

Oliver M. Brandes
Jon O'Riordan

A Blueprint for Watershed Governance in British Columbia



POLIS Project
on
Ecological Governance
University of Victoria



Oliver M. Brandes is an economist and lawyer by training and a trans-disciplinarian by design. He serves as co-director of the POLIS Project on Ecological Governance at the University of Victoria's Centre for Global Studies and leads the POLIS Water Sustainability Project, where his work focuses on water sustainability, sound resource management, public policy development, and ecologically based legal and institutional reform. Oliver is an adjunct professor at the University of Victoria Faculty of Law and School of Public Administration. He is a founding member of the Forum for Leadership on Water (FLOW), which he currently co-chairs, and B.C.'s Convening for Action on Vancouver Island (CAVI) Leadership Team. He has affiliations at the University of Waterloo, Brock University, and the University of Manitoba. In 2012, he co-developed B.C.'s first Water Law course at the University of Victoria Faculty of Law. In 2009, he helped lead the writing of the book *Making the Most of the Water We Have: The Soft Path Approach to Water Management*.



Dr. **Jon O'Riordan** is a former Deputy Minister of the British Columbia Ministry of Sustainable Resource Management. He has completed 35 years in the public service—mainly with the B.C. provincial government—in environmental management and land and resource planning. In his most recent position at the Ministry of Sustainable Resource Management, he was responsible for completing six regional land and resource management plans. Dr. O'Riordan joined the POLIS Water Sustainability Project as a strategic water policy advisor in 2007. In his role at POLIS, he focuses on provincial water policy reform and the ecological governance of water management.



Professor **Tim O'Riordan** is Emeritus Professor of Environmental Sciences at the University of East Anglia, U.K. and a contributing author of *A Blueprint for Watershed Governance in British Columbia*. He has edited a number of books on the institutional aspects of global environmental change, policy, and practice, and led two international research projects on the transition to sustainability in the European Union (1995–2002). He is actively involved in research addressing the themes associated with better governance for sustainability. He is also active in the evolution of sustainability science partnerships. His direct work relates to designing future coastlines in East Anglia in England and in Portugal, to ensure they are ready for sea level rise and the creation of sound economies and societies for a sustainable future. His other research interests cover interdisciplinary approaches to pursuing the transition to sustainability, risk perception and communication, business, and social virtue.



Laura Brandes is the Communications Director at the University of Victoria's POLIS Water Sustainability Project. Bringing her expertise as a writer, editor, and science communicator, her work focuses on disseminating new policy research and effectively engaging communities, governments, and practitioners on water conservation and policy issues. She was the editor and a contributing author of *A Blueprint for Watershed Governance in British Columbia*. Laura has researched and written about a range of environmental and conservation issues, including watershed-based water management and governance, the water soft path, sustainable stormwater management, natural heritage systems, food security and sustainable food systems, and renewable energy initiatives. Laura holds an Honours Bachelor of Science in wildlife biology from the University of Guelph, and is an alumna of the Banff Centre's Science Communications program.

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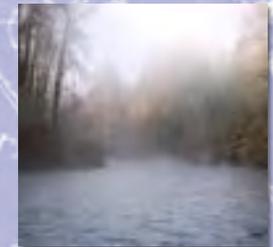
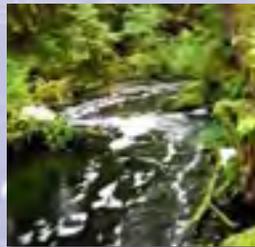
Oliver M. Brandes Co-Director, POLIS Project on Ecological Governance

Jon O’Riordan Strategic Advisor, POLIS Water Sustainability Project

WITH

Tim O’Riordan Emeritus Professor, East Anglia University

AND **Laura Brandes** Communications Director, POLIS Water Sustainability Project



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POLIS Project on Ecological Governance

Centre for Global Studies, University of Victoria
PO Box 1700 STN CSC
Victoria, BC V8W 2Y2 Canada
Tel: 250-721-8800
Email: polis@uvic.ca
polisproject.org

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The Impetus for the Blueprint

A Blueprint for Watershed Governance in British Columbia builds on *Towards a Blueprint for Watershed Governance in British Columbia* (2012)¹. This discussion paper and event dialogue summary reports on the key themes explored at a two-day expert roundtable hosted in June 2012 by POLIS and the University of Waterloo's Water Policy and Governance Group (WPGG). The roundtable explored the potential for developing a watershed-based approach to water and resource governance in B.C., and the event and supporting discussion paper were an essential foundation for developing the Blueprint. Experts from a diversity of backgrounds attended the June 2012 event:

Deborah Curran (Environmental Law Centre, University of Victoria); Rob de Loë (Water Policy and Governance Group, University of Waterloo); John Finnie (Regional District of Nanaimo); Lee Carol Godden (Centre for Resources, Energy and Environmental Law, University of Melbourne, Australia); Deborah Harford (Adaptation to Climate Change Team, Simon Fraser University); Rodger Hunter (Cowichan Watershed Board); Lynn Kriwoken (B.C. Ministry of Environment); James Mattison (Consultant and Former Comptroller of Water Rights, Government of B.C.); Lorna Medd (Cowichan Watershed Board); Tim O'Riordan (University of East Anglia, U.K.); Ben Parfitt (Canadian Centre for Policy Alternatives and POLIS Project on Ecological Governance, University of Victoria);

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The event was facilitated by Kirk Stinchcombe (Econics) and supported by members of the POLIS team, who contributed throughout: Jesse Baltutis, Laura Brandes, Oliver M. Brandes, and Jon O'Riordan.

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Expert Review Panel

This document integrates the feedback from a two-phase, peer-review process. The review panels were comprised of practitioners, researchers, government representatives, and thought leaders from across Canada, with expertise and experience in various aspects of watershed governance. The authors thank all the reviewers

who contributed to this report, and acknowledge that their review does not necessarily represent full endorsement of its contents or conclusions. Some reviewers requested to remain anonymous. The authors thank them for their input, along with the following individuals:

David Brooks	Research Fellow, POLIS Project on Ecological Governance Associate, International Institute for Sustainable Development
Randy Christensen	Staff Lawyer, Ecojustice
Rod Dobell	Professor Emeritus of Public Policy, University of Victoria Senior Research Associate, Centre for Global Studies, University of Victoria Strategic Advisor, POLIS Project on Ecological Governance
Rob de Loë	Professor and University Research Chair Water Policy and Governance, University of Waterloo
John Finnie	Convening For Action on Vancouver Island (CAVI) Former General Manager for Regional and Community Utilities, Regional District of Nanaimo
Ian Graeme	Manager, Watershed Sustainability, Water Protection & Sustainability Branch, B.C. Ministry of Environment
Rodger Hunter	Coordinator, Cowichan Watershed Board Management Consultant, Vis-a-Vis Management Resources Inc.
Steve Litke	Senior Program Manager, Fraser Basin Council
Tony Maas	Principal, Maas Strategies Member, Forum for Leadership on Water (FLOW) Former Freshwater Program Director, WWF-Canada
Bruce Mitchell	Professor of Geography and Environmental Management, University of Waterloo
Michele-Lee Moore	Assistant Professor of Geography, University of Victoria
Linda Nowlan	Director, Pacific Conservation, WWF-Canada
Margot W. Parkes	Canada Research Chair in Health, Ecosystems & Society, University of Northern British Columbia
John Pennington	General Counsel, Forest Practices Board, Government of B.C.
Ralph Pentland	Acting Chair, Canadian Water Issues Council President, Rabbet Enterprises Inc. Member, Forum for Leadership on Water (FLOW)
Merrell-Ann Phare	Executive Director, Centre for Indigenous Environmental Resources Member, Forum for Leadership on Water (FLOW)
Linda Sheehan	Executive Director, Earth Law Centre
Paul Sprout	Director Pacific Salmon Foundation
Barbara Veale	Manager of Planning and Regulation Services, Conservation Halton
Anna Warwick Sears	Executive Director, Okanagan Basin Water Board

Executive Summary

Water is society's most critical and, increasingly, its most strategic asset. Without abundant clean and flowing fresh water—and functioning watersheds—there is no life, no economy, and no future. Yet, sustainable water use is increasingly under threat across the globe due to growing consumption, pollution, and rapid resource development, all of which impact watershed health and drinking water sources. The prospect of shifting hydrology due to a changing climate will only exacerbate the problems associated with these threats via, for example, more extreme weather events, increased flooding, and prolonged droughts.

Over the past 20 years, the Province of British Columbia has implemented a number of significant legislative changes to its resource management and governance regime. This will culminate in a new *Water Sustainability Act*, expected in 2014. As part of the Province's recent *Water Act* modernization process, significant public discussion (instigated by government) has occurred around key aspects of water management and the extent to which water and related resource policy reforms are needed. Yet, the deeper and more complex dialogue about the *who, how, what, and accountability* of decision-making—the essence of watershed governance—is only just beginning.

Provincial and territorial governments across Canada are moving away from top-down, government-driven approaches and towards more collaborative and delegated forms of water and watershed governance. This mirrors trends in many jurisdictions around the globe. In Canada, Ontario, Quebec, parts of the prairies, and regions in the North are making changes to watershed governance based on meaningful engagement with affected communities, better involvement of First Nations, and improving financial support and capacity at the watershed level.

This Blueprint focuses on watershed governance in British Columbia and sets out a 10-year program for effectively managing and governing fresh water in the context of functioning and healthy watersheds. It represents a potentially transformative change for watershed governance in the province.

Governance & Why it Matters

Governance is the dual process of decision-making and holding those that make decisions to account. In British Columbia, community and watershed-based groups are getting increasingly involved in decisions that affect



their local watersheds, including drinking water source protection, ensuring environmental flows, urban and local resource development, and balancing water use between various stakeholders and rights holders. This bottom-up momentum attests to the desire of communities and local interests to have a more formal and established role in watershed governance, especially since governments, at all levels, no longer have the capacity to follow through on their commitments to protect watershed function and resilience. In B.C., the provincial government has recognized this desire by including provisions for delegating certain governance functions to local watershed institutions and arrangements in its legislative proposal for a new *Water Sustainability Act*.

A Blueprint for Change

This Blueprint focuses on the reform and transformation of watershed governance to enable more socially and ecologically resilient—and ultimately sustainable—outcomes for B.C. It specifically explores the *institutional architecture* (the law, policy, governance, and incentives framework) needed to create this kind of comprehensive change. British Columbia is geographically, hydrologically, and culturally diverse. Given the challenges and opportunities unique to B.C.—such as concern for fish and fish habitat, increasing water scarcity, unresolved aboriginal rights and title, and the urgent need to better include both First Nations and civil society in watershed planning and decision-making—this Blueprint provides an overview of the specific governance changes required over the next decade.

The benefits and opportunities associated with this kind of watershed governance reform include:

- creating social resilience to adapt to a changing climate;

- enhancing water-use efficiency and conservation and improving management;
- leveraging local expertise and resources;
- clarifying roles and responsibilities;
- protecting and enhancing ecological health and function, and thereby improving community prosperity; and
- reducing (or avoiding) conflict.

Guiding Principles for a New Model of Governance

The Blueprint is informed by six critical watershed governance principles. These principles inform the proposed institutional architecture, which will be needed to implement this comprehensive vision for watershed governance. The guiding principles are:

- 1 Water for Nature
- 2 Whole-Systems Approaches
- 3 Transparency and Engagement of Affected Parties
- 4 Subsidiarity and Clear Roles for Decision-Making
- 5 Sustainable Financing and Capacity
- 6 Accountability and Independent Oversight

The central premise of this Blueprint is to fundamentally change the scale at which critical decisions impacting watersheds are made and to develop a clear role for *watershed entities* (WEs) in formal decision-making. WEs would be community-based institutions that operate at a watershed scale to provide a nexus for integrating whole-system thinking with local ecological, economic, and social requirements. The governance functions and core activities envisioned for WEs are described in detail (Table 2), including a discussion of their principal roles and responsibilities in watershed visioning and planning; monitoring and reporting on local conditions; integrating

mandates across levels of government; reducing and resolving conflicts; and education and building awareness.

