



the partnership
for water sustainability in bc



Peer-Based Learning Will Help Local Governments Implement 'Watershed Blueprints' in BC

Partnership releases curriculum overview for 2-day course on the 'ISMP Course Correction'

Convening for Action in BC:
Visualize What We Want Our Regions to Look Like in 50 years

**Create a Legacy:
Settlement Change in Balance with Ecology**

1. *Influence choices by individuals and organizations*
2. *Use the term "sustainability" as a lens for considering approaches that influence choices*

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Peer-Based Learning Will Help Local Governments Implement 'Watershed Blueprints' in BC

Preface

ISMP is the acronym for Integrated Stormwater Management Plan. In the late 1990s, the genesis for ISMPs was a desire by local governments to integrate the community, engineering, planning and environmental perspectives.

During the period November-December 2010, the Partnership for Water Sustainability released the 5-part **ISMP Course Correction Series**. This series integrated lessons learned by leading local governments when undertaking watershed-based planning. Release of the **Summary Report for ISMP Course Correction Series** followed in February 2011.

The unfunded infrastructure liability confronting all local governments, combined with conditions imposed in May 2011 by the Minister of Environment in Metro Vancouver, are drivers for implementing the 'course correction'. A desired outcome is Sustainable Service Delivery. To achieve this outcome, the spotlight is on a life-cycle way of thinking about infrastructure needs and how to pay for them.

The Province is challenging local governments to think about what infrastructure asset management entails **BEFORE** an asset is built. The paradigm-shift starts with land use planning and determining what services can be provided sustainably, both fiscally and ecologically. Figure 1 illustrates the essence of the paradigm-shift for ISMPs: from **model-centric** to **landscape-based**.

To meet an educational need, the Partnership for Water Sustainability is developing a 2-day course titled **ISMP Course Correction: Achieve More with Less**. The City of Surrey will host the first course on November 9-10, 2011.

Kim A Stephens, MEng, PEng, Executive Director
Partnership for Water Sustainability in British Columbia
June 2011



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So What is Sustainable Service Delivery?

- It integrates all the principles of Asset Management
- It understands the value of land-use planning
 - And it understands the impacts land-use planning has on service delivery
- It integrates the 'Design with Nature' philosophy
 - Nature is a valuable asset that must be 'maintained' in order to 'operate' effectively
 - Nature's assets often appreciate rather than depreciate – What can we do to leverage this?
 - Nature provides multiple 'services' – some similar to traditional community services – i.e. Rainwater Management
 - Nature, and many of the resources it provides, are finite

