



Rainwater Revolution

Imagine rain as a resource instead of an urban inconvenience

By Jason Youmans

After more than a decade of working to restore the last stretch of Douglas Creek to something approaching its natural state, Bob Bridgeman knows that traditional rainwater management practices mean bad news for urban waterways. Ongoing attempts by the Friends of Mount Douglas Park Society to breathe life back into the Saanich watercourse—where today only the final kilometre before it meets Cordova Bay remains above ground—have been regularly frustrated by contaminated water sent rocketing into the creek from the drainage system that services suburban sprawl in the surrounding 520 hectare watershed, home to about 5,000 properties.

Thanks to our short-sighted forbearers, the South Island—and most of the Western world for that matter—has inherited a drainage regime built around the principle that rainwater is an inconvenience to be conveyed out of our neighbourhoods quickly and at the highest volume possible. The result for local waterways that serve as the evacuation route can be devastating, shifting streambeds and destroying habitat for salmon and other creatures.

“Normally, you have a 10 year impact-event every 10 years,” says Bridgeman. “Well, we have 10 of those every years in Douglas Creek just because of the watershed.”

Human abuse of the drainage system through disposal of assorted toxins only increases the environmental destruction wrought by our storm sewers, says Bridgeman. “So there’s all these impacts, and we’ve developed strategies over 14 years to try and deal with these—but what we’d really like to do is deal with normal hydrology and water quality, then this creek project is just dead simple. We need to change the way that we live and do things on the watershed.”

Bridgeman’s is one among a growing number of voices calling for a radical—and yet patently simple—rethink of what rainwater means, a reconceptualization grounded in the notion that it’s far better to go with mother nature’s flow, than try to paddle against her.

Recently, the University of Victoria Environmental Law Centre captured the flaws in, and proposed solutions to, our present rainwater management system. What the ELC calls for is a region-wide integrated approach, recognizing the value of rainwater as a resource, rather than an inconvenient intrusion into the urban landscape.

“It’s about addressing that grievous mistake that we made 150 years ago, when thinking that the solution was to pipe and convey the water off of properties,” says ELC legal director Calvin Sandborn, who helped author the report with several of his students for the Veins of Life Watershed Society. “It’s like everything else that we deal with in the environmental field, it’s by recognizing natural systems that

The problems with pipes

The downside of our inherited stormwater management practices are made plain during the South Island’s rainy season, when fecal contamination of the waterfront forces the health authority to issue public health warnings.

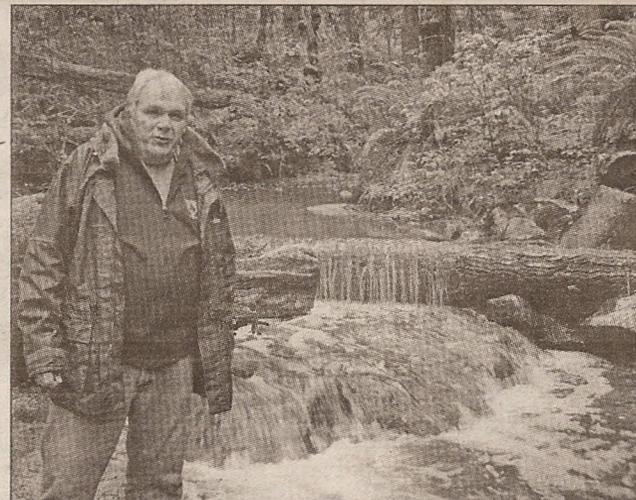
After a decrease through the 1990s, those warnings have been on the rise again since 2001, owing mostly to our antiquated sewerage and stormwater infrastructure. In Oak Bay’s Uplands neighbourhood, for example, stormwater and sewage discharge channels run parallel to each other, separated only by a low concrete partition. When the rain comes thundering down, the volume overwhelms the channels and the contents churn into each other, spilling sewer-contaminated stormwater onto the region’s shoreline from the short outfall pipes. Homeowners and property developers further add to the problem when they incorrectly hook their residential sewage pipes into the stormwater system.

And while adverse human health impacts are possible from our present approach, its effect on creatures further down the food chain are definite. While less a concern here than in more industrialized areas, marine scientists in the Puget Sound region have noted that stormwater is a primary factor in the presence of PCBs in the local Orca population, helping contribute to their dwindling numbers.