Two critical features characterize WEs. First, there must be a framework that allows for a **flexible spectrum of organizational structures** that is adaptable to fit local circumstances. Second, **WEs should be enabled**—not required. Agreement among key stakeholders and rights holders, including First Nations and government, would be needed to catalyze the creation of a local WE. WEs would be specifically designed with attention to building accountability mechanisms and would be financially sustainable, allowing them to develop the necessary local legitimacy to advise and, ultimately, make decisions governing the ecological, social, and economic health of their watersheds.

Winning Conditions & Milestones in the Coming Decade

The Blueprint sets out a series of steps to implement this comprehensive vision. Priorities include governance pilots to test new approaches; development of regulations associated with the governance aspects proposed in the new *Water Sustainability Act*; aligning funding models to provide resources for implementation and action; and convening forums and other information exchanges where practitioners from across the province can regularly share experiences and develop new decision support tools.

Ultimately, the goal is to protect watershed health and ensure whole-system (or whole-of-watershed) thinking. This would be complemented by increased cooperation with First Nations, opportunities to accelerate ecologically sound development, and strengthened community involvement in critical decisions that affect fresh water in British Columbia.

For the model proposed in this Blueprint to work, and for WEs to be successful, we identify nine winning conditions. When implemented together, these conditions increase the likelihood of success. They are:

- 1 **Enabling Powers in Legislation** for delegating governance functions to watershed entities
- 2 **Co-governance with First Nations** with full recognition of their rights and title
- 3 **Support from and Partnership with Local Government** to ensure appropriate local context and accountability to voters
- 4 **Sustainable Long-Term Funding** based on a number of sources, and including payments for ecosystem services
- 5 **A Functioning Legal Framework for Sustainable Water and Watershed Management** that ensures whole-system management, emphasizes stewardship and addresses cumulative impacts
- 6 **Availability of Data, Information, and Monitoring** to ensure a good understanding of the state of the hydrology, water quality, actual water use, and health of the watershed
- 7 **Independent Oversight and Public Reporting** through a revamped *Natural Resources Board* to ensure implementation and promote improved governance
- 8 **Assessing Cumulative Impact** to inform decisions on land- and water-use activities, based on assessing nature's limits and the ecological carrying capacity of watersheds
- 9 **Continuous Peer-to-Peer Learning and Capacity Building**, including strong networking among practitioners and regular forums to accelerate learning and sharing from a diversity of experiences



GOVERNANCE AND WHY IT MATTERS

Governance refers to the complex processes involving individuals, institutions (public, but also private), and civil society that make social choices. It involves both the *who* and the *how* of making collective decisions, and is thus inevitably concerned with power: the ability to influence, shape, and execute decisions, and to hold those making them to account.

In its formal sense, governance involves laws, regulations, and formal institutions and incentives. Just as important is how the norms, values, behaviours, and ethics influencing those decisions are constituted—how they flow through the social networks of influence and action. Behind the concept of governance are the notions of learning and adapting to change, and building social resilience to address an increasingly uncertain future.

Preamble: Situating the Blueprint in Context

This document offers a “blueprint” for how British Columbia might implement a new watershed governance approach, recognizing the unique institutional, legal, cultural, and geographic challenges of the province. This Blueprint proposes activities and priorities for making a transformative shift in the law, policy, governance, and incentives framework—what we broadly term institutional architecture—for watersheds in B.C. over the next decade. We believe 10 years will provide the minimum time required to pass the appropriate legislation and regulations; undertake new, and learn from existing, pilot watershed governance initiatives; build capacity in government, including First Nations, private sector, and civil society; increase awareness; and establish the required sustainable funding.

The governance and law reform aspects of water and watershed sustainability are a central research focus for the POLIS Project on Ecological Governance at the University of Victoria. Over the last decade, POLIS has worked nationally on these areas and also actively engaged with British Columbia’s effort to modernize water law and governance in the province.² This Blueprint builds on that foundation of work and on research and policies initiated by government and other key academic and non-governmental organizations across the province and Canada. This includes:

- *Delegated Water Governance: Issues and Challenges in the B.C. Context*³ by Nowlan, L., & K. Bakker (2007)—a paper for the BC Water Governance Project, by the Program on Water Governance at the University of British Columbia
- *Collaborative Watershed Governance Initiative Workshop Series*⁴—led by the Fraser Basin Council on behalf of the BC Water Governance Project through a 2008 workshop series
- *Background on Water Act Modernization Technical Paper* (2009)⁵ and *A Water Sustainability Act for B.C. Legislative Proposal* (2013)⁶ prepared by the British Columbia Ministry of Environment

- *Challenges for Source Water Protection in Canada Report No. 27* by Simms G., & de Loë, R. (2010) and *Governance for Source Water Protection in Canada Synthesis Report*⁸ by de Loë, R., & Murray, D. (2012)—developed as part of a four-year intensive, national, Canadian Water Network-supported partnership research project led by the Water Policy and Governance Group at the University of Waterloo

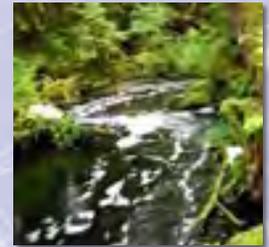
At POLIS, an overarching aspect of our work is the exploration of how community-centred approaches can be integrated into the institutional, legal, and governance framework for natural resources. We believe that water and functioning watersheds are the imperative for the coming generation, and we know the status quo system is not serving our social, ecological, or even our long-term economic needs. We recognize the challenges of watershed governance are legion and the potential for missteps or errors is high. However, we also recognize that the current system in B.C. is failing and new possibilities must be offered to get past the current gridlock.

Time and time again, POLIS has seen communities facing circumstances where government no longer has the capacity to follow through on its commitment to safeguard the health and function of local watersheds, yet alone take on the additional roles needed to address the complexity of managing watersheds today. We recognize that these issues are often too complex and interrelated to assume one single agency, department, or ministry can handle it alone. Accordingly, we believe that collaboration and

shared watershed governance is the critical starting point to begin plotting a course towards successfully balancing the ecological, economic, and social needs of British Columbia.

In this Blueprint, our central focus is the reform and transformation of watershed governance to enable more socially and ecologically resilient, and ultimately sustainable, outcomes for British Columbia. POLIS has developed this detailed policy, law, and governance reform Blueprint as an initial step to a much broader ecological governance transformation.⁹ It was developed for broad consideration, and as a guide for B.C.'s current efforts to modernize its water laws and update the overarching provincial approach to governing watersheds. The purpose of this Blueprint is to demonstrate a possible path forward, while recognizing that full implementation will require further detailed analysis and experimentation via a number of diverse pilots of shared or delegated approaches to governance.

Governance reform involves much more than just new legislation and policy, but our perspective is that significant changes to the legal and institutional framework offer a critical and, indeed, necessary next step. In B.C., there is currently a valuable opportunity to innovate to ensure an effective approach to watershed governance is achieved. This document was specifically designed to provide a starting point for exploration of and dialogue on how the proposed new B.C. water legislation, and the broader general water and land-use law and governance reform process currently underway, can manifest improvements to governance for the protection of fresh water across the province.



Purpose & Methodology of the Blueprint

The analysis and discussion that follow are squarely aimed at supporting the deliberations of citizens in the pursuit of innovations in governance for the benefit of communities and watersheds in British Columbia. The focus of this document is on governance (the process of decision-making), not on specific management policies (operational activities on the ground).

In this Blueprint, we draw upon leading thinking concerning water and watershed governance from practitioners in B.C., across Canada, and from around the globe. And, we build on experiences from those jurisdictions that have already made progress on watershed governance over the past decade. This research was developed through a review of literature, an exploration of successful models of watershed governance and, importantly, through a number of focussed discussions and workshop roundtables with leading practitioners and experts in the field.

To build our discussion for developing a new, more distributed, and shared form of governance for watersheds, we specifically consider:

- key drivers of change in Canada, internationally, and in B.C., including the evolving policy context affecting the governance and management regime for watersheds in the province;
- various models of watershed governance that are currently in place around the globe, and the key principles that inform them;

- cultural, financial, and institutional factors in B.C. that inform, and in some cases constrain, policy transfer from other jurisdictional experiences;
- a proposed institutional framework that embodies leading governance principles and is practical in the current provincial context; and
- a plan of action that builds on the “winning conditions” needed to establish the necessary capacity for effective citizen and community engagement in watershed decisions across the province and that ensures the most suitable options get implemented in a staged and timely fashion.

*Rivers are our means of life—where we hunt, fish, trap and travel. The river is not just the water; it's the vegetation, the fish, the medicines, the moose that come down to drink, the beaver that swim by, the muskrat. It has more value than all the parts of the land. It needs to be protected.*¹⁰

—RESPECT FOR THE LAND: FORT NELSON FIRST NATION STRATEGIC LAND USE PLAN (2012, JUNE), P. 13.

SECTION I

An Introduction to Watershed Governance and the Current Institutional & Legal Context in B.C.

1.1 WATER: THE LIFEBLOOD OF WATERSHEDS & COMMUNITIES

The relationship between water and society is complicated. We exist in history's most complex hydrological era, and never before have humans manipulated and intervened with the natural water cycle to the extent that we currently are. Yet, water is fundamental. Without it we have no life, no economy, no future. Water is much more than just a strategic asset or resource to be developed. It has critical ecological, economic, social, and spiritual importance.

Fundamentally, water and watersheds are the foundation of our prosperity and collective well-being. Water's flow in watersheds is linked to the wetlands, aquifers, lakes, streams, and riparian areas that provide food and habitat for all living things. This flow also breathes life into our culture and communities. Developing a system in British Columbia that effectively manages and governs fresh water in the context of functioning and healthy watersheds will be the priority challenge for the coming decade. The time for action is now.

A strong scientific consensus exists that the climate will change dramatically in the coming decades as atmospheric concentrations of greenhouse gases increase.¹¹ The impact of climate change on the hydrological cycle—and on dependent economic and social systems—has already been seen and felt across the globe, and it will only become more significant over time. Leading scientists predict that, in the near future, climate warming (via its effects on glaciers, snowpack, and evaporation) will combine with cyclic drought and rapidly increasing human



WHAT DO WE MEAN BY “WATERSHED” IN THE CONTEXT OF GOVERNANCE?

In this Blueprint, we use a broad definition of “watershed” that refers to the sophisticated interplay between social, ecological, and hydrological systems. Terms such as “catchment” or “river basin” are also commonly used. Spatially, watersheds concern a defined area of land that drains surface water, along with the natural ecosystems and human activities that take place within it. The land-water dynamic is central to the concept of watersheds, and it is important to recognize that the vast majority of a watershed is land.