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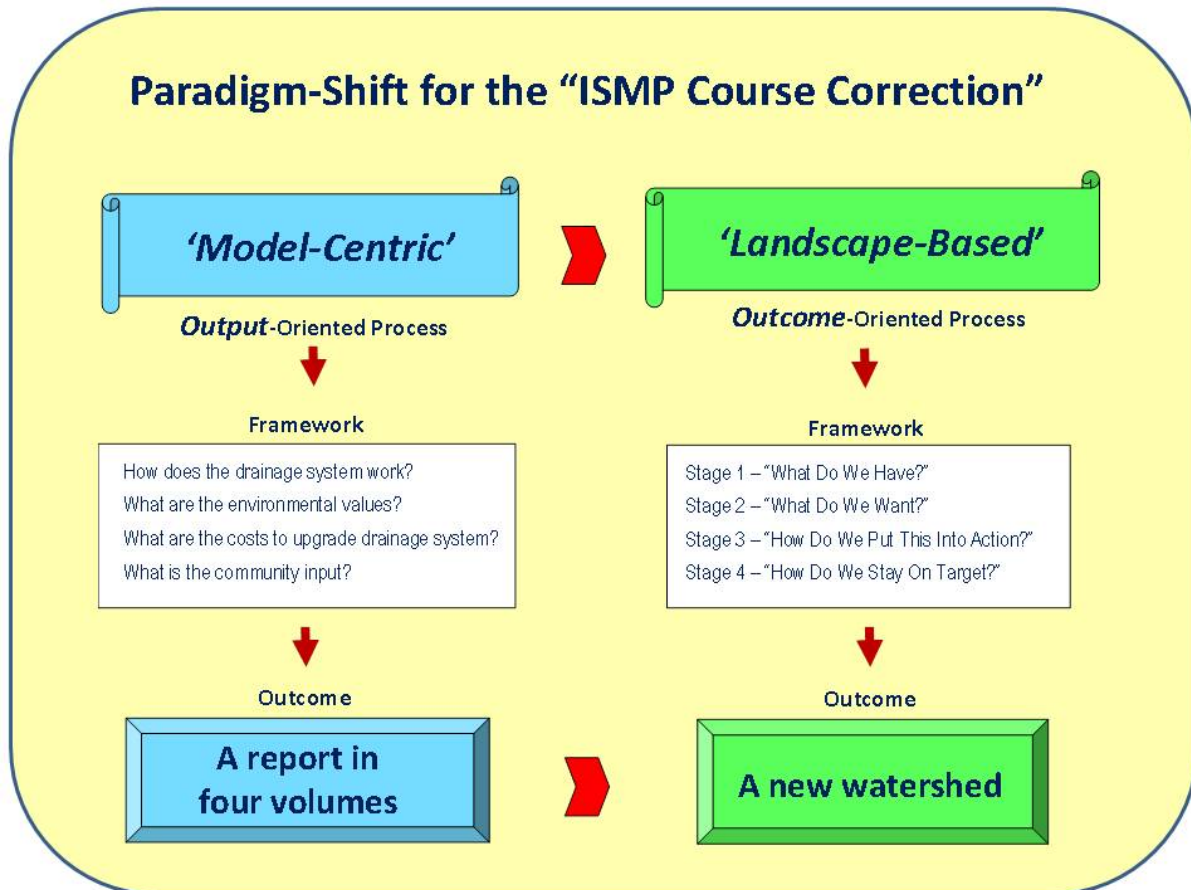


Figure 1

Peer-Based Learning Will Help Local Governments Implement 'Watershed Blueprints' in BC

Context for ISMP Course Correction

Use of the ISMP term is unique to British Columbia. First employed by the City of Kelowna in 1998, it quickly gained acceptance to describe a watershed-based approach to integrating hydrology, ecology and land use.

In 2001, Metro Vancouver's member municipalities recognized the benefits of this approach and made a commitment to the Province to have ISMPs in place by 2014 for their watersheds. Geographically, about half of British Columbia's population resides within these watersheds. When the Province released **Stormwater Planning: A Guidebook for British Columbia** in 2002, the ISMP approach was expanded and became a recognized provincial process.

Unaffordable Plans

The genesis for ISMPs was a desire to integrate the community, engineering, planning and environmental perspectives. Why: *To develop truly 'integrated' solutions* – that is, solutions that accommodate changes in settlement and land use while protecting property and aquatic habitat.

A decade ago, local governments were venturing into uncharted waters when undertaking ISMPs. However, over-emphasis on computer modelling and pipe analyses resulted in engineering-centric plans that were unaffordable. This drew attention to the need for a 'course correction' in the way ISMPs are approached. At the heart of the ISMP issue is the long-term dilemma of how to pay for infrastructure and watershed improvements if or when there is no source of funding.

Now, the collective experience of the Bowker Creek Initiative (in the Capital Region), the City of Surrey and other pioneer leaders such as the District of North Vancouver serves as a guide for an approach that is affordable, connects with the community, and gets the watershed vision right.

Get it Right

Population growth in BC's urban settlement areas is being accommodated to a large degree through redevelopment. From a watershed health and restoration perspective, this creates opportunities to "get it right" the second time.

After more than a decade of ISMP and related experience, a critical lesson learned is this: *A drainage planning process can be expected to flounder unless it is truly integrated with a blueprint for watershed redevelopment over time.*

Align efforts within a municipality. Integrate with land use and development processes. They drive the built form. A watershed vision is about the look-and-feel of the watershed landscape.

An ISMP is a potentially powerful tool. It can influence other municipal processes for the better. It can generate the blueprint for integrated and coordinated action at a watershed scale.

Mission Possible

The experience, lessons learned and outcomes described in *Beyond the Guidebook 2010* have informed the framework and objectives for the course on the *ISMP Course Correction*.

