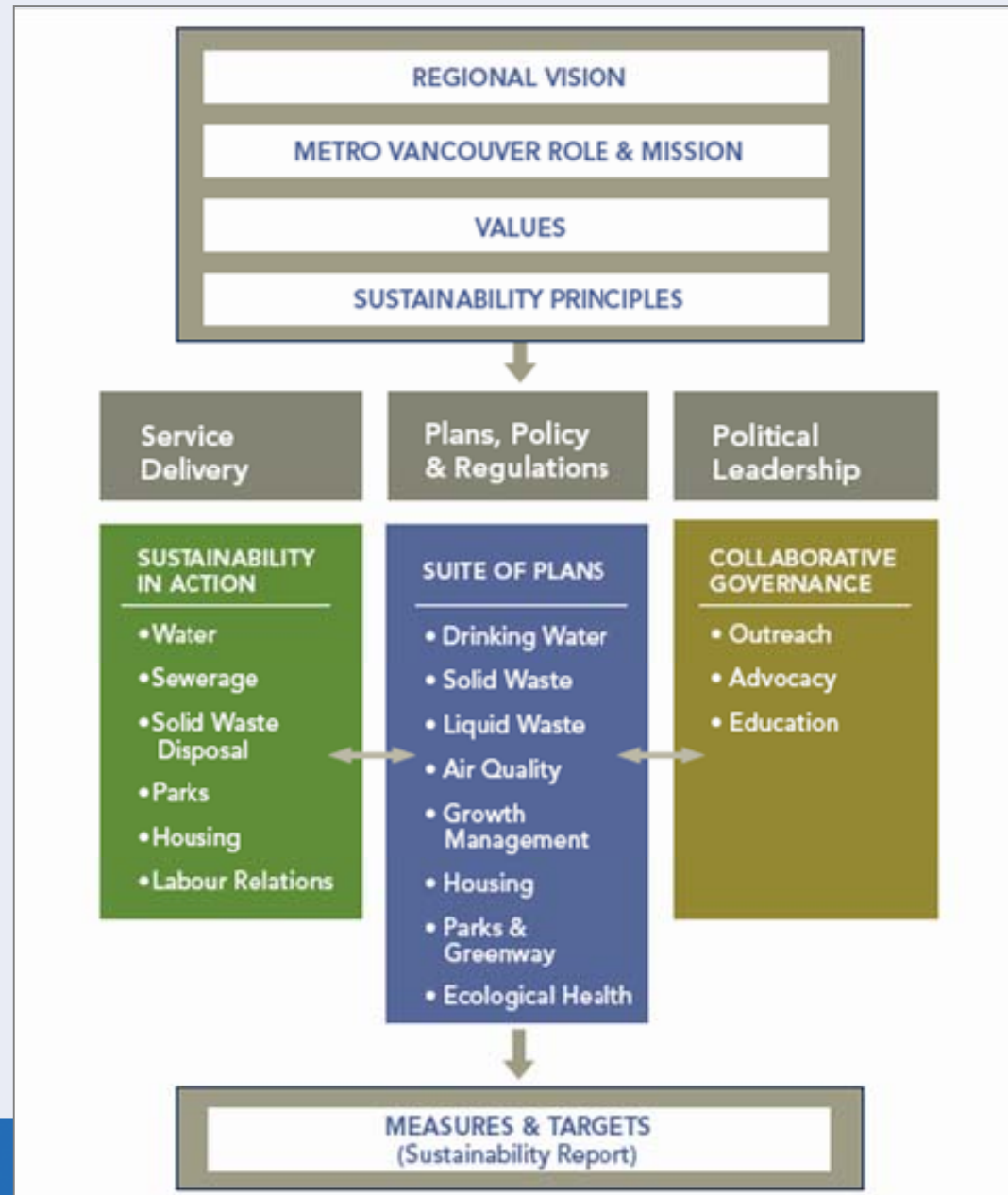
Sustainable Region Initiative

- Sustainability Framework for all plans
 - integration of plans
 - co-ordination
 - collaboration
 - synergies
 - prioritization



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Metro Vancouver's Sustainability Framework



