



20. Reinventing Rainwater Management: Designing the Green City

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Shakespeare had it right – rain is a gentle blessing that “drops from heaven upon the place beneath.” Rain quenches thirst and sustains all life on earth. It greens our world. Without rain, we would inhabit a stark desert.

But we’ve built our cities in a way that turns rainfall into blight. When it rains in our cities, water sweeps over roofs, streets and parking lots, picking up a multitude of pollutants on the urban landscape. Then a network of curbs, gutters and pipes deliver that tainted water at high speed and volume into sensitive water bodies.

This stormwater runoff carries vast quantities of oil, gasoline, heavy metals, solvents, old lead paint chips, pesticides, herbicides, fertilizers, and PAHs into our streams and ocean. It also delivers fecal contaminants, leading to public health advisories for our beaches.

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Stormwater has destroyed our urban salmon streams. Its high velocity erodes stream banks and destroys spawning beds. Its toxins kill fish. And stormwater culverts block fish migration.

At one time, salmon in Victoria's Colquitz Creek were so thick farmers speared them and scattered them on fields for fertilizer. Over 30 streams in Vancouver were chock full of the big fish. But stormwater has turned these bountiful creeks into drainage ditches. Local restoration groups regularly see their efforts washed away by stormwater surges and toxins.

Polluted runoff has also closed many of the shellfish beds near our cities. In addition, stormwater runoff has now been documented as the chief source of PCB contamination in orcas – one of the main threats to survival of that endangered species. Stormwater washes PCBs off of roofs and other surfaces and delivers the chemicals to fish at the bottom of the orca's food chain. Recent scientific studies draw the link between runoff and survival of this region's most majestic animal.

All the above problems are the legacy of our obsolete 19th century stormwater management system – a system that fails to respect natural systems and water cycles. However, rainwater management practices have recently been developed that make the 21st century Green City possible.

Instead of relying heavily on pipes and concrete, this new approach relies upon soil, trees and open space to naturally absorb, store, evaporate and filter rainwater. This Low Impact Development (LID) approach mimics the natural water cycle – allowing water to infiltrate down through the soil and slowly release into the watershed.

Engineers, developers, and governments across North America are adopting green rainwater management techniques – including porous pavement, brick pavers, narrower streets, sidewalk planter boxes, replacing curbs and gutters with grassy boulevards and swales, improving soil absorption, retention ponds, rain gardens, and green roofs. Such LID techniques are now required for all new development in western Washington State.

Often cheaper than conventional pipes and concrete, LID provides additional benefits – it adds urban green space and recreational areas, cleans water and air, and makes the community more attractive. In fact, a Philadelphia study concluded that the LID approach provided **23 times** the total social, environmental and economic benefits of conventional stormwater management. The City of Philadelphia recently launched the most ambitious

LID effort in North America – a comprehensive plan to “peel back the pavement” and convert the city into an urban oasis.

Our provincial and local governments need to adopt a similar strategy. For its part, the province needs to encourage local governments to move forward on this issue. The province should:

- Follow the example of Washington State and require Low Impact techniques for all new developments – and create a long-term plan to retrofit developed urban areas with green infrastructure;
- Mandate each region and municipality in the province to establish *Integrated Watershed Management Plans* for dealing with rainwater through modern green techniques. Planning must take place at a watershed scale – it won’t work if Oak Bay protects Bowker Creek and Victoria and Saanich fail to protect their portions of the same watershed;
- The watershed plans should integrate planning for stormwater with planning for water supply and sewage to ensure the most efficient use of the precious water resource;
- The watershed plans should be required to set the following mandatory targets:
 - Elimination of stormwater discharges rated “high” for public health concern by 2017;
 - Elimination of discharges rated “high” for environmental concern by 2017; and
 - Making fish and shellfish near urban areas edible by 2035.
- To meet the targets, we must fix the old pipes that allow sewage to mix with storm water and flow onto our beaches. LID will reduce this problem, but money is still needed to fix the pipes. Cities such as Portland have successfully shifted such stormwater financing from property taxes to a “user pay” system, which encourages homeowners to reduce their runoff, saving both the homeowner and government money. The city of Victoria is adopting such a user-pay system, and the province should encourage this approach across BC.

It is clearly time for a change in the way that we manage stormwater. If we act now, our grandchildren will benefit dramatically. They’ll be able to walk on beaches free of stormwater fecal contamination. From those clean beaches they’ll be able to spot the occasional orca, still wild in the Straits. They will walk along the banks of local urban streams, awed by the magic of restored salmon runs. They will harvest shellfish from long-closed shellfish beds.

We can do all of this – but the province and local governments must first take action and establish a rainwater management strategy.

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For more information, see:

The Environmental Law Centre's proposed new strategy for stormwater is found in *Re-inventing Rainwater Management: A Strategy to Protect Health and Restore Nature in the Capital Region*. (2010) <http://www.elc.uvic.ca/press/stormwater.html>

Peeling Back the Pavement: A Blueprint for Reinventing Rainwater Management in Canada's Communities. Polis Project and the Environmental Law Centre. (2011) http://poliswaterproject.org/sites/default/files/Peeling_Back_highres_nov17.pdf

The POLIS Project on Ecological Governance website: <http://www.polisproject.org/conservation>.