Systemic change is possible, as the case study experience in *Beyond the Guidebook 2010* demonstrates, even in the complicated sphere of planning for use and conservation of land. It requires understanding and pursuit of holistic outcomes.

Beyond the Guidebook 2010 describes how a 'convening for action' philosophy has taken root in British Columbia. Bringing together local government practitioners in neutral forums has enabled implementers to collaborate as regional teams. Their action-oriented focus has resulted in 'how to do it' examples of rainwater management and green infrastructure. This approach helps decision-makers visualize what 'design with nature' policy goals look like on the ground.

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Course on the ISMP Course Correction

Table 1 presents the structure and curriculum overview for the 2-day course. It comprises eight modules. These are adapted from the 5-part *ISMP Course Correction Series*, published in 2010.

Achieve More With Less

Local governments have many competing priorities. Everyone is challenged to do more with less, and get it done. The course will demonstrate the benefits of collaboration, alignment and integration: **Establish the vision, set the target, and then implement.**

Fiscal constraints provide a powerful impetus for doing business differently. Green infrastructure is part of a holistic approach to 'achieve more with less'. Refer to accompanying magazine article for additional context regarding the unfunded liability.

The course will guide land use and infrastructure professionals through the stages and steps in developing a plan that is balanced, landscape-based and financially sustainable.

Peer-Based Learning

The course is founded on peer-based learning. The experience of local government champions who have developed precedent-setting watershed plans will provide the curriculum backbone.

Participants will learn how they can draw on in-house resources, adapt the City of Surrey's ISMP framework, apply the Bowker Creek approach (in the Capital Region) to watershed team-building, and embed the vision for a watershed restoration strategy in land use planning processes.

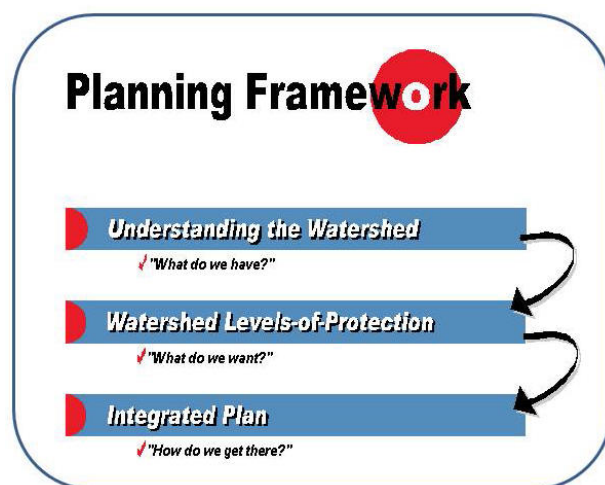
Peer-based learning is two-way. When learners bring relevant experience related to their real-life problems, this will inform the sharing. Also, tapping into their issues, concerns and needs increases the potential for transfer of learning to occur.

Create a Watershed Blueprint

The course will build on the foundation created by the 2002 Guidebook. The theme for each day of the course corresponds to the 2-part branding for this provincial guidance document:

- **Day 1–Build the Vision:** 1) what we have; and 2), what we want.
- **Day 2–Create the Legacy:** 3) how we put this into action; and, 4) how we stay on target.

Participants will learn from those with experience about methodologies and tools that will help them: 1) get the watershed vision right; 2) establish achievable performance targets; 3) create an affordable *watershed blueprint*; and, 4) integrate with other processes and/or plans to incrementally implement the *watershed blueprint* over decades.



Sustainable Service Delivery

The linkage to infrastructure asset management is a way to focus ISMPs on watershed outcomes. Sustainable Service Delivery is a life-cycle way of thinking. It integrates asset management, land use planning, development and watershed health. Course participants will learn that the legislative authority for integration of land use planning and asset management, including financial management, already exists within the Local Government Act and Community Charter.

