

Water Sustainability and the City Leveraging B.C.'s Water Sustainability Act in Support of Urban Watershed Management

FRESHWATER ALLIANCE D'EAU DOUCE

Background

- Research emerged from a project by Evergreen
 - How can or could the Water Sustainability Act help local governments respond to urban watershed challenges?
- ► First identify:
 - What environmental issues?
 - How prevalent?
 - Why are they happening?
 - What are management barriers to addressing issues?
 - What are solutions?
 - How can we take advantage of WSA and design some of those solutions into policy framework?

Definitions

"Urban"

- At least 300 people per square kilometer (B.C. average: 4/km²)
- Population of 10,000 or higher
- Focus on: Metro Vancouver, Eastern Vancouver Island, Kamloops area, Okanagan

"Watershed sustainability"

- Environmental resources and ecosystems are in conditions such that the needs of both current and future generations can be met
- Ecological and hydrological integrity in order to provide water quantities and qualities that allows for these needs to be met
- This definition does not explicitly include First Nations legal and cultural conceptions of sustainability

Urban Watershed Issues

Land-use change → Urban stream syndrome & lost streams

- Land-use change, particularly impervious surfaces, is primary culprit
- Symptoms include:
 - Increased streamflow variability ("flashier" hydrograph, sometimes prolonged low flows)
 - Impaired water quality (turbidity, chemical or biological contaminants)
 - Loss of complex ecological features \rightarrow habitat loss
 - Higher water temperatures (urban heat island effect)

Many streams are lost entirely (buried, culverted)



Wastewater → contaminants of emerging concern (CECs) & microplastics

- Controlled releases (treated)
- Uncontrolled releases (untreated)
 - E.g. combined sewer overflows
- 100s of unregulated CECs detected in surface water
 - Knowledge gaps re: how they interact over space & time, impacts on ecosystems & biota
- Compounded by old and aging infrastructure



Competing water demands → constrained water supply

- Variety of uses (domestic, agricultural, industrial, ecological)
- Strained environmental flows
- Groundwater depletion made worse by impervious surfaces (impaired recharge)



Climate change → issue magnifier

- More intense bouts of precipitation → increased likelihood of flooding
 - Evidence: CSOs increasingly common
- ► Longer, drier, hotter summers → increased likelihood of drought
 - Also, warmer stream temperatures



Survey Results

Survey: Respondents



Lower mainland (highly urban)
 Lower Mainland (moderately urban)
 Eastern Vancouver Island
 Kamloops area
 Okanagan

Survey: Respondents



Affiliation

Collaborative partnership
 Consulting firm
 First Nation band or organization
 Municipality
 Not-for-profit organization
 Regional district

Survey: Environmental Issues

Perceived severity of environmental issues



Survey: Environmental Issues by region

Severity of watershed issues by region



Underlying causes

<u>Watershed</u> <u>Issue</u>	<u>Level of concern</u> (by region)			Environmental Pressures and Stressors
	MV - HU	MV -MU	Interior	
Riparian degradation and habitat loss				 Land-use change in foreshore areas and riparian zones, which may directly displace natural features Impervious and hardened surfaces in watershed, which produces more runoff that could hasten streambank erosion Changes in and about streams (channelization, dikes, dams) which directly alter habitat or increase increase volume and therefore erosion
Low streamflows and droughts				 Land-use change that displaces natural features with agriculture and built environments, changing the ecosystem's ability to hold onto water in the dry season Impervious and hardened surfaces in watershed, which inhibit groundwater infiltration resulting in lower flows in dry season Water withdrawals for domestic, agricultural, industrial and commercial uses, which put pressure on water supplies Changes in and about streams (channelization, dikes, dams) which may impede or decrease stream discharge Climate change, which is bringing about longer, hotter and drier summer seasons

Underlying causes

Perceived severity of environmental pressures



Underlying causes

Perceived severity of environmental pressures by region



Metro Van - highly urban Metro Van - moderately urban Okanagan & Kamloops

Current Tools

Local government tools

Bylaws, including zoning; Development Permit Areas

 Direction set out in: OCPs, Regional Growth Strategies, Stormwater/Watershed/Liquid Waste Management Plans

Water demand-management

- Bylaws (efficient plumbing, landscaping requirements)
- Water metering
- Conservation-oriented rate structures

Infrastructure funding

- Funding restoration projects and Green Infrastructure/LID
- Investments in water & wastewater treatment technology
- Funded through: capital grants; levies or fees

Management Barriers

Survey response: barriers

Can local governments adequately address watershed issues?