Regarding the notion of a “socio-ecological” system, our definition of a watershed includes a range of scales. A watershed might, for example, form part of a larger basin (as seen with sub-watersheds in the Fraser or Columbia River systems), or be defined by a clustering of smaller sub-watersheds that aligns with a given population that forms an identifiable freshwater community or culture (as might be the case along the B.C. coast where communities span multiple smaller stream systems).

activity in western Canada to cause a crisis in water quantity and quality with far-reaching implications.¹²

These atmospheric and hydrological changes, coupled with intensifying resource development and extraction, accelerating urban development, and increasing water use for urban, industrial, and energy needs, are collectively diminishing the health and functioning of watersheds.¹³ Freshwater ecosystems are among the most extensively altered systems on Earth. Rivers, streams, and lakes have been subjected to chemical, physical, and biological alteration as a result of large-scale water diversions, introduction of invasive species, overharvesting, pollution, and climate change.¹⁴ All these activities are interrelated and, taken together, increase the demand for and conflict around fresh water. Changing public attitudes and improved understanding about nature's water needs, the evolving role of Indigenous Peoples, and increased demands for public and community engagement are collectively challenging the current paradigm of water management and existing processes of decision-making.¹⁵ This confluence of factors represents a significant catalyst for change regarding how water is managed and how watersheds are governed.

Decision-making about water and watersheds in Canada spans all levels of government, including First Nations. Constitutional responsibility for water and watersheds directly involves federal, as well as provincial and territorial governments, with many activities delegated to more local levels. The Constitution also clearly affirms existing aboriginal and treaty rights. Fundamentally, this affirmation requires a meaningful role for First Nations in all levels of water-related decision-making. At a minimum, this includes

consultation and accommodation of these protected rights.¹⁶ However, it is important to recognize that many First Nations maintain that more of a government-to-government approach is required.¹⁷ In essence, governance is complex, often fragmented, and very challenging.

Where We Have Come from & Where We Might be Going

Although the *Constitution Act*, 1867 divides responsibility and distributes power between provincial and federal governments, in practical legal terms it is the provincial governments across Canada that have the primary responsibility for making decisions about water and watersheds. They have the most direct constitutional powers related to land use, water management, and control over local government. The federal government's role in water management, although shared with the provinces, has waxed and waned over the years. Its primary areas of activity are through its responsibilities for fisheries, navigation, and transboundary waters. In 1987, a clear path for federal leadership on water was mapped out in the *Federal Water Policy*.¹⁸ Despite its potential, this policy was never fully realized. A generation later, it remains largely unimplemented and the federal role has diminished substantially.¹⁹

As governance has continued to emerge as a regional and national priority, other national, collaborative leadership institutions have become increasingly involved in various aspects of water and watershed issues, such as the Council of the Federation, Assembly of First Nations, Council of Ministers of the Environment, and Council of Canadian Academies.²⁰ However, many of their initiatives, while often

rhetorically bold, tend to lack jurisdictional capacity for follow-through. Good governance—which is more than just good government—inevitably involves not only these formal players, but also collaboration with key knowledge holders and players on the ground. This includes civil society, academia, business, industry, and professional associations. If promises are to be followed by action, it also involves power sharing with those that must face the consequences of decision-making, including First Nations as required constitutionally and, increasingly, communities of all shapes and sizes.

British Columbia, like many of Canada’s provinces and territories, has historically relied on a top-down, government-led approach to watershed management and decision-making. The increasing complexity associated with addressing the challenges affecting our watersheds, coupled with a rapid decrease in the on-the-ground capacity of the Province, has created a demand for more direct civic and community engagement around critical environmental and resource management decisions. The current disconnect between the way decisions are made and the growing interest of those affected in having a more direct role is creating tension concerning all resource management decisions—especially those related to water and watersheds.²¹

The examples outlined in **Governance Failure & the Costs of Inaction** (page 4) illustrate the implications and potential costs of not only poor decisions and lack of meaningful engagement, but also of failing or insufficient governance and institutional architecture. In B.C., although not yet as severe as these examples, evidence of the status quo approach leading to conflict and ineffective

management is also increasingly apparent. For example:

- On Canada’s supposed “wet” coast on the Labour Day long weekend in 2006, Tofino authorities shut down water supplies to thousands of tourists due to shortages of drinking water, which had major local economic repercussions.²²
- In northeast B.C., Fort Nelson First Nation is voicing serious concerns about more than 20 water licence applications to support oil and gas extraction through fracking. One of these applications alone requests the right to withdraw three gigalitres (three billion litres) per year from the Fort Nelson River.²³ This, on top of the nearly 500 authorizations for withdrawal, amounts to over 15 gigalitres being withdrawn from their traditional territory—the equivalent of 6,000 Olympic-sized swimming pools worth of water. Although this is a huge volume of water, it might not necessarily be significant in the context of the region’s overall water budget. Yet, concern remains. Depending on the distribution of withdrawals, whole creeks, stream reaches, and shallow lakes could be run dry or significantly degraded—perhaps permanently. In June 2012, Fort Nelson First Nation appealed to the Environmental Appeal Board concerning the assessment and decision-making process of the regional water manager and the failure to uphold the honour of the Crown through meaningful consultation.²⁴
- In 2012 on Vancouver Island, the inability of provincial water officials to balance, via the management of a weir, the dual priorities of regulating the water levels of Cowichan Lake and downstream flows in the Cowichan



PROVINCIAL CONSTITUTIONAL POWERS OVER FRESH WATER

The Canadian constitutional foundation of provincial jurisdiction over fresh water lies in the provincial ownership of resources and explicit legislative rights establish in s.92 of the *Constitution Act, 1867*, which gives the provinces a primary role for the governance and management of water in Canada (with s109 vesting public lands, including fresh water).

Key heads of powers include:

- 92(1) regulation of local works and undertakings
- 92(5) management and sale of public lands
- 92(8) municipal institutions
- 92(13) property and civil rights
- 92(16) matters of a local or private nature
- 92(A) ownership of natural resource

While surface water and groundwater are constitutionally vested in the provincial Crown, this ownership is subject to aboriginal rights and title claims protected under s35.

In B.C., aboriginal rights and title claims to water have not been specifically recognized in court decisions and are not yet effectively factored into the existing water allocation or governance regime.

River (a Canadian Heritage River and significant salmon spawning ground) resulted in a dangerous threat and severe impacts to the local community, including Cowichan Tribes, salmon populations, and a downstream pulp mill.²⁵ Salmon had to be driven upstream in trucks to ensure spawning and the river was mere days away from literally running out of water, which would have had catastrophic and lasting results for all involved.²⁶

As these examples demonstrate, issues and concerns can manifest in a variety of ways. They are unique to local circumstances, yet there are predictable patterns playing out in all corners of the province. Water challenges, including drought, rapid resource development, extreme weather, and contaminants in drinking water, appear to drive localized water crises. Yet, at the root of these challenges are failures in governance, which amplify the problem and diminish the

Governance Failure & the Costs of Inaction

Although shifting to new forms of delegated or shared governance incurs a cost—both in time and money—the costs of inaction and the status quo are also quickly rising.

In the Klamath Basin, which straddles the Oregon and California border in the United States, there have been decades of legal fighting among farmers, Native American tribes, the fishing industry, power producers, and governments. These conflicts concern the availability of water, the legality of granted water rights, and, fundamentally, the inability to share what is becoming an increasingly valuable and scarce resource. Conflict and concerns about water quality, human health, and the compromised health of the river (including a 90 per cent decline in a once globally significant salmon fishery), ultimately cost millions in legal fees. After an acrimonious and expensive decade, which included whole sectors of the economy being compromised, hard work, leadership, and many concessions on all sides have resulted in new formal agreements, collaborative arrangements, and governance approaches that are finally beginning to resolve the tension.ⁱ

In Australia, slow movement on the implementation of comprehensive water reforms in the face of the millennium drought (a result of ineffective governance) led to millions of

dollars being spent on emergency relief and insurance payments for fishers and farmers. It spurred the need for a \$10 billion plan to address management in the Murray Darling Basin, and now there is serious consideration of the federal government taking over river management from the states (the equivalent of Canadian provinces) through constitutional changes.ⁱⁱ Failures to find collaborative processes and lack of follow-through on building the necessary watershed governance architecture will have serious and potentially permanent consequences, including economic, social, and ecological impacts, and perhaps even a rewriting of the country's constitution.

In Canada, the water crises in Walkerton, Ontario and North Battleford, Saskatchewan clearly demonstrate the potentially deadly costs of poor source protection and the related insufficient attention that is often given to governance and effective water management. In Walkerton, not only did seven people lose their lives from tainted drinking water, but many thousands more were affected and hundreds were disabled and left with permanent health effects. The ensuing inquiry cost over \$10 million and the amount of damages paid in civil compensation to victims is over \$65 million to date.ⁱⁱⁱ

capacity to resolve each of these individual challenges. These failures in governance are often the result of a complex web of interrelated factors, including a status quo and crisis-response mentality, under resourced senior governments, and decision-making structures that are out of date, ill-suited, or simply not up to the task. Of course, problems with governance are rarely the only issue. Governance alone cannot correct inadequate water management, but poor governance will almost certainly prevent effective management.²⁷

In response to this increasingly apparent revelation, many grassroots organizations and collaborative initiatives are organizing at the local watershed scale and are seeking more formal roles in decision-making. A recent detailed survey of B.C.-based watershed organizations demonstrates the emerging appetite for shared governance of watersheds and clearly reveals the growing constituency that exists around the protection and stewardship of freshwater systems.²⁸ But this is most certainly not just a B.C. phenomenon. Similar concerns and actions are occurring across Canada and, indeed, around the globe.

1.2 WHY WATERSHED GOVERNANCE? WHY NOW & WHY B.C.?

Most Canadian, and many international, jurisdictions have already begun the process of moving away from top-down, government-driven approaches to water and watershed governance (See **Crisis, Convergence & the Changing Face of Water(shed) Governance**, page 6). In some cases they are moving towards formalizing these more collaborative and distributed approaches to decision-making. This often includes legally embedded community- or watershed-

based institutions as key implementers or drivers of action. Collaborative approaches enrich decision-making and provide additional support for increasingly resource-strapped senior governments.

In Canada and B.C., the main drivers for a more collaborative, watershed-focused model of management and governance include:²⁹

- The demand for local drinking water protection, based on the experience in Ontario with the Walkerton tragedy and the ensuing *O'Conner Report*³⁰ which recommended higher levels of protection and new forms of water governance;
- Water pollution and, in particular, concern over non-point source pollution from impervious surfaces and agricultural runoff, as well as chemicals, such as endocrine disrupters, in waste streams;
- The dual threat of increasing water use and contamination associated with extractive activities, such as oil and gas development or mining;
- Concern for fish and their habitat and the protection of ecological health in watersheds through maintaining environmental flows and retaining ecological functions in riparian areas;
- Recognition of increasing water scarcity to encourage conservation of water use and increased water productivity;
- Increasing uncertainty and conflict among diverse users of watershed resources;
- Growing demand for citizens to have a viable voice in decision-making and concern about outdated and siloed or fragmented management and governance regimes;



CONSENSUS REQUIREMENTS FOR SAFEGUARDING CANADA'S WATER

- View and manage Canada's water resources as one body, above and below ground
- Organize governance of water issues with the hydrological perimeters of significant watersheds
- Create management agencies that bring to the table as many stakeholders in a watershed as practical
- Give those agencies clear, nationally consistent mandates and measurable objective for water safety and supply security
- Dramatically improve nationwide monitoring of water and ecosystem resources and institute public reporting of their stock, condition, and flows

Source: Pentland, R. & Wood, C. (2013). *Down the Drain: How We Are Failing to Protect Our Water Resources*. Vancouver, Canada: Greystone Books Ltd., p. 183.

