

**Beyond the Guidebook Seminar
November 2007**

**Moving from Stormwater Management to
RAINwater Management:
A Federal Fisheries Perspective**



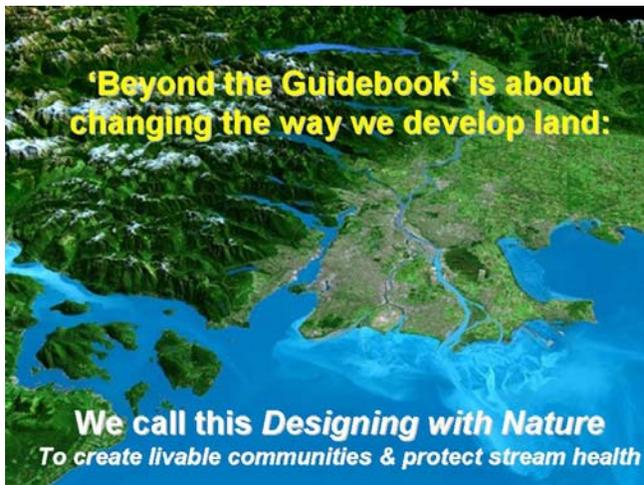
**Fisheries and Oceans
Canada**

**Pêches et Océans
Canada**

**A Presentation
By
Corino Salomi, Fisheries & Oceans Canada**

An initiative under the umbrella of the Water Sustainability Action Plan for British Columbia

Moving from *Stormwater Management* to *RAINwater Management*: A Federal Fisheries Perspective



Beyond the Guidebook Seminar

Released in June 2007, **Beyond the Guidebook: Context for Rainwater Management and Green Infrastructure in British Columbia** is a guidance document that [describes a runoff-based approach to drainage modeling](#).¹ Furthermore, it connects the dots between source control evaluation and stream health assessment. In a nutshell, it means this is 'where science meets analysis' because [runoff volume management is directly linked to stream erosion and water quality](#).²

The **Beyond the Guidebook** provincial initiative is co-sponsored by the [Green Infrastructure Partnership](#)³ and the [Water Balance Model Inter-](#)

[Governmental Partnership](#).⁴ Because [Fisheries and Oceans Canada](#)⁵ and [Ministry of Community Services](#)⁶ are on the steering committees for both partnerships, the [Beyond the Guidebook Seminar held in November 2007](#)⁷ provided a timely opportunity to inform local government and land use practitioners regarding the emerging policy framework and senior government expectations....for applying a [Beyond the Guidebook](#)⁸ approach to land development and watershed management.

Corino Salomi (Head, Habitat Section, Lower Fraser Valley), a member of the steering committees for both the Green Infrastructure and Water Balance Model partnerships, delivered a presentation titled [Moving from Stormwater Management to RAINwater Management: A DFO Perspective](#).⁹ His presentation followed one by **Chris Jensen** (Ministry of Community Services) titled [Integration of Rainwater Management and Green Infrastructure: The Province's Perspective](#)¹⁰; and was structured in three parts: an overview of fish habitat management policy and legislation; the history of guidelines in British Columbia; and a federal perspective on Beyond the Guidebook. "We are moving from guidelines to tools", Corino noted when introducing the road-map for his presentation.

¹ <http://www.waterbucket.ca/rm/index.asp?sid=44&id=330&type=single>

² <http://www.waterbucket.ca/gi/index.asp?sid=23&id=96&type=single>

³ <http://www.waterbucket.ca/gi/index.asp?sid=0&id=13&type=single>

⁴ <http://www.waterbucket.ca/rm/index.asp?sid=12&id=246&type=single>

⁵ http://www.dfo-mpo.gc.ca/home-accueil_e.htm

⁶ <http://www.gov.bc.ca/csenv/>

⁷ <http://www.waterbucket.ca/gi/index.asp?sid=49&id=319&type=single>

⁸ <http://www.waterbucket.ca/rm/sites/wbcrm/documents/media/37.pdf>

⁹ <http://www.waterbucket.ca/gi/sites/wbcgi/documents/media/176.pdf>

¹⁰ <http://www.waterbucket.ca/gi/sites/wbcgi/documents/media/175.pdf>

Science-Based Understanding

Corino Salomi opened his presentation by referencing the Washington State research in the 1990s that resulted in a science-based understanding of the factors affecting stream health. "[We have learned from and built on Washington State research findings that changed our way-of-thinking](#)¹¹. Dealing with the changes in hydrology that result from the way we develop land must be our #1 priority...because changes in hydrology are often the #1 cause of land development related in-stream impacts", he explained.