Table 1: Course on the “ISMP Course Correction” – Curriculum Overview

An Educational Program to Transfer Knowledge, Develop Leadership Capacity, and “Achieve More With Less”

ABSTRACT:	<p>An ISMP is a potentially powerful tool. It can influence other municipal processes for the better. It can generate the blueprint for truly integrated and coordinated action at a watershed scale. The course will guide land use and infrastructure professionals through the stages and steps in developing a plan that is balanced, landscape-based and financially sustainable.</p> <p>Local governments have many competing priorities. Everyone is challenged to do more with less, and get it done. The course will demonstrate the benefits of collaboration, alignment and integration: Establish the vision, set the target, and then implement.</p> <p>The linkage to infrastructure asset management is a way to (re)focus ISMPs on outcomes: <i>Create a vision of a future watershed complete with intact ecological values, healthy streams, abundant fishery resources, and a functional infrastructure.</i></p> <p>Participants will learn how they can draw on in-house resources, adapt the City of Surrey’s ISMP framework, apply the Bowker Creek approach (in the Capital Region) to watershed team-building, and embed the vision for a <i>Watershed Landscape Restoration Strategy</i> in land use planning processes.</p>		
Time	ISMP Stage No. & Scope	Theme for Course Correction Module	Learning Outcomes
DAY 1 – BUILD THE VISION			
0830 - 1000	“Sustainable Service Delivery”	A Integrate Watershed-Based Planning, Ecological Health and ‘Infrastructure Liability’	Participants will understand the genesis and regulatory context for ISMPs; and why integration of land use planning and infrastructure asset management is necessary and enabled.
1030 - 1200	1 “What Do We Have?” <i>(Information and Data Collection)</i>	B Frame Watershed Problems and Opportunities	Participants will understand why it is important to ask the right questions, go on a watershed walkabout, frame the issues, tap into local knowledge, and focus on what is most relevant.
1300 - 1430	2 “What Do We Want?” <i>(Vision for Future Development)</i>	C Focus on Stream Health and Watershed Outcomes	Participants will understand the science driving the paradigm-shift from <i>STORMwater</i> to <i>RAINwater management</i> ; and how application of 10 guiding principles will lead to success.
1500 - 1630		D Capitalize on Green Infrastructure Opportunities to ‘Design with Nature’	Participants will understand why ‘designing with nature’ is key to climate change adaptation, and how to make a difference at multiple scales: <i>“What I can do for the watershed”</i> .
DAY 2 – CREATE THE LEGACY			
0830 - 1000	3 “How Do We Put This Into Action?” <i>(Implementation Plan, Funding and Enforcement Strategies)</i>	E Apply a Knowledge-Based Approach to Focus on Solutions and Outcomes	Participants will understand what <i>Shared Responsibility</i> means; and how to bring people together, learn from each other, and align efforts to implement effective green infrastructure.
1030 - 1200		F Move to a Levels-of-Protection Approach to Sustainable Service Delivery	Participants will understand when and how to apply models and screening tools; and how to establish watershed-specific targets and then implement at the development scale.
1300 - 1430		G Create a Blueprint to Implement the Watershed Vision	Participants will understand how to integrate drainage, land use, environment and social information; and how to create bite-size pieces that facilitate incremental implementation.
1500 - 1630	4 “How Do We Stay on Target?” <i>(Monitoring and Assessment Plan)</i>	H Define Adaptive Management Rules, Roles and Responsibilities	Participants will understand the role of effectiveness monitoring, and why Adaptive Management means <i>“we change direction when the science leads us to a better way”</i> .

Green Infrastructure: Achieve More With Less

BY KIM A STEPHENS, RAYMOND FUNG
AND ANNA WARWICK SEARS



Local governments in British Columbia are faced with this financial challenge: the initial capital cost of infrastructure is about 20 per cent of the lifecycle cost; the other 80 per cent largely represents a future unfunded liability. Each year, the funding shortfall grows. As infrastructure ages and fails, local governments cannot keep up with renewal and/or replacement. Fiscal constraints provide a powerful impetus for doing business differently. Green infrastructure is part of a holistic approach to 'achieve more with less'.

While developers may pay the initial capital cost of municipal infrastructure, local government must assume responsibility for the lifecycle cost associated with operation, maintenance and replacement of infrastructure assets. Often this is not adequately funded through property taxation and utility charges, as various political priorities compete for limited tax dollars. In addition, local governments bear the entire financial burden to stabilize and restore watercourses impacted by increased rainwater runoff volume after land is developed.