Crisis, Convergence & the Changing Face of Water(shed) Governance

Throughout the 19th and 20th centuries around the globe, water policies and supporting legal structures were focused on building infrastructure and institutions for the purposes of satisfying human demands for water; controlling the vagaries of natural climatic variability (including flood and droughts); generating power; and providing some certainty for recreation, resource extraction, and irrigated large-scale agriculture. Ecosystem values and conditions were rarely considered or made an explicit part of water policy decisions. The consequences have been serious degradation and destruction of ecological systems.^{iv}

Reform of regulatory frameworks is often the hallmark of governance change, and substantive policy and legislative innovations in governance have occurred over the past few decades in parts of Canada and internationally.^v Beginning with South Africa's major water reform efforts in the mid 1990s, which culminated in the South African *National Water Act* in 1998,^{vi} many countries have followed the path of institutional and legal innovation.^{vii} Examples include the 2006 *Russian Water Code* and the earlier European Union *Water Framework Directive*, which came into force in 2000. The European Union is a global leader in implementing watershed governance principles through the *Water Framework Directive*,^{viii} which makes coordinated planning and management at the watershed scale mandatory for all members. Water law and governance changes have also occurred throughout Australia, and, in response to the millennium drought, culminated in the 2007 *Federal Water Act*. The much earlier example of the Tennessee Valley Authority, established in 1933, is also notable for its influence

on watershed development approaches in both North America and Latin America.^{ix} And the *Ontario Conservation Act* (1946) is the foundation for 36 conservation authorities and has attracted worldwide attention.

Around the globe, reforms have been driven by growing recognition of the limitations of traditional state-centred policy solutions to address issues that are diffuse, transboundary, and subject to uncertainty. This includes, for example, non-point source pollution, protection of estuaries and aquatic species, climate change-driven extremes of droughts and floods, water quality planning under formal legislation, and the protection of biodiversity and endangered species.^x Often, citizens perceive decisions as being made by "far-off faceless bureaucrats with little knowledge of or concern for how those decisions affected local conditions."^{xi} The drivers for change across these international examples have often differed, but the resulting patterns are similar:

- a commitment to more holistic water management approaches, in which protections for water in nature are emphasized;
- ensuring that water and its management are treated as a public trust (which is often codified)^{xii} ;
- new forms of governance that involve the sharing of power or rescaling of decision-making; and
- institutions that attempt to address the problem of "fit" between administrative and biophysical boundaries and operate on spatial scales following hydrological principles (watersheds).^{xiii}

- Fiscal constraints on all levels of government that require new collaborative initiatives to align and reinforce action, leverage capacity, and enhance available resources and expertise; and
- Institutional barriers that result from fragmented decision-making and reduction in government resources for management and enforcement of existing laws and regulations.

In addition, British Columbia also has a number of specific contextual factors that must be addressed and will inevitably affect the type of governance approach that might ultimately be adopted here. These include:

- The geographic and cultural diversity of watersheds;
- The fact that over 94 per cent of land and resources are owned by the Crown (although many watersheds on Vancouver Island are primarily private lands, and many First Nations contest the notion of Crown ownership);
- Unresolved aboriginal treaties with evolving legal rights to water and other watershed resources;
- The current patchwork of existing strategic land-use plans and their various legal commitments;
- The lack of local government jurisdiction over upstream activities, which affects its ability to protect drinking water sources;
- The emerging integrated single decision-maker model for resource development in the provincial government, which emphasizes streamlining and expediting permitting and approval processes;
- Limited or non-existent requirements to monitor and report actual water use;
- The current lack of tools to assess cumulative watershed impacts; and
- The nature of potential changes to regulating groundwater extraction, monitoring, and assessment.

To move the provincial regime towards a more ecologically balanced approach requires that economic and community sustainability be incorporated within a broader ecological focus, where maintaining ongoing ecological function is the central priority. Attention must be paid to both management, which includes operational activities on the ground, and governance. New institutional, legal, and governance architecture is needed that, at its core, allows for the rescaling of critical aspects of watershed decision-making and refreshes the structures and processes that arrive at these decisions. Taken all together, these systems and processes are what we term watershed governance.³¹

The Province of B.C. might be beginning to recognize the need to proactively establish new arrangements that enable a sharing of power and decision-making. For example, the recent legislative proposal for a new *Water Sustainability Act* includes provisions for delegating some functions of governance to what the proposal calls “watershed governance arrangements.” In particular, in the proposal the Province has recognized the need to engage communities more directly in governance:

“The potential to enable the delegation and/or sharing of responsibility and accountability for decisions (e.g., allow for delegation of some water management activities or decisions to people or agencies outside the provincial government or more than one person or agency with the authority to exercise the same powers).”³²

This commitment sets the stage for a whole different type of water and watershed regime in the province. B.C. sits upon a precipice of change, and a number of factors have already been introduced that will both drive and shape this transformation—perhaps none more critical than the constitutional role of First Nations to be more formally included in decisions that affect them and their traditional territories.

First Nations, with their strong historical, cultural, and economic ties to the land, represent not only a formal political force but might also be the critical lever of change and innovation. This is especially true in B.C., where unresolved aboriginal rights and title haunts all aspects of resource decision-making and development in the province. First Nations are an important level of government that must be properly acknowledged and hold an important place in any efforts to improve the governing of watersheds to ensure more ecological and socially sustainable outcomes.

1.3 GUIDING GOVERNANCE PRINCIPLES

British Columbia is geographically, hydrologically, and culturally diverse. Accounting for this diversity and the other contextual drivers outlined in the previous section will be critical for any new governance options being considered. No single governance model will fit all regions. Identifying and incorporating guiding principles will therefore be an important foundation to provide clear direction.

A number of good governance principles³³ embody the philosophy and concept of watershed governance and must be seriously considered in the British Columbian context.

In this Blueprint, we have identified six key principles that repeatedly appear in the best examples and literature from around the globe. In our view, these provide the foundation for watershed governance as it might manifest here and now in B.C. Specifically, these principles can help shape the kind of institutional architecture needed to ensure better ecological and community outcomes:³⁴

- 1 **Water for Nature**, which involves building resilience in ecosystems as the foundation of the economy to adapt to future challenges
- 2 **Whole-Systems Approaches**, including watershed stewardship, land-water interactions, surface and groundwater interactions, and cumulative impacts in watersheds as social-ecological systems
- 3 **Transparency and Engagement of Affected Parties**, including enabling deliberation with all key parties, including rights holders and stakeholders
- 4 **Subsidiarity and Clear Roles for Decision-Making**, which involves nesting watershed organizations and institutions at ecologically relevant scales
- 5 **Sustainable Financing and Capacity**, given that the ability to execute and maintain an ability to engage in ongoing and new and emergent issues requires longevity and ongoing capacity
- 6 **Accountability and Independent Oversight**, which must include both sides of accountability—how the governing body is held accountable and how it holds others to account—as well as the creation of important feedback loops and mechanisms in law that build legitimacy and generate opportunities for learning, based on actions and outcomes on the ground

Taken together and applied on the ground, these principles have the power to embed a fulsome notion of watershed governance. Before demonstrating how these principles might manifest in British Columbia in Sections II and III, the remainder of this section reviews the current water law and resource management regime in province. This review reveals stubborn challenges and barriers that still exist and sheds further light on the transformations needed to move towards more ecologically sustainable outcomes on the ground.

1.4 BRITISH COLUMBIA'S CURRENT WATER LAW & RESOURCE MANAGEMENT REGIME

One of the unique challenges for watershed governance in B.C., and indeed across Canada, is the divided responsibility for managing land and water between all four levels of government. In British Columbia, the current governance approach is focused primarily on resource extraction—not resource stewardship.³⁵ This approach is driven by decisions made by government regulators and an environmental assessment process with the primary function of approving development proposals that are subject to minimal conditions to address environmental, community, and First

Current Provincial Water Law

British Columbia's water law regime is an amalgam of existing, established laws and newer legislation that has been passed over the last 15 years. The principal legislation—the *Water Act*, established in 1909—is primarily concerned with allocating and licensing surface waters and controlling activities in and around streams to protect fish habitat and prevent erosion.

In the 1990s, more attention was placed on stewardship and the restoration of fish-bearing streams impacted by forestry. In 1994, the Province enacted the *Water Protection Act*, which prohibited dams on the Fraser River, prevented inter-basin diversions, and strictly controlled the export of water, other than bottled water. In 1997, the *Fish Protection Act* designated a small number of sensitive streams and provided options to require future water allocations to protect fish flows. Land development on private lands in the more developed parts of the province is regulated under the *Riparian Assessment Regulation* (2004), which defined

Streamside Protection and Enhancement Areas where new development was prohibited or restricted.

On provincial Crown lands in watersheds outside urban development areas, the *Forest and Range Practices Act* (2004) establishes biodiversity objectives for protecting riparian areas, wildlife, and fishery values, as well as identified areas subject to erosion. Similar values are applied to oil and gas development in northern B.C. under the *Oil and Gas Activities Act* (2008) and its supporting regulations. Both of these resource framework laws also have some modest water management provisions.

As a result of growing concerns for protecting sources of drinking water, the Province enacted the *Drinking Water Protection Act* (2002) and associated regulations to enable source protection planning during emergencies and the implementation of a comprehensive approach to drinking water protection. Yet, to date, no plans have even been initiated.



Nations' interests. For example, the current B.C. *Water Act* and *Land Act* are largely focused on rules for resource extraction and development. While more recent legislation, such as the *Forest and Range Practices Act*, does include some broader watershed stewardship principles, these remain adjunct to the extraction and development focus. The *Water Act* reinforces this extractive emphasis by using a "First in Time, First in Right" priority system that decouples allocation from any kind of ecological or social context, lacks formalized instream flow protection, and creates pernicious incentives to waste water through "use-it-or-lose-it" requirements or "beneficial use" defined strictly in terms of economic benefits.³⁶

The 2008 provincial water strategy, *Living Water Smart*, shifts the emphasis of water management away from focusing on water as simply a commodity, and towards water stewardship. It emphasizes meeting nature's needs and conserving water through efficiency, reuse, and conservation. However, at this stage the policy remains primarily aspirational with many aspects yet to be implemented.

The flagship commitment associated with this policy is the pledge to modernize the B.C. *Water Act*. After a series of in-depth workshops, discussion papers, and consultations, the Province has now released its legislative proposal for a new *Water Sustainability Act*. A number of groups, including First Nations, industry, local government, research think tanks, professional associations, and environmental non-governmental organizations, provided detailed analyses and offered specific recommendations.³⁷

The five key management and governance policies identified in the Province's proposal include:

1. Protection of stream and aquifer health

- Protecting ecological flows and basic instream requirements for new licences, including extending to the groundwater water licence regime and restricting uses to essential household and agricultural needs under critical flow conditions
- The potential for developing water sustainability plans and area-based regulations to alter conditions in both new and existing licences to protect environmental flow needs

2. Water allocation and groundwater regulation

- Promoting conservation and ensuring all new water decisions are subject to meeting provincially established water objectives
- Restricting water use during droughts to protect critical flow needs
- Enabling water sustainability plans in critical watersheds
- Licensing existing groundwater use and all new major users (exempting smaller domestic users)
- Authorizing water supply wells
- Potentially constraining well authorizations under area-based regulation or water sustainability plans

3. Water sustainability plans and area-based regulations

- Providing area-based approaches to water management covering: critical environmental flows; drought management; efficiency and conservation measures; environmental flow needs; special orders; and differing priority-based allocation systems



B.C.'s "ECOSYSTEM" OF WATERSHED ORGANIZATIONS

A wide variety of differing types of watershed-scale, collaborative institutions exists in B.C. These can generally be classified into one of three broad categories. These categories give an indication of the range of activities currently taking place across the province, and also of potential future activities:

- **formal institutions** set out in a legislative framework with some independent funding and some powers to at a minimum influence decision-making (e.g. Okanagan Basin Watershed Board, Columbia Basin Trust, Fraser Basin Council)
- **semi-formal local government or partnerships** with limited dedicated funding and a more informal mandate (e.g. Cowichan Watershed Board, Nicola Round Table, Lake Windermere Ambassadors, Shawnigan Roundtable, Bowker Creek Initiative)
- **broad-based volunteer and interest-based advocacy groups** focused on restoration, education, and/or advocacy either in a given specific watershed or more broadly (e.g. Streamkeepers, WaterWealth Project, Watershed Watch Salmon Society, One Cowichan)

4. Monitoring and reporting

- Monitoring actual water use (both surface and groundwater) for major users
- Requiring all users to monitor actual use under area-based regulations or water sustainability plans
- Measuring ecological flows where prescribed
- Establishing environmental water quality standards to meet provincial objectives

5. Governance

- Delegating some responsibilities of governance to formal or informal watershed governance arrangements (and ensuring they are accountable for those decisions) with delegated functions meeting standards set in the Act and regulations
- Applying the integrated decision-making model in the Ministry of Forests, Lands and Natural Resource Operations to link water decisions with other resource decisions in the same watershed
- Delegating additional, specific governance functions (some advisory) that meet provincial objectives through water sustainability plans or area-based regulations

If implemented, these commitments represent a departure from past approaches to water management in the province. The remainder of this Blueprint focuses on the commitment to innovative governance arrangements, and the potential of watershed governance as an important driver of changing practices.