Draft LWMP

- Goal 1: Protect public health and the environment
 - Strategy 1.1 Reduce liquid wastes at their source
 - Strategy 1.2 Reduce wet weather overflows
 - Strategy 1.3 Reduce environmental impacts from liquid waste management to a minimum
- Goal 2: Maximize recovery of resources and value
 - Strategy 2.1 Pursue liquid waste resource recovery in an integrated resource recovery context



Draft LWMP

- Goal 3: Manage liquid waste affordably and effectively
 - Strategy 3.1 Manage assets and optimize existing sanitary sewerage operations
 - Strategy 3.2 Use innovative approaches and technologies
 - Strategy 3.3 Monitor the performance of the liquid waste system and impacts on the receiving environment
 - Strategy 3.4 Provide resilient infrastructure to address risks and long-term needs
 - Strategy 3.5 Use collaborative management to address evolving needs



2. Stormwater to Rainwater

- Traditionally react to stormwater
 - flood control, drainage and erosion control
- Stormwater is
 - rainfall and snowmelt runoff
 - a 'degraded' resource
- Manage rainwater as a resource before it becomes stormwater
 - needs collaboration and integration

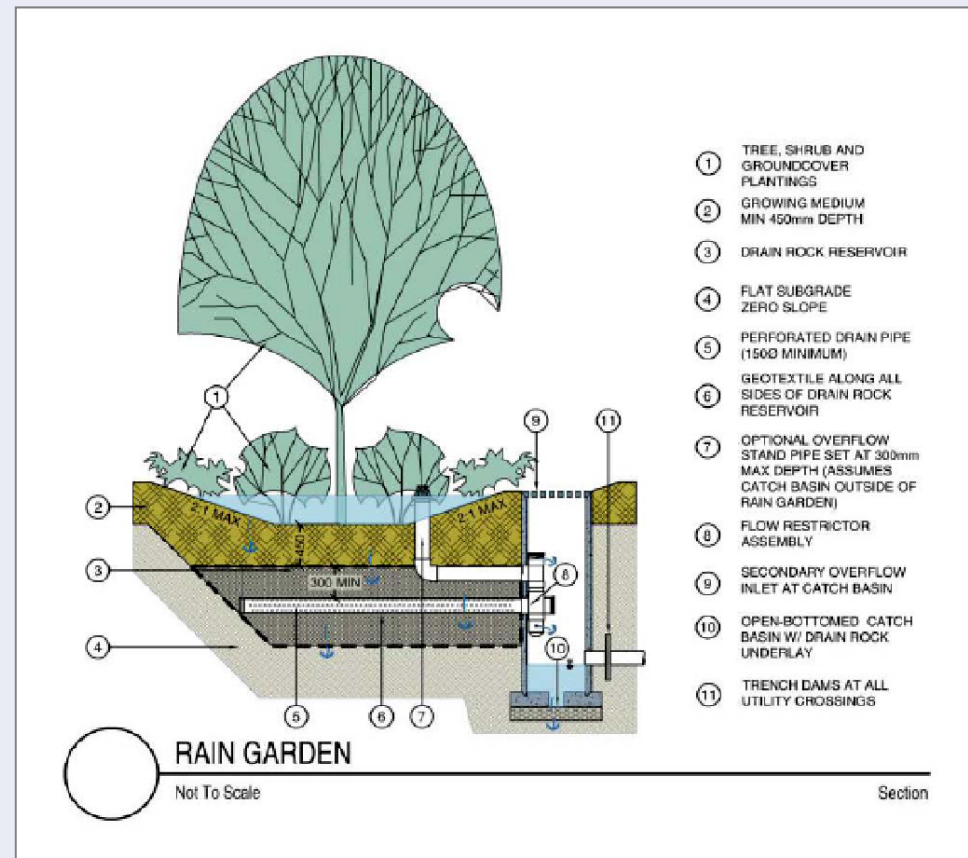


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Stormwater to Rainwater

Strategy 1.1 Reduce liquid wastes at their source

- Manage at the site level
 - importance of green infrastructure
 - beneficial to CSO reduction
 - Improved stream health



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green stormwater infrastructure

Stormwater to Rainwater

Strategy 2.1 Pursue liquid waste resource recovery in an integrated resource recovery context