Survey responses: barriers

Barriers to urban watershed management

■1 □2 ■3 ■4 ■5



1. Enabled vs. mandated protection

"'Enabling' is a fancy word for 'downloading'." - interviewee

"Local government cultures vary widely with respect to priority of watershed issues. Some take environmental issues very seriously and are quite pro-active. Others care about flood control and view species at risk, fisheries and other environmental values with ambivalence or even disdain." – survey participant

"it's a plan, it doesn't mean it's a 'have to." – interviewee

TOWARDS SOLUTIONS

- ► Regulated water standards → bring communities up to a baseline, address political will
- Performance-based criteria: leaves room for flexibility, customization
- Water Objectives as a vehicle to do this

"We need to get a process rolling with the explicit outcome of setting a legally binding water objective related to either water quality or quantity."

-survey participant

2. Long-term planning vs. short-term political cycles

"We are not taking advantage of every redevelopment opportunity to help restore a natural water balance. We have the technology and capability to do this. We are sensitive to what our residents and council feel are higher priorities and therefore moving very slowly."

- survey participant

"budgets and public agendas are often determined by what is politically palatable, not necessarily what is in the best interest of the community"

- interview participant

TOWARDS SOLUTIONS

- Third-party organizations (not responsive to political pressures) with stable funding
 - E.g. Conservation Authorities in Ontario
- Structured decision-making: outline process to evaluate potential options, and the consequences and trade-offs involved for each option
 - Could lend transparency and consistency to watershed decision-making
 - Widely credited as a success factor in B.C. Hydro's Water Use Planning process

3. Piecemeal approach

Many tools are site specific, pertain to future developments or re-developments – but not degradation that has already happened

Current suite of tools are "slowing down loss" [but] "it's very hard to move the needle forward" – interviewee

TOWARDS SOLUTIONS

- Regulatory tools that facilitate restoration and retrofits
- E.g. Massachusetts and New Hampshire require permits for uban drainages that release into impaired watersheds
 - Permits may require retrofits water being discharged meets Maximum Daily Limit of contaminants entering water bodies

4. Lack of resources to support on-the-ground work

Identified as the largest barrier in survey

"Huge watershed. So many stakeholders. No time. No funds." – survey participant

- Pertains to local government and provincial government
 - Provincial government: not enough budget for staff to do approvals, enforcement, science and monitoring

"While I applaud the recent changes to the Act, I feel the Province will be hard pressed to respond to the new work it will generate." – survey participant

TOWARDS SOLUTIONS

- One of the most straightforward problems!
- At the local level: new funding bases e.g. stormwater or drainage fees and levies
- At the provincial level: Water Sustainability Act is an opportunity for new funding mechanisms (fees from water licenses)
 - Could fund more provincial staff hours
 - Monitoring programs
 - Collaborative decision-making

5. Accountability of provincial and federal governments

 Pertains to both levels of government, but was noted more with regard to provincial government (water management mandate)

"There are not enough enforcement officers allocated to protect water in a proactive manner. It has become a reactive system in response to calls, long after the damage is done." – survey participant

"The Province needs to better enforce existing water licenses (irrigation withdrawal and pumping back) and well as illegal withdrawal. Many of our rivers do not flow in the summer due to oversubscription of the water." – survey participant

TOWARDS SOLUTIONS

- Province re-insert itself in watershed management
 - More staff hours
 - As a partner in watershed decision-making, not just compliance

"The province is mostly absent except as a regulatory body. [...] I believe the Province could be a valuable partner if we could bring them to the table."