As mentioned previously, First Nations' perspectives on who owns, and therefore controls, water are vastly different from the current provincial policy, which is based on Crown

ownership and the "First in Time, First in Right" allocation principle. Reconciling some of these differences will be necessary to make progress on a new *Water Sustainability Act* for the province. At a minimum, this will require the Province to ensure a role for First Nations in decision-making (especially at the strategic planning level) and to be explicit that existing aboriginal rights and title will be recognized and protected in any new legislation.³⁸

Single Decision-Maker Model, Addressing Cumulative Effects & Moving Towards Integration

British Columbia's watersheds are riddled with resource extraction activities, including oil and gas, forestry, mining, and dams and power generation, as well as other development activities such as urbanization and agriculture. Many of these activities appear, on the surface, to have only minor or localized impacts, but collectively they can undermine watershed health through "death by a thousand cuts." A recent special report by the Forest Practices Board emphasizes that the cumulative impact of resource development "remains largely unknown and unmanaged."³⁹ B.C. has been slow in keeping track of the combined impacts of the myriad of activities. At this stage, they are generally regulated and monitored independently, if at all.⁴⁰

Until very recently, resource decisions in watersheds occurred in a completely fragmented fashion. Different regulators in a number of ministries would independently make decisions, and rarely consider impacts on the whole watershed. In 2010, the Province brought many of these decision-makers into a single agency, the Ministry of Natural Resource Operations (now the Ministry of Forests, Lands and Natural Resource Operations), and has since initiated a

more integrated decision-making model that is hoped will eventually lead to more consistent decisions that explicitly balance ecological, economic, and cultural values.

The Rise of Watershed-Based Organizations in B.C.

Although the current water and resource legislation in B.C. is still embedded in a top-down, centralized governance model (where almost all decisions and powers are held by the Province), over the past 40 years the Province has

established a number of initiatives in major river basins across B.C. for addressing local concerns in a watershed context (see **A Brief History of the Formal Watershed-Scale Governance Institutions in B.C.** below).

Formal models for collaboration, which in some cases allow for limited delegated responsibility, include the Okanagan Basin Watershed Board, the Columbia Basin Trust, and the Fraser Basin Council.

A Brief History of the Formal Watershed-Scale Governance Institutions in B.C.

In 1970, the **Okanagan Basin Water Board** was established under the *Municipalities Enabling and Validating Act*, and given taxing powers to address water problems that crossed the jurisdictional boundaries of the Okanagan Regional Districts. Early responsibilities included grants for sewage treatment infrastructure and partnering with the Province to clean up effluent discharge and eventually the invasive Eurasian milfoil that was despoiling the valley lakes. It was also appointed to coordinate the implementation of the federal/provincial *Okanagan Basin Study*, which was completed in 1974. The Board consists of representatives from the three Regional Districts, the Water Supply Association, and the Okanagan First Nation tribes. It is supported by the formally established (in legislation) Okanagan Water Stewardship Council, which has representation from resource users, partner agencies, and local experts from the general public. The Board undertakes studies and specific actions that are generally under local government jurisdiction and direction. In 1997, the Province and the federal government established the **Fraser Basin Council** (following the sunset of the Fraser Basin Management Board). It is a non-profit society with a small board of governors selected by federal, provincial, local,

and First Nations governments. The board and its members established its constitution and bylaws, and a board of directors with broader representation directs the work of the Council. The Council maintains a focus on the Fraser Basin but has a provincewide mandate. The majority of funding is project-based, a portion of which is “fee-for-service.”

Another approach to stewardship is embodied in the trust model. In 1974, the **Islands Trust** was established to address development pressures in B.C.’s Gulf Islands. It is essentially a form of local government, which codifies a more explicit focus on sustainability, stewardship, and preservation of the unique Gulf Islands environment.

More recently, in 1995, the **Columbia Basin Trust** was established to support efforts by the people of the Basin to create a legacy of social, economic and environmental well-being in the Canadian portion of the Columbia River Basin—the region most affected by the long-term impacts of hydroelectric projects built under the Columbia River Treaty. Using the income from its investments, the Trust develops, implements and manages programs and initiatives that respond to community and regional needs.



During the 1990s, British Columbians witnessed an unprecedented number of major land-use and resource management policy initiatives, including an emphasis on renewed treaty processes, the Commission on Resources and Environment (CORE) regional planning process, the Protected Areas Strategy, the Old Growth Strategy, the Timber Supply Review, and the development of Land and Resource Management Plans. These initiatives have generally resulted in incremental improvements in land and resources stewardship, but have failed to address the root causes of the unsustainable exploitation and over-extraction of natural resources that plagues British Columbia.⁴¹ Nevertheless, the lessons learned through these initiatives, and the capacity developed to tackle complex issues through multi-stakeholder group processes, is a useful legacy to build on—and one that exists in few other jurisdictions in the world.⁴²

These processes have laid the foundation for the rise of new and innovative watershed-focused groups and organizations. Notably, the Nicola Watershed Community Round Table, the Cowichan Watershed Board, the Lake

Windermere Ambassadors, and, more recently, the Shawnigan Basin Authority and its associated Roundtable all focus on area-based governance models for their community watersheds. These initiatives capture local interest and energy. Yet, they are hampered by limited capacity and concerns regarding their ability to actually influence decisions, or the ability to hold those who are making locally and ecologically significant decisions accountable.

These initiatives do, however, demonstrate the desire of citizens and local governments to have a stronger voice in decisions affecting their watersheds, and also demonstrate the growing unease of these groups regarding the ability of senior government to adequately protect their interests via the more traditional top-down model of management and governance.

The rise of community-based organizations in watershed governance mirrors trends across Canada, and indeed globally. These groups and individuals are preparing not only to engage in the direct management of their home waters, but also to organize themselves to take on more sophisticated roles concerning decisions affecting their watersheds.

KEY CHARACTERISTICS OF THE WATERSHED APPROACH GENERALLY

- 1 Uses watershed boundaries (at various scales) to define units for analysis and management
- 2 Addresses a more comprehensive and integrated scope of issues, including water quality, water use, habitat, surface-groundwater dynamics, land-water interactions, and goals related to healthy ecosystems
- 3 Ensures multiple actors including First Nations, local, and non-governmental interests meaningfully participate and share influence over decisions
- 4 Decision-making processes draw on biophysical science, as well as social, scientific, traditional, and economic information, and local knowledge, including perspectives on past management efforts and site-specific contextual information
- 5 Oriented toward collaborative planning and problem-solving, which promotes consensual negotiations and specific situation-appropriate management actions

Adapted from: Genskow, K.D., & Born, S.M. (2006). Organizational Dynamics of Watershed Partnerships: A Key to Integrated Water Resource Management. *Journal of Contemporary Water Research and Education*, 135(1), pp. 56-64; Born, S.M., & Genskow, K.D. (2001). Towards Understanding New Watershed Initiatives. A report from the Madison Watershed Workshop, 2000, July 22-21. University of Wisconsin-Madison. Retrieved from <http://www.bvsde.paho.org/bvsarg/i/fulltext/new/new.pdf>

*... the river basin often provides opportunities for modern governance networks. A basin is a closed region where there are incentives for people to come to an agreement on governance systems with water as the focus...*⁴³

—ROGERS, P., & HALL, A.W. (2003).
EFFECTIVE WATER GOVERNANCE. GLOBAL WATER PARTNERSHIP, P. 21.

SECTION II

A Framework for Governance to Ensure Better Watershed Outcomes

In this section we explore how the watershed—as we broadly define it—can become a more formal focal point of decision-making and why it is generally the appropriate scale and space for integration and whole-system thinking. To achieve the desired outcome of healthy and functioning watersheds, we propose using the watershed as the primary scale for water-based decision-making. This includes watershed and related land-use planning, riparian management, agriculture, urban growth and development, restoration, green infrastructure, and certain types of resource development activities, such as forestry and fisheries. We also recognize that, to be effective in watersheds, the governance principles noted in section 1.3 must also apply to the broader provincial policy on land and resource management.

2.1 DESIRED WATERSHED IMPACTS ON THE GROUND & IN THE WATER

To improve the current situation, any new governance arrangement must ensure that the basic ecological health and function of watersheds is retained or regenerated. At the same time, it must enable compatible sustainable economic development—all while promoting effective participation and engagement of citizens and communities. Shared governance arrangements and robust participation with First Nations are essential in traditional territories.

The priority of the proposed watershed governance framework is the real requirement to maintain the

ecological functioning of watersheds (see **What is Proper Functioning Condition?**, page 16). This is *the priority*, and includes protecting water quality; sequestering carbon in riparian areas and wetlands; maintaining habitat and critical flow regimes; attenuating groundwater supplies in droughts; and mitigating the impacts of flooding. As the climate continues to change, and with it the hydrological cycle, such ecological “services” will only become more valued and critical to the prosperity and health of communities.

2.2 THE WATERSHED ENTITY (WE) MODEL

Driving innovation and enabling new forms of ecologically based decision-making will require nuanced interplay among all levels of government, including First Nations, and watershed-scale institutions. In whatever model is ultimately employed, federal and provincial/territorial governments, with First Nations, will inevitably retain important constitutional accountability and process requirements for many aspect of both the management and governance of water and watersheds.

Shifting certain aspects of water and land governance to a watersheds focus does not mean that one scale (e.g. provincial government) will stop being involved or engaged. Rather, a nested, multi-scalar approach will be necessary to address the more complex challenges associated with achieving positive, long-term ecological, social, and economic outcomes. For example, setting ecological objectives, including minimum standards and flow needs; ensuring enforcement; maintaining responsibility for developing and overseeing a general resource rights and entitlements regime (including for water); and facilitating

regular, science-based assessments and transparent reporting of freshwater ecosystem health will all still directly involve both the federal and provincial government.

In a comprehensive global study of governance, Blomquist et al. clearly indicate that, “since political boundaries almost never correspond with watersheds and watershed scale decision-making structures do not usually exist, they should be created.”⁴⁴ In a recent detailed Canadian study on fresh water, authors Pentland and Wood echo this sentiment, “Virtually all water policy experts urge the alignment of public agencies with significant natural watersheds, recognizing that these are nested within each other and that consequently such agencies may also need to be nested within higher-level entities.”⁴⁵ In the case of B.C., there is a very real challenge to create, or in some cases evolve, the necessary institutional architecture to better embed watershed thinking in all aspects of relevant land, water, and resource decision-making.

