Commentary on Effective Municipal Rainwater/Stormwater Management and Green Infrastructure to Achieve Watershed Health

Prepared Jointly By

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The *Local Government Act* vests the responsibility for drainage with municipalities, and British Columbia case law makes clear the responsibility of municipalities to manage runoff volume to prevent downstream impacts. An increasingly important corollary to that responsibility is the need to work from the regional down to the site scale, to maintain and advance watershed health to ensure that both water quantity and quality will be sustained to meet both ecosystem and human health needs.

The *Local Government Act* empowers municipalities with extensive and very specific tools to proactively manage the complete spectrum of rainfall events. These tools enable them to achieve watershed goals and objectives that are established under Integrated Stormwater Management Plan (ISMP) processes.

The Ministry of Community Services is the lead Ministry for rainwater management and green infrastructure; and has a mandate to leverage the Green Communities Project to advance implementation of green infrastructure province-wide. To influence the greening of the built environment, Ministry policy is that "*today's expectations are tomorrow's standards*".

Beyond the Guidebook: The New Business As Usual (2007),(available at www.waterbalance.ca), builds on *Stormwater Planning: A Guidebook for British Columbia* (2002) and provides key guidance to the new provincial approach. Validated through Metro Vancouver pilots, *Beyond the Guidebook* advances a performance target methodology for correlating green infrastructure effectiveness in protecting stream health. This initiative incorporates lessons learned over the past six years in order to help municipalities establish what performance targets makes sense at the site, catchment and watershed scales.

Now that prerequisite tools and resources exist, a key to success of ISMPs in meeting the goal of maintaining or improving watershed health as communities grow and redevelop will be the effective integration of rainwater management techniques and green infrastructure in land use planning, plus follow-through upon ISMP implementation, integrated from the regional down to the site scale.

Strategies for integrating drainage actions with other policy and actions, to be truly effective, include:

- Identification and protection of natural green infrastructure (green space and Environmental Sensitive Areas) that performs multiple services
- Reduction of watershed load through effective land use planning and urban containment
- Incorporation and retrofitting of engineered green infrastructure technologies into development plans
- Use of the *Water Balance Model powered by QUALHYMO* to set performance targets at the site, catchment and watershed scales
- Adjustment of bylaws and policies to support objectives and desired outcomes
- Plan performance monitoring and follow-up to adapt and adjust to lessons learned
- Budgeting that anticipates administrative and operations support

A desired outcome is to create neighbourhoods that integrate good planning and innovative engineering designs, for overall greater environmental, social and economic sustainability.

Through an integrated planning process, Table 1 below identifies actions that can be taken by municipalities to create liveable communities and protect stream health.

Table 1 – Framework for Moving from Planning to Action

Action	Level of Commitment
Complete and implement integrated rainwater/stormwater management plans that are **affordable and effective i**n protecting Watershed Health	• Municipalities develop ISMPs that enable implementation of integrated strategies for greening the built environment; and include establishing watershed-specific runoff targets (for managing the complete rainfall spectrum) that make sense, meet multiple objectives, are affordable, and result in net environmental benefits at a watershed scale.
	• Municipalities establish watershed targets that are characteristic of actual conditions in watersheds, recognizing that there will be different strategies for already developed versus partially developed watersheds
	• Municipalities evaluate the acceptability of watershed-specific runoff targets on the basis of an evaluation framed by these three questions: 1. What target will achieve the watershed health objective? 2. What needs to be done to make the target achievable? 3. Do the solutions meet the test of affordability and multiple objectives?
	▪ Municipalities implement green infrastructure solutions that result in effective rainfall management at the site, catchment and watershed scales.
Embed ISMP strategies in neighbourhood concept plans	• Municipalities develop rainwater/stormwater and land use plans through an inter-departmental process that is collaborative and integrated. • Municipalities provide guidance as to how watershed-specific targets can be met at the development scale.

The **Water Balance Model powered by QUALHYMO** is a public domain, on-line decision support and scenario modeling tool for promoting rainwater management and stream health protection through implementation of "green" development practices. This tool demonstrates how to achieve a 'light hydrologic footprint', and will help build bridges between planners and engineers; and underpins *Beyond the Guidebook: The New Business As Usual*.

The methodology embedded in the *Water Balance Model powered by QUALHYMO* enables a watershed target to be established; it also enables the user to assess how to meet the watershed target at the site scale. Accompanying this commentary is a paper titled *Beyond the Guidebook: Establish Watershed-Specific Runoff Capture Performance Targets* that was released at the 2008 Water Balance Model Partners Forum.