- Province take action on previous commitments
 - State of Our Waters report reporting shows commitment to transparency, accountability

6. (Un)collaborative decision-making

"Cities only have limited powers [and] DFO and MFLNRO need to step in and help at times [...] especially when large infrastructure projects are involved" - survey participant

"Implementation of the WSA requires support in the area of community collaborative engagement processes. The Province should invest funding service agreements with community watershed groups, funded through water fees from groundwater extraction operators." - survey participant

"Our watershed issues tend to be focused on traditional European values: property protection, water for consumption, water for industry (economic opportunities), water for recreation, etc. First Nation heritage values are overlooked as Municipalities do not feel it is their duty to consult and accommodate" – survey participant

TOWARDS SOLUTIONS

- ► Consistent and supported approach to collaborative decision-making → Watershed entities
- Illuminations report by POLIS Project: 85% of respondents agreed watershed entities are necessary to implement Water Sustainability Act to fullest potential
- Also: a third-party, 'capacity-building' organization to facilitate knowledge sharing within and between watershed entities, assist communities to meet regulatory requirements
- Important: involving First Nations in co-governance role
 - Move beyond colonial decision-making

7. Fragmented and complex framework

"There are conflicting mandates for local governments to add source controls and enforce the [B.C. Building Code]" – interviewee

"Regulations are often in conflict with water and the resource it is regulating, [for] example... [the Forest Range Practices Act], Mining Act, [and] Agriculture waste regulations." – survey participant

"How will Water Sustainability Plans intersect with Watershed Assessment & Response Plans? ... [L]ocal governments are already challenged to achieve regulatory requirements so these planning processes need to be coordinated to avoid duplication." – survey participant

TOWARDS SOLUTIONS

- Highlights the need for collaboration/coordination! (watershed entities)
- New tools: recognize and build upon work that has already been done
- Communication and guidance: how will Act interact with other regulatory tools?
- New tools that take legal precedence despite other enactments

Leveraging the WSA

Leverage points

- Areas of opportunity:
 - Provisions that enable consideration of watershed health in land-use decisions (e.g. Water Objectives and Water Sustainability Plans)
 - Provisions that enable delegated decision-making
 - Provisions that enable the appropriation of fees and charges (potential source of funding mechanisms)
 - Provisions that protect environmental uses of water (e.g. Environmental flow needs and Critical environmental flows)
 - Provisions that enable reporting and monitoring requirements for water users

Recommendations

1. Connecting land and water with Water Objectives

- 1. Develop regulations that use performance-based criteria to establish objectives for water quality, quantity and ecosystem health.
- 2. Develop objectives to apply to urbanized watersheds
- 3. Monitor and review Water Objectives

2. Improving coordination and transparency in watershed decision-making

- 4. Develop guidance and processes for local governments on how watershed decision-making will be affected by implementation of the Water Sustainability Act
- 5. Develop watershed governance pilots in priority areas, which could form the basis for 'watershed entities'
- 6. Establish a third-party, capacity-building entity to coordinate and facilitate knowledge transfer within and between watershed entities and different levels of government
- 7. When Water Sustainability Plans are designated, ensure plans consider and incorporate the efforts of previous watershed planning efforts, local government community plans and bylaws.

3. Securing adequate funds for watershed management

- 8. Review the current fees and rates structure set out in the Water Sustainability Fees, Charges and Rentals Regulation
- 9. Work with a Sustainable Funding Taskforce to explore and test implementation of other sustainable funding mechanisms for watershed management at the provincial and watershed level, such as increasing revenue from local tax bases, Crown resource rentals, etc.

4. Ensuring water is protected for nature

- 10. Establish legally enforceable regulations to protect environmental flows
- 11. Develop an Environmental Flows Taskforce with participation of local government, First Nations, and the federal government to establish whether existing water allocations are sustainable

5. Monitoring and reporting on watershed health

- 12. Identify opportunities to coordinate and streamline water data from different monitoring operations around the province to enhance knowledge-sharing and reduce duplication of efforts
- 13. Require all water users to monitor water withdrawals and report their use to government
- 14. Compile a summary of water data into a State of Our Waters report, a publicly accessible report issued every five years

Practitioner Feedback

Major Themes

- 1. Reiterating the need for resources
- 2. Collaboration and sharing responsibility
- 3. Clarity and direction from province
- 4. Investing in education

QUESTIONS?