Throughout this Blueprint, we use the generic term “Watershed Entity” (WE) to refer to the organizations and governance arrangements (some of the institutional architecture) that could exist at the watershed scale, and that we feel is necessary to move towards a new, more watershed-focused approach. WEs might include authorities, boards, trusts, regional bodies, or other watershed partnerships or arrangements. They would have a formal and recognized governing mandate with identified roles and responsibilities relating to preserving and promoting watershed health and function and sustaining the local economy and community well-being. This notion of a Watershed Entity is also consistent with what the Province is proposing in its new *Water Sustainability Act*, which supports the possibility of formal role(s) for local “watershed governance

What is Proper Functioning Condition?

Proper Functioning Condition (PFC) is a methodology for assessing the physical functioning of riparian-wetland areas, based on hydrology, vegetation, and soil/landform attributes. It is often used by ecologists and resource managers to set priorities for restoration activities. Proper functioning ecosystems are extremely important, since they provide the foundation for healthy watersheds, including thriving fisheries, wildlife, rivers, streams, and natural functions, such as carbon sequestration. PFC can also be a useful tool for watershed analysis. It can help identify watershed-scale problems, prioritize interventions, and

suggest management remedies. PFC can also assist in designing monitoring programs and focusing scarce financial and human resources on fixing the most significant, priority problems.

According to the PFC methodology, there are three functional conditions for watersheds:

- **Properly functioning watersheds** maintain all PFC attributes and range of values in accordance with their capability
- **Functioning at risk watersheds** maintain some PFC attributes but lose ecological values in extreme events
- **Non-functional watersheds** where potential restoration to PFC is very challenging and expensive

PFC is an appropriate starting point for determining and prioritizing the type and location of quantitative inventory or monitoring in a watershed. Beyond being a qualitative assessment tool that is based on quantitative science, PFC can also be an excellent communication tool for bringing a wide diversity of stakeholders in a watershed to agreement. By using PFC, the process can form a common vocabulary for identifying the necessary steps for developing a community's "Desired Future Condition" and articulating an ecological, social, and economic vision for the watershed.^{xiv}



PFC-based regeneration of agricultural ditch into healthy aquatic habitat by Aqua-Tex Scientific Consulting Ltd. (Blenkinsop Creek, Saanich, B.C.).

arrangements” (people or agencies outside the provincial government) that might be involved in delegation or sharing of some watershed stewardship functions or decisions.⁴⁶ By enabling WEs formally in law, these entities could be provided with a clear mandate and would build legitimacy and improve accountability between decision-makers across levels of government. WEs, along with their specific roles and assignments, would by necessity be adaptable—taking different forms in different places to fit local, geographical, and cultural contexts. WEs would be activities-based, rather than organizationally prescriptive. In some places, a WE might evolve from an existing institution, for example, a board, trust, authority, or regional district. In other places, where nothing appropriate currently exists, an entirely new WE might be created by the key local interests, including local government and First Nations.

There are two critical dimensions to the WE approach. First, there must be a framework under which such a delegated or shared model might exist that allows for a flexible spectrum of organizational structures that could be adapted to fit local circumstances. Simply put, the rules of the game need to be set. Second, WEs would be enabling—not required. Agreement among key stakeholders and rights holders, including First Nations and local government, would be needed to catalyze the legal creation of a WE. The legally enabled entity would then need to meet basic thresholds to ensure accountability and capacity to execute designated activities, such as managing budgets and complying with regulatory requirements.

Table 1 (pages 20–21) outlines some of the formal accountabilities of existing governments and key institutions

as they currently operate in the context of watersheds in B.C. This table does not contain all the possible actors or players, which might also include non-governmental organizations, water users, the public, or professional associations. Rather, it outlines some of the most crucial key actors who would have formal roles and responsibilities in our envisioned framework. This table is also not an exhaustive list of all possible roles or activities. Instead, it outlines general accountabilities, set out in the Constitution and in law, which will continue to exist under the new proposed approach, but with some specific functions to be delegated to WEs (as laid out in Table 2).

The primary roles and responsibilities of all levels of government would not change immediately. Once the new *Water Sustainability Act* is introduced, the focus for the provincial government would begin to shift to becoming more enabling and collaborative, de-emphasizing the current top-down approach. Governments would still retain legal accountability to establish and monitor clear minimum standards (or outcomes) to which all future land-use and water management activities would be required to adhere. These spheres of activity would need to be complemented by citizen enforcement provisions to ensure robust legal accountability—a major departure from current approaches common in Canada.

In this way, a “floor” would be created that that would help restore or maintain ecological and social watershed health. And, by moving to the proposed framework through an enabling approach, regions that wish to set higher standards would be free to do so, thus creating a potential virtuous “race to the top” between communities in different watersheds.



A Spectrum of Possibilities for Shared Powers & Authorities at the Watershed Scale

A wide variety of shared or collaborative arrangements exists across Canada and internationally. Generally resulting from local contexts or historical development, these applied watershed governance arrangements range from formal decision-making entities to informal advisory or coordinating bodies. The following is not an exhaustive list. Rather, it presents some general categories and demonstrates a range of possibilities oriented towards actual decision-making.

1. **Local-Provincial Partnerships**—The most iconic and well-known Canadian example of regional watershed bodies are Ontario's **Conservation Authorities**, which are mandated to "further the conservation, restoration development and management of natural resources other than gas, oil, coal and minerals" within the context of their local watershed. Beginning in 1946, the Province of Ontario delegated a broad suite of management activities and formal responsibilities to these authorities. Activities range from managing recreation and wildlife areas and reviewing and approving development proposals, to overseeing reservoir operations and development in flood plains. More recently, as part of *Ontario's Clean Water Act*, key planning powers are being delegated to local stakeholder committees for the production of locally developed, science-based drinking water source protection assessment reports and source protection plans.

Other notable examples of watershed-based partnerships between municipal and provincial governments in Canada include the **Meewasin Valley Authority**, which is responsible for the South Saskatchewan River, and **Manitoba Conservation Districts**. Other Canadian provinces have bodies more oriented

to planning and providing advice to government, such as **Alberta's Watershed Planning and Advisory Councils** or locally empowered watershed organizations as a part of Quebec's *Politique nationale de l'eau* (2002).

2. **Australian Catchment Authorities** and **Oregon's Watershed Councils** also have many of these same characteristics. In the case of Oregon, the State passed legislation that provides guidance for the establishment of councils, as a local government decision, that represent the interests of the basin. It creates an accountability framework to facilitate the councils as a forum that brings local, state, and federal government actors and plans together, along with local residents and landowners, to participate in water management.^{xvi}
3. **Provincial-Federal Power Sharing**—Under Part 11 of the *Canada Water Act*, Water Quality Management Areas can be established. Although this part of the Act has never been used, it remains in force and offers an opportunity to embed watershed governance. If used, such agencies would have considerable independent authority, including, for example, levying fines, setting effluent discharge fees, and making loans and grants.^{xvii}
3. **Land and Water Boards**—In Canada's territories, a number of boards exist that represent innovative examples of delegated resource decision-making. Resulting from land-claim negotiations, legislation explicitly provides these independent boards with powers to issue licences for water use and to regulate pollution or impacts, with a mandate to keep the quality, quantity, and rate flow of water "substantially unaltered."^{xviii}

4. **Cross-Border Decision-Making**—The Canada-U.S. *Boundary Waters Treaty* enables the International Joint Commission (IJC) to establish (independently from government) orders of approval for the operation of regulatory works on boundary waters. The IJC generally delegates day-to-day-operations to basin level Boards of Control, which can create a decision-making body that is independent from government.^{xix}
5. **Nested Watershed Approach**—The European Union *Water Framework Directive* is a leading example of a sophisticated balance between “harmonization” (top-down) and “subsidiarity” (bottom-up). The goal of the Framework is to establish common standards and practices to safeguard water quantity and quality across the E.U. It sets out clear goals and timelines to achieve “good” water quality and “good ecological status.” From the bottom up, it mandates local watershed councils for all rivers within the union. These often-independent basin-level entities apply to both surface water and groundwater and undertake watershed planning, raise awareness, and set standards and goals to achieve the overarching mandate of the Framework.^{xx}
6. **Collaborative Super Agencies**—These formalized partnerships negotiate management plans and implement actions across multiple scales of jurisdiction. They are still quite rare since they are often resource intensive and must walk a fine political balance. A leading North American example is the **CALFED super agency** in California. It began as an interagency committee to recommend provisions for implementing the 1994 water quality standards for the San Francisco Bay/Delta, and has evolved into an agency with a \$900 million annual budget that is charged with overall water management and restoration throughout the Sacramento and San Joaquin River watersheds of the Central Valley. **Australia’s Murray-Darling Basin Authority** is another example. In Australia, water is managed on a state-by-state basis. However, in the case of the Murray-Darling River, Australian states agreed to take a national approach to water regulation and management. They created one agency responsible for the integrated management of water across the basin through the federal *Water Act* (2007).^{xxi}
7. **Guardianship/Public Trust Model**—These models create novel legal arrangements where citizens or appointed “guardians” can speak on behalf of river systems or water itself. The public trust doctrine is enshrined in many legal systems around the world, most commonly in U.S. western water law. A leading example from New Zealand is the agreement, signed between the New Zealand Crown and the Whanganui River iwi (the local Māori people), which states that the Whanganui River will be recognized as a person in the same way that a corporation can take on “personhood.” The agreement defines the river as a legal entity with two guardians—one from the Crown and one from iwi—who act together for the benefit of the river to promote and secure the spiritual and cultural rights of the river, in addition to protecting its physical and ecological rights.^{xxii}

TABLE 1. OVERVIEW OF ROLES AND RESPONSIBILITIES OF EXISTING GOVERNMENTS AND INSTITUTIONS IN THE PROPOSED WATERSHED GOVERNANCE MODEL

GOVERNING AREAS	PRIMARY ROLES
Provincial Government	<ul style="list-style-type: none"> • Setting basic objectives and standards including: <ul style="list-style-type: none"> - water quality standards (with attention to the synergistic impacts of contaminants); - drinking water standards in community watersheds (as part of national standards for drinking water quality); - establishing environmental flow minimums; and - developing water-use efficiency requirements • Riparian management* (with local government) • Flood forecasting and flood plain zoning*(with local government) • Fish habitat and wildlife stewardship* • Environmental assessment* • Liquid waste management, including non-point source pollution and issuing waste management permits* (with local government developing and administering plans) • Hazardous waste management* • Natural resource management* • Establishing a priority system for water allocations, including in-stream water entitlements held by government in trust for the waterways and enforced by independent guardians of the waterways • Enabling and overseeing Watershed Entities (WEs), including providing basic core administrative financial support (at least initially) • Monitoring and reporting, including basic hydrologic and ecological monitoring • “State-of-the-watershed” reporting and understanding the state of ecological functionality of watersheds • Collaborative resource management and licensing of Crown lands, including leases in foreshores and estuaries • Compliance and enforcement mechanisms to hold government and water users accountable to waterway protection, with the support of citizen enforcement rights, enabled in law • Government-to-government discussions and consultation with First Nations, including accommodation of aboriginal rights and title
	<p>*These are areas in which First Nations are already involved, usually in conjunction with appropriate federal government departments, such as Health Canada, Environment Canada, or Indian and Northern Affairs</p>