- Rainwater is a resource with value
 - urban streams
 - synergies with drinking water management
 - greywater
 - irrigation



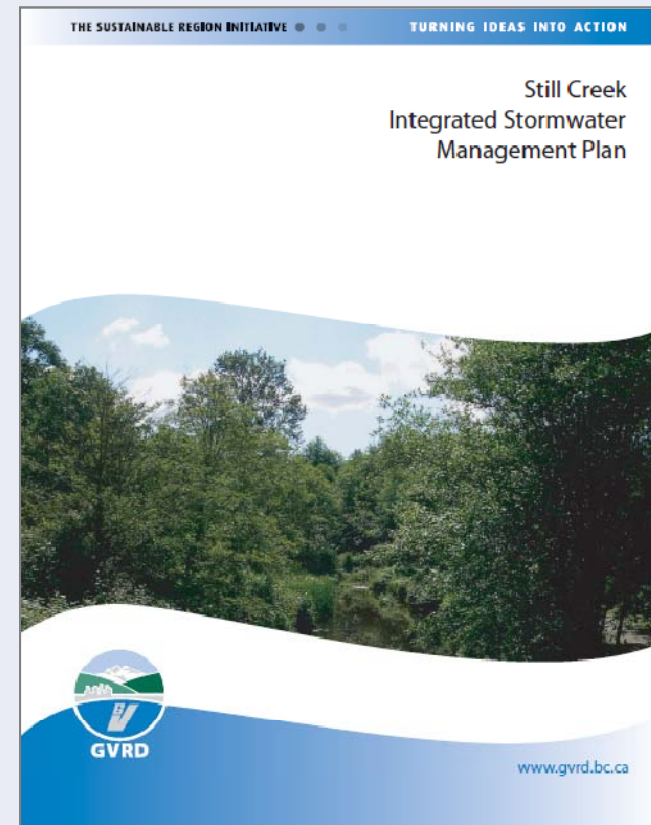
Rain barrel at infill dwelling, Vancouver



Stormwater to Rainwater

Strategy 3.4 Provide resilient infrastructure to address risks and long-term needs

- Links land use with stormwater management
- Continue w/ Integrated Stormwater Management Plans (ISMPs)
 - watershed scale
 - complete by 2014
- Implement ISMPs



Joint Burnaby, Vancouver and Metro Vancouver Still Creek ISMP



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Stormwater to Rainwater

Strategy 3.5 Use collaborative management to address evolving needs

- Continue SILG & EMC
- Establish new overarching utilities committee
 - reports to Board
 - focussed on sustainable integrated infrastructure
 - can establish technical subcommittees