In BC, we have building on the work of Horner & May of Washington State a decade ago when they defined the order-of-priority for factors affecting stream health

- Changes in Hydrology**
- Disturbance and/or Loss of the Riparian Corridor
- Degradation and/or Loss of Habitat within the Stream
- Deterioration of Water Quality

To set the scene for what he wished to accomplish via his presentation, Corino provided his audience with this context: "My Beyond the Guidebook presentation is not about DFO telling you what to do. Rather, my take-away message is that the Beyond the Guidebook philosophy is about establishing what we are able to achieve through rainfall runoff capture at the source, *where rain lands*. Furthermore, embracing the Beyond the Guidebook philosophy means we will collaborate to improve land development practices because we share an ethic to do what is right for the environment."

Fish Habitat Management Policy

Corino observed that the [Policy for the Management of Fish Habitat](#)¹² can be viewed as providing an over-arching framework for the pragmatic approach embodied in the **Beyond the Guidebook** document. He explained that the policy was implemented by DFO in 1986 to support the habitat provisions of the [Fisheries Act](#)¹³, promote sustainable development and help counter the negative impacts that development activities can have on fish habitat; he added that the Habitat Policy's goals include:

1. **Conservation** of existing habitats;
2. **Restoration** of damaged habitat; and
3. **Development** of new habitats.

"Most people are familiar with the conservation goal which requires that the current productive capacity of existing habitats is maintained by applying the *no net loss* guiding principle", observed Corino, "Yet there is much, much more to the policy. It addresses integrated resource planning, for example, and also speaks to the themes covered in the program for this Beyond the Guidebook Seminar."

According to Corino, "The restoration and development goals build on the conservation goal in order to achieve a *net gain* in productive capacity. Net gain is the desired outcome, and this is what I want you to keep in mind when we talk about land redevelopment and the opportunities it can provide to restore fish habitat." He added that the DFO vision is to work with interested parties to rehabilitate the productive capacity of fish habitats or create new fish habitats in selected areas where economic or social benefits can be achieved through the fisheries resource. "We are talking about a [design with nature approach to development](#)",¹⁴ he emphasized.

Habitat Objective

- **Net Gain of Habitat for Canada's Fisheries Resources**
– Increase the natural productive capacity of habitats for the nation's fisheries resources, to benefit present and future generations of Canadians.

¹¹ <http://www.waterbucket.ca/gi/index.asp?sid=6&id=275&type=single>

¹² http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/policies-politique/management-gestion_e.asp

¹³ http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/policies-politique/act-acte_e.asp

¹⁴ <http://www.waterbucket.ca/gi/index.asp?sid=5&id=15&type=single>

To achieve policy goals for fish habitat protection and restoration, Corino identified the three pieces of relevant legislation in the DFO tool kit, namely: the [Fisheries Act](#); the [Canadian Environmental Assessment Act](#)¹⁵ (CEAA); and the [Species at Risk Act](#)¹⁶ (SARA). He emphasized that both CEAA and SARA can be applied to influence the way land is developed. Because changes in hydrology impact adversely on fish habitat, this means DFO has a responsibility to require that local governments and developers implement green infrastructure practices that are effective in achieving rainwater runoff capture.

History of Local Guidelines

Corino introduced and provided a perspective on the relevance of two guidance documents which were published in 1978 and 1992. He noted that most BC practitioners are familiar with the latter, but not necessarily with the former. The 1978 document has long been forgotten, while the 1992 document is referenced in numerous subdivision development bylaws.

History of Local Guidelines

1978: Guidelines for Land Development

1992: Land Development Guidelines for the Protection of Aquatic Habitat

- The objective has always been maintaining or improving stream health
- Infiltration was suggested even in the 1970's, but....
- Focus was on "stormwater" management
- And what were the results?

The [1992 Land Development Guidelines](#)¹⁷ were created to ensure that the quantity and quality of fish habitat are preserved and maintained at the productive level that existed prior to land development activities. Yet, stated Corino, the 1992 Guidelines have not achieved the intended outcome – that is, protection of fish habitat. "Stream degradation has continued because drainage strategies have been based on stormwater management, not RAINwater management", he observed, "Simply having a pond at the end of a pipe is insufficient to mitigate changes in hydrology. The pond is a partial solution."

"With the advantage of hindsight, it is quite revealing to read through the **1978 Guidelines for Land Development**. One can draw parallels with where we are at today", observed Corino, "Perhaps the simplest way to describe the 1978 Guidelines is to say that the future is the past...because they foreshadow the direction in which we are now heading with Beyond the Guidebook."