A recent thesis paper on the health of Saanich’s Swan Lake from UVic graduate student Lise Townsend noted that “... degraded water quality, unhealthy streams and invasive species are some of the main problems, many of which arise from sources far from the lake itself, in the watershed.”

Then there’s the matter of our local shellfish beds, most of which are closed to harvesting because, as years of Capital Regional District monitoring reports indicate, stormwater fouls the foreshore. As noted in the 2005 Juan de Fuca electoral area stormwater quality report, “Shellfish beds in Sooke Inlet, Harbour and Basin are presently closed to recreational harvesting. Many of these closures are based on elevated fecal coliform levels related to stormwater discharges contaminated with effluent from failing onsite sewage treatment facilities and inappropriate farming practices.”

Finally, and in addition to the numerous environmental consequences of our current stormwater practices, the ELC report asks readers to consider the missed opportunity that allowing our rainwater to escape through stormdrains constitutes. Rather than capturing and putting it to productive use, we instead view the excess water as yet another form of waste to be disposed of. So, instead of harvesting it and using it to our benefit—in residential rain barrels, for instance—we instead hope enough wet stuff falls to top up our regional



Friends of Mount Douglas Park member Bob Bridgeman says better rainwater management in the region means better health for our troubled urban waters

Getting better all the time

According to the Portland Bureau of Environmental Services, in a typical natural ecosystem, 64 percent of rainwater is absorbed into the ground through infiltration, 35 percent is taken care of through evaporation and transpiration and a mere one percent is what could be considered “surface runoff.” In our concrete and steel cities, however, only 25 percent of rainwater can be absorbed through infiltration by our limited greenspace, 11 percent goes by way of evaporation and transpiration, while 64 percent must be managed in the form of surface runoff. This gives rise to a simple equation: more impervious surface cover equals more runoff. Thus the solution to the environmental problems posed by our runoff should be found in the inverse: less asphalt on the ground, means more opportunity to use and absorb our abundant supply of rainwater.

Despite an absence of legislation requiring it, local governments and builders are moving gradually toward the implementation of what is known as “Low Impact Development”—that is, development that strives to work in concert with natural systems, rather than against them. Engineer Kim Stephens, the program coordinator for the Water Sustainability Action Plan for B.C. runs waterbucket.ca, a resource for government and developers, and says low impact development is an American term, thus he prefers, “Designing with Nature.” Stephens says a decade of lobbying for more enlightened rainwater management is now paying off.

“The first thing I would say is that it’s no longer ‘trying.’ The cultural change is actually happening. I think we’re at a tipping point right now in terms of cultural changes. I’m not talking about the entire population obviously. I’m talking about those who have some influence in terms of local govern-

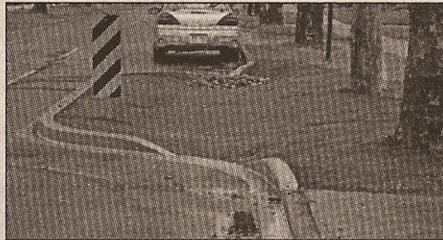
rather than a blight, abound.

At the University of Victoria, new buildings like the recently unveiled First Peoples House incorporate innovative rainwater catchment techniques. For example, instead of gutters carrying the rain off the roof and into a storm drain, it's simply redirected into watering the gardens surrounding the buildings and into the ponds that surround it. A green roof on the facility makes further use of the falling rain.

Saanich City Hall recently resurfaced its parking lot with permeable pavement that allows rainwater to pass through it for absorption into the ground below, rather than spilling off the parking lot, carrying oil and other auto residue toward Swan Lake.

The Bowker Creek Watershed Initiative has long been working to bring that stream back to good health after years of neglect amid the city's growth. Today, its 100 year plan lays out a comprehensive strategy for encouraging each municipality through which the creek passes—Victoria, Oak Bay and Saanich—to take a stewardship role, and the creek's protectors are ready to leap at any opportunities that present themselves—by way of property redevelopment in the watershed—to encourage restoration of the creek. The impending reconstruction of Oak Bay high school, adjacent to which the creek has been crammed into a narrow concrete channel, for example, presents a golden opportunity to rebuild the shoreline of that short leg in preparation for a day when the entirety of Bowker Creek can live again. A recent rain garden created at the end of Victoria's Trent Street now filters the runoff from that road before it enters Bowker.