3. Stormwater Interagency Liaison Group

Evolved from LWMP
advisory task group

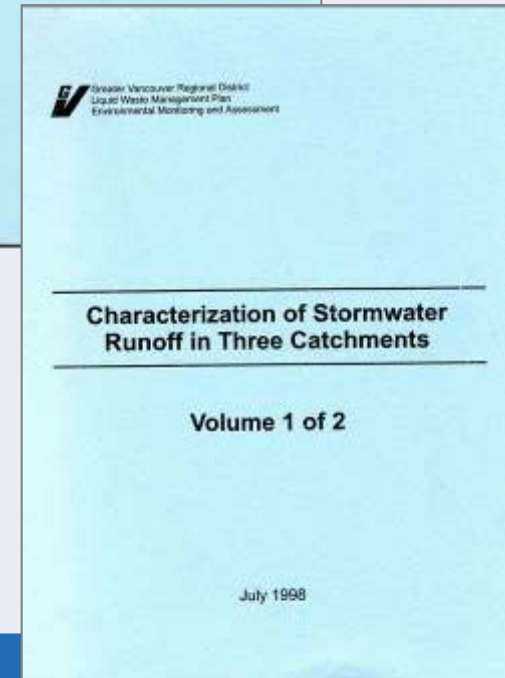
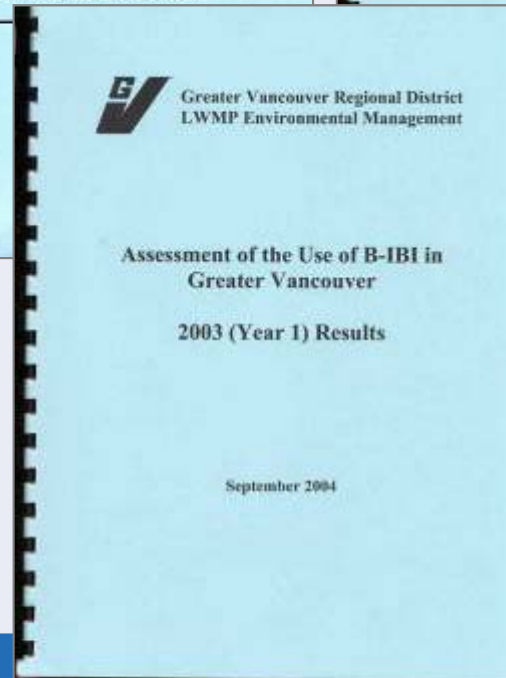
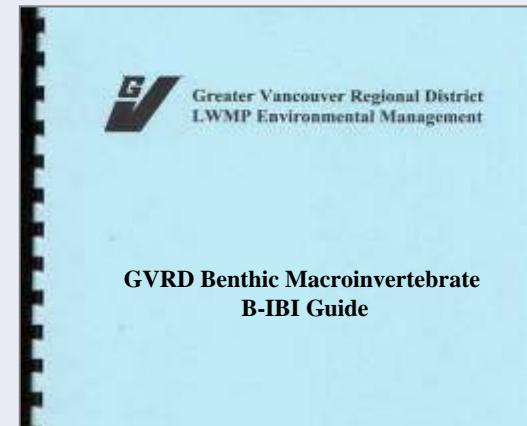
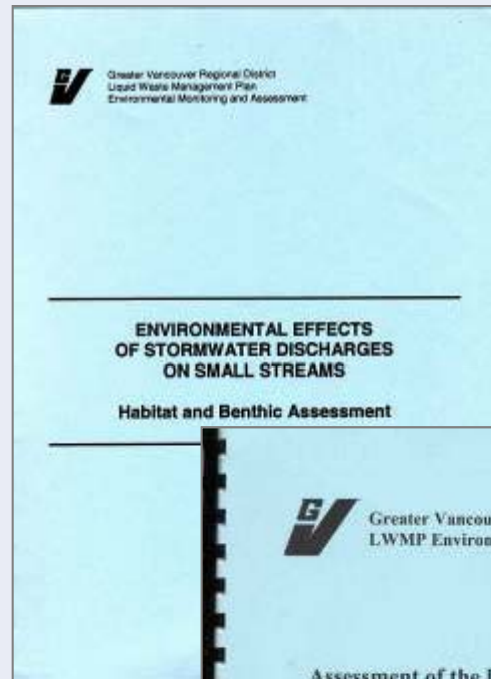
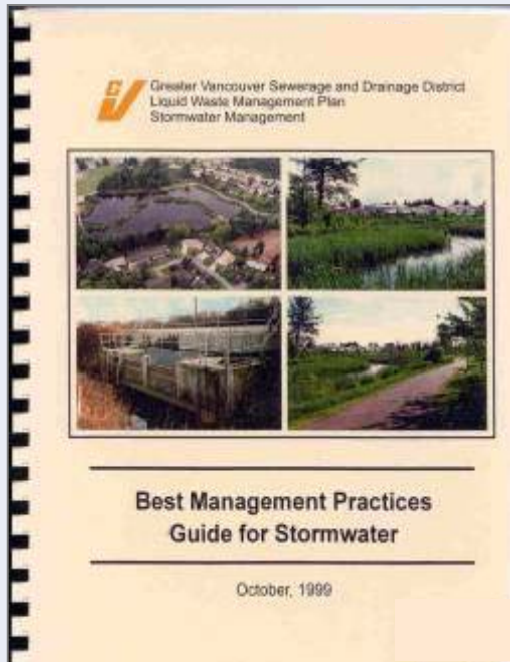