To underscore his point that the authors of the 1978 document appeared to have grasped how to mitigate changes in hydrology, Corino presented an image from the document that illustrated how to achieve runoff volume reduction through the use of infiltration measures. "Infiltration is not new. The problem has been the lack of tools", he commented. This observation provided the segue to [Stormwater Planning: A Guidebook for British Columbia](#),¹⁸ and the paradigm-shift from Stormwater Management to RAINwater Management. "From my perspective, the Guidebook was especially effective in shifting how people think because it painted a [picture of the rainfall spectrum that helped people visualize the integration of strategies](#)¹⁹ at different scales to produce a complete solution."

He then introduced and summarized a number of documents published since 2001, including the 4-page Discussion Paper titled [Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat](#).²⁰ This is a key reference because the runoff-based approach that is at the heart of Beyond the Guidebook is intended to resolve performance concerns arising from misapplication of the Discussion Paper.

¹⁵ http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/policies-politique/ceaa-lcee_e.asp

¹⁶ http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/policies-politique/sara-lep_e.asp

¹⁷ <http://www.dfo-mpo.gc.ca/Library/165353.pdf>

¹⁸ <http://www.env.gov.bc.ca/epd/epdpmpp/stormwater/stormwater.html>

¹⁹ http://www.waterbucket.ca/rm/index.asp?type=summary§ion=Rainfall_Spectrum&sid=43

²⁰ <http://wbm-bc.lanarc.ca/sites/wbm-canada-template/documents/media/2.pdf>

The Shift From Stormwater to RAINwater

- 2001: Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat
- 2002: Stormwater Planning: A Guidebook for British Columbia
- 2002: GVRD Template for Integrated Stormwater Management Planning
- 2003: Water Balance Model for BC
- 2005: GVRD Source Control Design Guidelines
- 2007: Beyond the Guidebook

Why Beyond the Guidebook

According to Corino Salomi, “The [purpose of the Beyond the Guidebook initiative](#)²¹ is to help local governments and the development community establish what level of rainwater runoff volume reduction makes sense at the site, catchment and watershed scales.” The **Beyond the Guidebook** methodology will allow practitioners to assess both site-level rainwater management measures AND flood relief projects so that they can develop a watershed approach that addresses stream protection and/or restoration. In the process, practitioners will view the watershed and its streams from a much more holistic perspective.

A synopsis or mind-map of the direction in which rainwater management is heading is described by these three sound-bites:

- **2002 Stormwater Guidebook:** “*thinking like a site*” – i.e. reduce runoff volume.
- **QUALHYMO:** “*one-stop shopping*” i.e. so engineers can model what overflows from source controls.
- **Beyond the Guidebook:** “*thinking like a watershed*” – i.e. protect stream health.

Beyond The Guidebook

- Focussing on a given detention target or infiltration target will only go so far
- Broader understanding, integration, and planning efforts are required
- Finally... the Water Balance Model with QUALHYMO streamflow assessment and the available tools bring it all together



“Drainage practice is at a crossroad in the path defining the methodologies and applications used in rainwater management. **Beyond the Guidebook** makes a clear distinction between a rainfall-based approach and a runoff-based approach”, continued Corino. The runoff-based methodology at the heart of **Beyond the Guidebook** has been validated by the City of Surrey through the Fergus Creek pilot and is incorporated in the [Water Balance Model powered by QUALHYMO](#).²²

“By applying the **Water Balance Model powered by QUALHYMO**, local governments will now be able to explore the fundamental requirements implicit in the 2001 Discussion Paper for stream health and environmental protection”, added Corino, “Furthermore, this decision support tool will enable engineers and planners to go **Beyond the Guidebook** in developing truly integrated solutions for protecting life, property and the aquatic environment.”

Corino described the **Beyond the Guidebook** as a ‘must read’ because of the way it provides a synopsis of what is most relevant and useful. “We now have the tools and the experience to **design with nature** and **move from stormwater management to RAINwater management**”, he stated in his closing remarks. He summarized by emphasizing that the objective is protect stream health, which is broader than how much volume one can infiltrate on a particular development. “While we need to have volume reduction targets, at the end of the day it is how effectively we apply the suite of available rainwater management tools that will ultimately determine whether we will succeed in protecting stream health at a watershed scale,” concluded Corino.

So, keep in mind that....

RAINwater management is about protecting streams, not how much volume you can infiltrate

²¹ <http://www.waterbucket.ca/rm/index.asp?sid=44&id=330&type=single>

²² <http://www.waterbucket.ca/gi/index.asp?sid=23&id=96&type=single>