Unfortunately, asset management is sometimes only considered after infrastructure is built. The challenge is to think about what asset management entails BEFORE the asset is built. Mitigate future financial burdens! This paradigm shift starts with land use planning. Connecting the dots between watershed health and infrastructure type is emerging as an important piece in 'sustainable drainage infrastructure', both fiscally and ecologically.

The financial burden and environmental impacts associated with 'pipe-and-convey' drainage infrastructure contrast with the benefits of 'green' infrastructure at a watershed scale: natural landscape based assets reduce runoff volumes, have lower lifecycle costs, decrease stresses applied to creeks, and enhance urban liveability.

Local governments
can protect
watershed health
by means of a
'design with nature'
approach.

Level-of-Service Approach

'Level-of-Service' is the integrator for everything that local governments do. For drainage infrastructure, it refers to the expected level of performance of municipal systems in providing flood protection. What level of service does a community wish to provide, and what level can it afford?

There are tradeoffs between drainage of land, flood protection, ecological integrity AND cost. Everyone will have to make level-of-service choices. Thus, a guiding principle for a watershed-based plan could be framed this way: Establish the level-of-service that is fiscally sustainable AND protects watershed health.

Appropriate and effective green infrastructure is a way to increase the level-of-service — for example, permeable landscapes that restore the rainfall absorption capacity of the watershed will reduce runoff. This has tangible value because it protects aquatic habitat and hence stream health. This will increase the level of ecological protection. Less runoff will also improve the level of drainage protection during wet weather.

To understand the link, think in terms of the 'Level-of-Service' an urban tree canopy provides for rainfall interception. As trees grow, the interception capability increases. There is less runoff, less wear-and-tear on creeks, and less need for creek stabilization.

Doing Business Differently

The province's Living Water Smart and Green Communities initiatives are a catalyst for doing business differently: start with effective green infrastructure and restore environmental values within the urban fabric over time. Actions and targets in Living Water Smart encourage 'green choices' that foster a holistic approach to infrastructure asset management. Two complementary strategies can green a community and its infrastructure: preserve and protect natural green infrastructure; and implement designs that soften the footprint of development.

An absorbent topsoil layer has emerged as a fundamental building block to achieve a lighter 'water footprint'. As a green infrastructure practice, topsoil is the interface between rainwater management and drought management. Soil depth creates a sponge which can limit runoff during wet-weather periods; and reduce water need during dry-weather periods. If we can show how to get the topsoil part right, then other parts of the water sustainability equation are more likely to follow.

In collaboration with three municipalities, the Green Infrastructure Partnership has developed two primers: one deals with law and policy; the other is technical in nature. Released in February 2010, the Topsoil Law and Policy and Technical Primer Set synthesizes the pioneering experiences of the City of Courtenay, City of Surrey and District of North Vancouver. This is a critically important first step in developing a suite of practical green tools for use by municipal staff and designers.

Currently, the Okanagan Basin Water Board and Green Infrastructure Partnership are collaborating to expand the two primers into a Topsoil bylaws primer. This will provide a more comprehensive and accessible resource for local governments. It will support rainwater management, water conservation, and aquifer recharge. The Topsoil bylaws primer will be available at the end of 2011.



Soil depth after land is developed for urban uses will have a bearing on...

- How water is conserved
→ sustainability of supply
- How water runs off the land
→ sustainability of aquatic habitat

Conclusion

Local governments can protect watershed health by means of a 'design with nature' approach. This uses more natural features and functions, rather than hard manmade systems, to green infrastructure practices. Through a watershed-based plan, local governments can strategically connect the dots between land use planning, development, watershed health AND asset management. And by 'designing with nature', local governments could make a very strong case for a 'sustainable drainage system', at a lower life-cycle cost. **CB**

Kim Stephens is executive director, Partnership for Water Sustainability in B.C.; Raymond Fung is chair, Green Infrastructure Partnership and director, Engineering & Transportation, District of West Vancouver; and Anna Warwick Sears is executive director, Okanagan Basin Water Board.



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