GOVERNING AREAS	PRIMARY ROLES
Federal Government	<ul style="list-style-type: none"> • Fisheries and habitat management and conservation • Transboundary issues, both domestically and internationally • Baseline ecological, climatic, and hydrological monitoring • Ecological, climatic, and hydrological scientific research • Water management on federal Crown lands • Compliance and enforcement to hold government and water users accountable to waterway protection, with the support of citizen enforcement rights, enabled in law • Government-to-government discussions and consultation, including accommodation of aboriginal rights and title • Collaborative resource management and land-use decisions on First Nations reserves
Local Government	<ul style="list-style-type: none"> • Drinking water source and supply management and water utilities management • Municipal/regional district rural area land-use zoning and development • Regulation of use and zoning of flood plains • Local dispute resolution • Zoning and subdivision approvals
First Nations	<ul style="list-style-type: none"> • Many of the same roles as local government, as outlined above, but on traditional territories and reserve lands • Government-to-government discussions and consultation, including accommodation of aboriginal rights and title • Water management on First Nation reserves and on title (and traditional) lands • Consultation and accommodation of applications for land and resource permits and licences • Shared resource decision-making with the provincial government, especially in significant traditional territories • Ecological and hydrological scientific research, including traditional ecological knowledge
Independent Oversight Body	<ul style="list-style-type: none"> • Enabled by legislation (e.g. independent officer who reports to legislature) • Audit function • Complaint investigation • “Friend to the Court” concerning watershed disputes • Auditing “state-of-the-watershed” reports • Serve as fact-finding and transparent knowledge broker
Appeal Board	<ul style="list-style-type: none"> • Statutory, including WE decision appeals • Formal dispute resolution, such as mediation and arbitration • Support for local “water bailiffs”

2.3 KEY ASPECTS & ACTIVITIES OF WATERSHED ENTITIES IN THE PROPOSED FRAMEWORK

Table 2 (pages 24–25) identifies the specific activities and potential responsibilities that could be delegated to the proposed WEs, as well as their key attributes and how they fit into the current institutional architecture. It also specifically outlines how they would interact with other existing formal decision-makers to drive a comprehensive watershed-focused model of governance. It also displays the range of activities that such organizations could take on over time. This incremental approach is critical, as it would allow WEs to “grow” into their jobs as their capacity and proven successes increase. An emphasis on this kind of flexible, evolution-ary approach would help build legitimacy for WEs to make increasingly difficult and controversial decisions over time.

Many of the activities outlined in this table are self-explanatory. For example, it is clear, in general terms, what is meant by education and awareness building, green infrastructure development, or state-of-the-watershed reporting. The aspects that we believe require some additional discussion are explored in more detail in the following section:

1. Watershed Visioning and Planning
2. First Nations’ Role in Co-Governance
3. Accountability and Legitimacy in Decision-Making
4. Conflict Resolution and the Role of Watershed Ambassadors
5. Data, Information and the Integration of Indigenous Knowledge and Science to Support Decision-Making
6. Sustainable Funding

Each of these aspects offers either genuinely new approaches to watershed governance or nuanced changes to how things are currently done in the province.

Many of the activities outlined in Table 2 as primary functions for WEs are already occurring in some form in areas around the province. This demonstrates that a firm baseline of strong community engagement and activity at the watershed scale does already exist. However, engagement and activities across B.C. are generally ad hoc, largely piecemeal, and massively underfunded. Lack of progress is often due to a variety of local limitations and sometimes the result of more systemic issues, such as a lack of formal recognition or clear mandate to perform the critical tasks, lack of funds or capacity, or a malaise of uncertainty around anticipated changes in provincial and federal water policy and legislation. The proposed framework would allow a more systematic approach and help to build legitimacy, capacity, and confidence as local successes translate into better ecological and community outcomes over time.

2.4 KEY ACTIVITIES ASSOCIATED WITH THE WE MODEL

1. Watershed Visioning & Planning

Clearly articulating an ecological, social, and economic vision for a watershed, complemented with focused planning, is absolutely critical to create an integrated approach to managing complex watershed systems. Furthermore, it is widely acknowledged that comprehensive and inclusive planning is necessary for the successful management of fresh water. Plans anchored in a local and regional vision of a healthy social-ecological system are

more likely to be supported and implemented. Such a vision must be the product of diverse input to provide a broad perspective on what the future can, and should, look like, and to frame specific goals, objectives, and outcomes.

In B.C., a number of such plans and vision statements have been completed over the past decades. For example, the District of Campbell River has prepared a drinking water protection plan for the Campbell River watershed and its water supply systems. It contains over 20 recommendations to protect source water quality and avoid expensive construction of water treatment facilities. The Cowichan Watershed Board is also implementing a comprehensive plan to allocate water for ecological purposes, as well as for

economic development, that accommodates lower flows in late summers, improves water quality, and protects riparian areas. The Okanagan Basin Water Board, the Nicola Watershed Community Round Table, the Shuswap Lake Integrated Planning Process, the Bowker Creek Initiative, and recently the Coquitlam Basin Society have all prepared similar comprehensive plans. Despite their high quality and practical use, all such plans lack legal enforceability to ensure the articulated commitments and visions are implemented over time. At best, they provide a tool for persuasion and for coordinating some disparate actors.

While legislation is desirable it is not sufficient on its own. Obtaining political will and the resources to follow

Effective Watershed Planning in Washington State

Washington State, which borders B.C. to the south, has a statewide watershed planning program to deal with formal water quality planning requirements under the federal *Clean Water Act*. The framework is based on 62 Water Resource Inventory Areas, which align with watershed boundaries, and 23 Water Quality Management Areas.

The *Revised Code of Washington—Watershed Planning Act* is the state legislation that provides the process for citizens, including tribes and governments, to formally assess the status of the water resources in their watershed and determine how best to manage them. In some watersheds, formal watershed plans address competing resource demands. Those watersheds undertaking planning must address a number of aspects of water quantity and develop strategies to meet existing and future water needs. Optional planning elements include water quality, salmon habitat, and recommendations to the Department of Ecology for instream flow levels to be adopted into formal rules.^{xxiii}

State agencies provide grants, technical assistance, and training for the process of developing such plans. If requested, they can also serve on Planning Units. Over \$500,000 is available for planning, assessing technical data, and writing the plan. Once a plan is approved, implementation grants of up to \$400,000 over five years are available.

In 2003, the Elwha-Dungeness Plan was one of the first such plans to be completed (approved in 2005). It was primarily driven by concerns around water quantity and balancing various uses. The plan made recommendations on water quantity, water quality, habitat, instream flows, stormwater, low impact development, water conservation, land use and management, and education and outreach. An important water quantity recommendation addressed future residential water supplies. Small quantities of water were reserved for development, while, at the same time, mitigation of impacts from those users was required.^{xxiv}

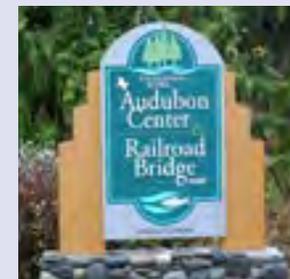


TABLE 2. MAIN FEATURES AND ACTIVITIES OF WATERSHED ENTITIES (WEs)

KEY FEATURE OF WEs	DETAILS	ADDITIONAL NOTES
Overview	<ul style="list-style-type: none"> • WEs legally defined by watershed boundaries (or a clustering of smaller watersheds with relevant groundwater aquifers) with clear legislated mandate • “Enabled” in legislation (i.e. voluntary establishment subject to capacity, local interest, and ability to meet accountability and legitimacy requirements) • Could either be created or evolve from existing institutions, such as a regional district, Trust, or non-profit society, but must meet basic accountability and First Nations partnership requirements 	<ul style="list-style-type: none"> • WEs also defined based on population size and cultural and community continuity • Not a one-size-fits-all model; for example, WEs could represent at the scale of: <ul style="list-style-type: none"> • a basin (e.g. Okanagan); • a sub-watershed of a larger basin (e.g. Thompson watershed within the Fraser Basin); or • a clustering of smaller watersheds, based on socio-ecological relevance (e.g. Capital Regional District, Haida Gwaii)
Areas of Decision-Making	<ul style="list-style-type: none"> • Initially limited to primary functions (see details on primary functions below) within the context of defined senior and local government roles and First Nations water/land objectives and priorities 	<ul style="list-style-type: none"> • Over time, potential to “opt in” additional functions with delegated decision-making powers, akin to “statutory decision-makers” under legislation
Representation	<ul style="list-style-type: none"> • Required to have representation across watershed interests and sectors, either directly or through formal technical advisory bodies • A variety of approaches possible but likely “multi-party”; this would involve a blend of elected representatives, along with individuals nominated by core parties (e.g. senior government, local government, First Nations) who would be appointed by local selection processes 	<ul style="list-style-type: none"> • Specific composition and size of council/boards would depend on local priorities and contexts, but would have broad-based representation • First Nations would have government-to-government role
Funding and Financial Sustainability	<ul style="list-style-type: none"> • Would draw from: <ul style="list-style-type: none"> • initial base funding from senior government; • local taxation; • resource revenues and rentals/ royalties/surcharges (from permits and licences), with a focus on “user pays”; • project-based grants and programs; • ecological bonds; and • trust funds, endowments, and other social financing sources 	<ul style="list-style-type: none"> • Initial funding would likely be needed to establish core administration; WEs would also need ability to raise funds to ensure basic capacity and additional resources for identified projects • Ongoing core funding, based on resource rentals and local taxation, would be supplemented by project-specific grants from senior government, private foundations, or service provision • Revenues would come from water pricing, with reinvestment for stewardship
Dispute Resolution	<ul style="list-style-type: none"> • Achieved formally via locally empowered water bailiffs and appeal board • Credible community watershed ambassadors appointed by WEs to provide community-based oversight and engagement • WEs would play a role in convening, educating, and nurturing community watershed ambassadors 	<ul style="list-style-type: none"> • Water bailiffs would have powers to negotiate disputes about water allocation rights during droughts • Watershed ambassadors would be local citizens with capacity to educate on good watershed management practices and assist in dispute resolution • Appeals and dispute resolution would be handled through an appeal board (e.g. the Environmental Appeal Board already exists in legislation)