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is the facilitator



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Foundations 1997-2002

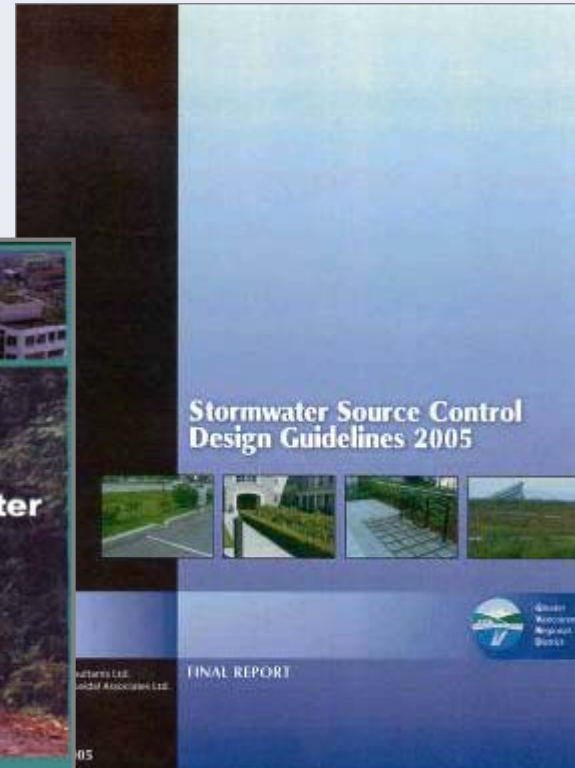
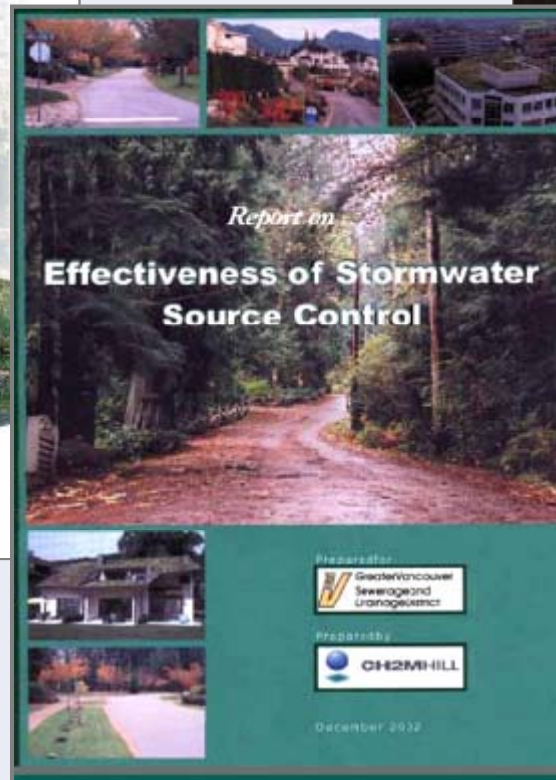
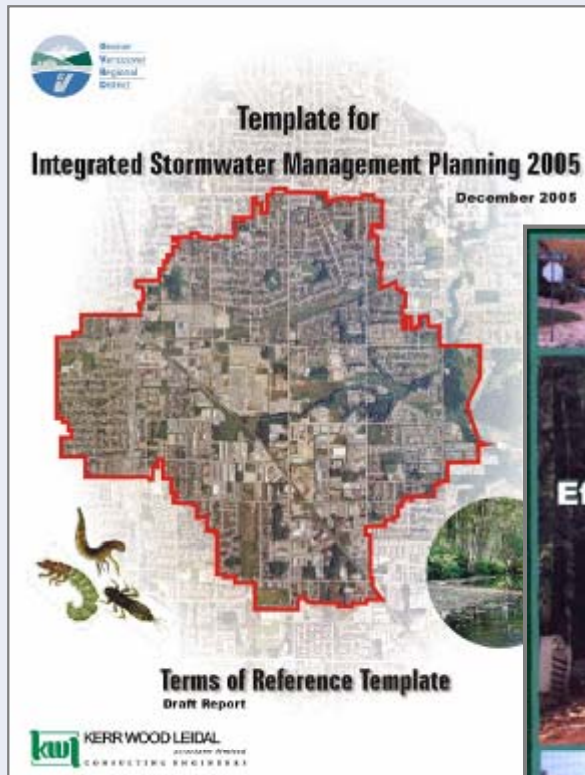