However, while advocates for better rainwater management acknowledge that small steps are now being made in many corners of the region—like Sooke, where an inte-



A series of new roadside rain gardens in the 900 block of Shelbourne Street are part of the effort to improve the health of Douglas Creek watershed

grated liquid waste management plan is in development—it remains a piecemeal effort, one that will only yield lasting benefits for the region's environmental health with a commitment from all levels of government to work in concert.

A question of will

Political will is something that has been lacking where visionary rainwater management is concerned, says Saanich councillor Vic Derman, an advocate for, in his words, "cities that function like forests."

"I wish we had more political leaders who would be willing to get out there in front of the wave and provide leadership, rather than waiting for which way the wind blows," says Derman. "In some cases we need to be marshalling the parade, not running to the front once it's started."

An early attempt to implement a region-wide model stormwater bylaw was still-born, with only Victoria signing on to the strict code of practice enforcing what sorts of materials could enter local storm drains. As with so many issues on the South Island, the CRD presently lacks the power or

resources to regulate the storm system, with individual municipalities left to draft their own legislation.

In the face of independent municipalities pursuing independent priorities, the recent report from the Environmental Law Centre calls for the establishment of a CRD rainwater commission, whose primary task would be the creation of an integrated watershed management plan, recognizing that activities in one municipality can impact downstream outcomes elsewhere. Such a commission, the ELC report argues, would allow more robust oversight of what's happening in our local waters and provide in-house expertise for smaller municipalities to make positive changes.

In addition to the rainwater commission, the ELC report also advocates introducing a rainwater utility charge. Much like how residents currently pay for water piped to their homes, the rainwater utility charge would bill property owners for runoff piped away from their land through a calculation based on the amount of impervious surface on their property. This, the ELC contends, would provide a dedicated revenue stream for rainwater management monitoring and infrastructure programs, while also offering a market-driven incentive for property owners to do their part to reduce the amount of runoff.

Until that happens though, people like Friends of Mount Doug Park's Bob Bridgeman will continue to urge municipal leaders to change their stormwater ways.

"I'm interested in salmon and I don't want to be around and do nothing as these salmon go extinct because they're such marvelous creatures," Bridgeman says. "For me, salmon's a big deal, and even if it's not a big deal for you, if your local waters, including Cordova Bay, cannot support life, then how much further can we be behind, really?" M

Going green city Shifts large and small

While many individual property owners would doubtless love to find ways to mitigate their contribution to our damaging storm water outflows—and they can, by controlling what goes down their own drains—much of the responsibility is borne by government, since it is government that is responsible for so much of our impermeable surface cover in the form of roads.

Certainly there are steps individuals can take, like using a rain barrel, installing an underground cistern in your backyard to capture rainwater for reuse, or simply disconnecting your downspout from the stormsewer system (don't do this one unless a municipal engineer is able to discern what impact the move will have on your—and your neighbours'—property). Further up the cost ladder, you could narrow your driveway, resurface it with a permeable surface or build your own bioswale to capture runoff.

However, the ELC report is heavy on the leadership role government must play if we are truly going to change our relationship with rainwater in urban centers:

"The Commission's long-term (25 year or longer), integrated watershed management plan would set the goals and targets for re-establishing a functioning hydrologic cycle in the many watersheds of the CRD and improving water quality. The plan will clearly set out what condition we want our runoff, ecosystems and storm sewer systems to be in at the end of the day. By defining regional and watershed-specific targets, the plan is transparent and all local governments, other agencies and landowners have access to clear direction. The targets also serve as a measuring stick, now and in the future, to determine whether our rainwater system is operating as we planned."

To read the Environmental Law Centre's report in its entirety, visit elc.uvic.ca.

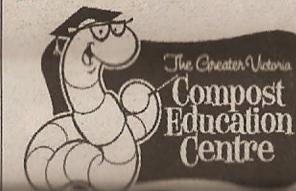
—J.Y.

"Happy Earth Week!"

— Elizabeth May



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