Confirmed linkages between
stormwater, land use and
watershed health impacts and
trends



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New Approach (Since 2002)



Developed new approach and tools for sustainable solutions



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Rain Gardens

DESIGN PRINCIPLES

- 1. Provide a minimum of 10% of the impervious area to be treated by rain gardens.
- 2. Rain gardens should be located in areas where runoff is concentrated.
- 3. Rain gardens should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 4. Rain gardens should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 5. Rain gardens should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Infiltration Basin Garden

Partial Infiltration

Full Infiltration

Rain Garden

Remember Source Controls, Prefiltration & Design Details

Swales

DESIGN PRINCIPLES

- 1. Swales should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 2. Swales should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 3. Swales should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Infiltration Swale System

Remember Source Controls, Prefiltration & Design Details

Green Roof

DESIGN PRINCIPLES

- 1. Green roofs should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 2. Green roofs should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Infiltration Trench & Shaft

Remember Source Controls, Prefiltration & Design Details

Infiltration Shafts

DESIGN PRINCIPLES

- 1. Infiltration shafts should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 2. Infiltration shafts should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Green Roof

Remember Source Controls, Prefiltration & Design Details

Sustainable rainwater management with region specific site level *Source Control Design Guidelines*



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DESIGN PRINCIPLES

- 1. Pervious paving should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 2. Pervious paving should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Pervious Paving

Remember Source Controls, Prefiltration & Design Details

DESIGN PRINCIPLES

- 1. Absorbent landscapes should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.
- 2. Absorbent landscapes should be designed to capture and infiltrate runoff from a minimum of 10% of the impervious area.

Absorbent Landscapes

Remember Source Controls, Prefiltration & Design Details

Absorbent Landscaping

Pervious Paving

Spin-off Initiatives

Water Balance Model developed directly from SILG research and funded initially by SILG and its members

Water Balance Model - Canada Homepage - Microsoft Internet Explorer

File Edit View Favorites Tools Help

WATER Balance MODEL Powered By **QUALHYMO**

Canada Homepage

YT NT NU NL BC AB SK MB ON QC NS PE NB

(Click on the Map to Access the Model and Homepage for each Province)

This public domain tool promotes **rainwater management** and **green development practices**

The vision for the Water Balance Model powered by QUALHYMO...as a decision support tool that bridges engineering and planning...is that it will help communities create neighbourhoods that integrate both good planning and innovative engineering designs, for overall objectives of

The Pan-Canadian Hydrology Modelling Tool

Model These Projects

1. Sites
2. Developments
3. Watersheds

Enter all of your scenario parameters through a point and click interface. Simulate and compare pre-development, base cases and multiple scenarios with hourly timestep weather data. Onsite and off-site storage facilities available!

Graphed Results

- Volume Summary
- Exceedance Summary
- Stream Erosion

About the Model

What is the Water Balance Model, and who can use it?

Here are some links to get you started:

- [Beyond the Guidebook: Why the Water Balance Model Powered by QUALHYMO](#)
- [Create Liveable Communities and Protect Stream Health](#)
- [An Overview of the QUALHYMO Engine](#)

About the Engine

QUALHYMO

QUALITY HYdrology MODEL's home on the web.

Learn more about the engine powering the Water Balance Model. Download the latest version, community forums and more!

[Visit the Official QUALHYMO Site](#)



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Why SILG Works

- Collaborative research
 - economy of scale
 - more innovation
 - raised the bar
 - benefits throughout North America
- A step removed from municipal day-to-day issues
- Sharing of like minds ('think & do tank')
 - explore common issues and solutions
- Value of face to face meetings
 - regulators and regulatees
 - build trust and confidence



Evolution

- New Integrated Utility Management Advisory Committee (IUMAC) in draft LWMP
 - sustainable infrastructure
 - integrated solutions for liquid waste, solid waste, water, energy and air quality
 - reports to the Metro Vancouver Board
 - supported by technical subcommittees
- SILG and EMC will be IUMAC subcommittees



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Questions / Comments ?



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