KEY FEATURE OF WEs	DETAILS	ADDITIONAL NOTES
Accountability	<ul style="list-style-type: none"> • Elected representation (or nomination and local appointment) as part of formal decision-making structure • Mandatory public reporting and independent, arms-length oversight • Accountability provisions would be built in law, with enforcement authority by citizens in court; also some administrative penalties for smaller violations 	<ul style="list-style-type: none"> • Senior government would compile watershed health indicators and perform/ require periodic oversight audits based on indicators • Complaint investigation and audit review would be done by an independent body • Financial and board-level directors would have oversight through transparent provincial processes
Primary Functions of WEs	<ul style="list-style-type: none"> • Watershed visioning and planning based on watershed function and ecological health (including flood and drought planning) • Integration of mandates, programs, capacities, and responsibilities of different levels of government at the watershed scale, including providing formal input into land-use decisions (e.g. prioritizing protected areas) • Education and awareness building, including direct engagement to build watershed community culture • Data collection and information management, including traditional ecological knowledge, as part of a provincially established, supported, and monitored integrated data system for state-of-the-watershed reporting • Promote water conservation, including alternative sources (e.g. rainwater, recycled water) and restore watershed aquifers using an approach that builds resiliency into management scenarios to address changing conditions • Promote compliance and conflict resolution 	<ul style="list-style-type: none"> • WEs would ensure ecologically based thinking and values are incorporated into all decisions at all levels of government • WEs would be responsive to local government, but within the context of senior government and established standards or ecosystem outcomes • Would develop legally enforced plans as defined and enabled in legislation, which would be publicly released and reported in partnership or collaboration with First Nations and local government
Additional Possible Functions of WEs (Areas for potential opt-in or draw down)	<ul style="list-style-type: none"> • Establish priority drinking water sources and develop Drinking Water Source Protection Plans, which would have priority over other resource activities, subject to Cabinet approval • Monitoring (and in some cases setting) watershed-wide water allocations, based on provincial objectives, including administering specific water licences • Monitoring (and in some cases setting) environmental water quality standards, with a role in pollution permitting • Green infrastructure development and funding distribution, including emphasis on mwwore sustainable approaches to flood management (e.g. use of wetlands for flood attenuation, setback dykes, bank stabilization) • Managing and balancing water use and activities in protected riparian areas • Fish habitat management and conservation 	<ul style="list-style-type: none"> • As WEs meet basic accountability and capacity requirements, they could further “opt in” to various activities, with the support of the Province and First Nations and based on capacity and interest • These “additional” activities would be guided by senior government priorities/policies (e.g. pollution prevention, environmental flow needs, protected spaces, water quality thresholds), but would enable WEs to exceed provincially set standards or to better customize them to the needs of their local regions

through on commitments are at least as important as the legislative framework. This is made very clear when one considers the status of existing watershed and drinking water source protection plans in B.C. Although the current legislative framework for water management in B.C. provides a number of enabling provisions for these plans—all with significant potential to change activities in the watershed—there has been essentially no implementation to date. For example, although Section 4 of the *Water Act* empowers the Ministry of Environment to undertake watershed plans together with local consultation, only one such plan has ever been developed in the decade since its inception, and it has yet to be passed by Order in Council to give it enforceability.⁴⁷ The B.C. *Fish Protection Act* also contains provisions for protecting instream flows for fish needs, but to date no such plans have been developed. In B.C., the *Drinking Water Protection Act* contains strong provisions for developing source drinking water protection plans but, again, no such plans have been established under legislation.

By harnessing the potential of the WE as a place-based nexus of interest and potential action, there is significant opportunity to overcome the current inertia prevalent in the province. A local WE would have the promise of being able to catalyze:

1. **resources** to get the plan done and implemented;
2. **focus and local expertise** to make the process and plan meaningful; and
3. **triggering plans into law** to ensure actions are set out and consequences result if actions are not met

By creating and empowering a WE with a clear mandate to not only generate, but actually implement, these kinds of visions and plans, real progress would become possible through its ability to provide a consistent push for follow-through.

2. First Nations' Role in Co-Governance

There is much that the rest of B.C. society could learn by listening carefully to what First Nations have to say about how to sustain land and water, and their cultural foundations. This kind of dialogue and relationship building is only rarely occurring in B.C. First Nation communities seldom see an opportunity to address their fundamental concerns to resolve outstanding aboriginal rights and title through land-use or water allocation decision processes. Shared decision-making is generally understood to be a process by which decision-makers, with their own jurisdiction, authorities, and laws, engage in a joint process with the Crown or local governments to reach a common decision. Any effective model of watershed governance must embody this more cooperative notion.

Aboriginal rights and title—and the concurrent requirements for consultation and accommodation—are a complex, contentious, and rapidly evolving area of law. Recent legal developments, such as in the *Halalt* case⁴⁸ on southern Vancouver Island, reaffirm the critical role that water-based decisions can have on First Nation communities and the need for a more sophisticated approach to consultation and accommodation, especially in light of unsettled rights and title in B.C. Building a viable and functional relationship with First Nations in a government-

to-government setting will be critical to ensuring an appropriate watershed governance regime in British Columbia.

As suggested earlier, the very idea of Crown ownership of water is contested by some First Nations. First Nations' perspectives on water and watershed governance and notions of rights, responsibilities, and entitlements are often vastly different from what local, provincial, and federal government, many communities, or industry assume. The main contention from First Nations' leadership is that the prior, superior, and extinguished water rights of Indigenous Peoples have never been addressed and therefore continue.⁴⁹

Many First Nations maintain that they never surrendered their claims on water or the land and they therefore possess true (allodial) title. The belief is that aboriginal title throws provincial claims to ownership over land and water resources into question. More recently, some of these differences, usually more focused on land-use issues, have begun to be addressed through negotiated agreements or modern treaties, such as the Nisga'a Treaty, Great Bear Rainforest Agreement, Haida co-management agreement, or the Clayquot Sound Land Use Agreement and complementing scientific panel.

Although these agreements do represent some progress, they are often catalyzed through lengthy planning processes or substantial legal cases, which force some level of compromise. Reconciling Crown sovereignty with aboriginal title will be a major challenge. Finding the right fit for a durable and long-term beneficial arrangement between First Nations and the Crown will require new approaches and new ways of sharing power and decisions over water and land.

The WE model outlined here offers a potential starting point to reconcile and integrate both aboriginal title and Crown sovereignty for watershed governance. It might also provide a meaningful space to apply the principles and spirit of the New Relationship. Both the provincial government and the First Nations Leadership Council signed the New Relationship document and it explicitly identifies, "mutual respect, reconciliation and recognition of Aboriginal rights and title as the foundation for building positive, government-to-government relationships."⁵⁰

Finding some common ground around the urgency of securing and maintaining watershed health may allow priority watershed activities, including protection and restoration, to proceed while the complex process of rights and title-based negotiations and treaty implementation continues. Without the need to "prove" title on the one hand, or the need to "protect" Crown interest on the other, the WE model provides some potential common ground.

Aboriginal rights and title and reconciling constitutional obligations and roles in co-governance are important and complex areas of law that are beyond the scope of this Blueprint. Instead, we suggest that the proposed place-based governance model, centred on WEs, offers a pragmatic path forward to ensure a "new relationship" that can actually manifest with real actions and more ecologically sustainable activities on the ground. The WE model can go a long way to achieve reconciliation as required by the courts and, more importantly, build long-term trust for this kind of reconciliation to go beyond the minimum legal requirements of consultation and accommodation.

The specifics of how a given First Nation and senior

government might initiate a WE might vary from place to place, but a number of overarching elements would likely be common to them all:

- a clear recognition of First Nations as constitutional rights holders;
- some formal arrangement for consultation and accommodation processes, and perhaps shared decision-making and co-governance in traditional territories; and
- agreement on the representation of First Nations on WE boards and other structures to ensure appropriate representation across levels of decision-making.

First Nations have a unique political and legal relationship with governments in Canada. Thus, First Nations could play a co-governance role on WEs that exist in their traditional territories, if they so wished.

3. Accountability & Legitimacy in Decision-Making

Accountability and legitimacy in decision-making are the foundation of good governance. Our whole system of representative democracy is founded on the basic notion of clear lines of responsibility and consequence. This link, however, does not mean that all decisions need be made by a given order of government. Delegation of planning



Northern Water Boards: An Innovative Approach for Shared Decision-Making?

In 1998, the federal *Mackenzie Valley Resource Management Act* (MVRMA) established a number of independent resource boards that were designed to manage the various stages of environmental impact assessment and regulatory processes related to resource development in Canada's North, including powers for land and water regulation. This Act specifically emerged from land-claim agreements between Canada and various First Nations in the Northwest Territories. It further decentralized the longstanding Territorial Water Board system created by the *Northern Inland Waters Act* (1970).

This approach gives the Aboriginal People of the Mackenzie Valley a greater say in resource development and management through independent boards that emphasize co-management. Aboriginal land-claim organizations nominate half of the board members, and the federal and territorial governments nominate the other half. These legally empowered regulatory boards take development applications for all land- and water-use and disposal activities, and rule on the terms and conditions that will

work best for the people of that region. Specifically acting under the authority of the MVRMA, the *Northwest Territories Waters Act*, and the framework set out in the Northwest Territories Water Regulations, the boards may issue, amend, renew, suspend, or cancel water licences.

An umbrella agency, the Mackenzie Valley Land and Water Board was established to integrate board processes and promote consistency. It is also responsible for conducting preliminary screenings and for regulating the use of land and water in the Dehcho and South Slave regions (areas in which land claims have not yet been completed), as well as development that may have impacts on more than one settlement region. The authority of this co-management board extends to all Crown and private lands and water in the Mackenzie Valley.^{xxv}

NOTE: *At the time of writing, the decentralized approach of multiple Northern Water Boards was being reconsidered by the federal government in favour of a central Territorial Water Board.*^{xxvi}

functions or decision-making powers commonly exists. However, effective delegation of selected powers to WEs will require federal and provincial governments to establish a framework to ensure the accountability and capacity of those entities.⁵¹ This must be coupled with a clear mandate and terms of reference to ensure that WEs have the legitimacy, accountability, and formal legal or institutional backing to intervene and effectively execute.

Governments across Canada, at all levels, already delegate decision-making, although, this is generally done within respective levels of government, rather than across institutions. A common approach at the provincial level is to use legislatively designated “statutory decision-makers.” The Comptroller of Water Rights is an example under the *Water Act*. The comptroller has the ability to independently make decisions on critical aspects that directly affect water entitlements, watersheds, and infrastructure.⁵² In most cases, such delegation comes with a formal and independent appeal procedure.

Ensuring effective, transparent, accountable, and appropriate delegation of powers is challenging and requires significant efforts up front to ensure a well-designed framework. This includes proper checks and balances, and conditions for such transfers. This topic is one of the more debated aspects within the water governance dialogue. A number of recent studies explore some of the challenges and concerns with such a shared approach to decision-making, including thornier issues like “Who should participate?”, “Should the composition of such groups be formally set out in law?”, or, “To what extent can government retract (or draw back) the powers once delegated?”⁵³ The Source Water Protection Planning program in Ontario provides a

potentially useful example for accountability in the context of water management, – and illustrates the difficulty in achieving this outcome.⁵⁴

There are many other forms of local delegated decision-making. For example, municipalities are simply “creatures of their provinces,” given their powers from provincial legislation. Another example of this type of delegation is through treaties with First Nations, such as the modern Nisga’a Treaty or Great Bear Agreement. Other examples include the specific delegation of powers that have statutory requirements, as is the case in Ontario with Conservation Authorities and Source Protection Committees or in Quebec with its watershed organizations under provincial legislation.⁵⁵

These examples and the other water-related examples listed in **A Spectrum of Possibilities for Shared Powers and Authorities at the Watershed Scale** (pages 18–19), demonstrate the range of powers, decisions, and responsibilities that are legitimately shared or devolved by government on a regular basis. Government can comfortably do the same with public institutions, such as WEs, and perhaps even clearly designate them as “statutory decision-makers” in specific contexts (as is suggested in the B.C. *Water Sustainability Act* legislative proposal).

A number of fundamental criteria must be established to ensure appropriate checks and balances are in place. Ensuring clearly defined roles and responsibilities, as well as linkages to outcomes and performance, are important starting points to build a strong base of accountability.⁵⁶ Another important area for building accountability and legitimacy relates to the requirement that members of WE boards have a connection to elected councils or individuals

(for example, either as appointments or via direct elections for such watershed-level representatives).

Decisions made by such boards should reflect the priorities and perspectives of the community in the context of the broader public and watershed interest. Ensuring regular contact and engagement with the broader community will not only entrench the accountability of such boards, but also enhance local networks, build trust, and strengthen the leadership mandate over time. Representation on WE boards should include a range of interests to ensure decisions are appropriately informed and supported. Of course, it may not be efficient to have representation from *all* interests, which is why these bodies must blend diverse local representation to ensure a broad suite of watershed perspectives are included. Any kind of enabling legislation would need to clearly articulate what will be required to empower WEs to execute these more formal activities and to ensure a board does not become “captured” by a particularly influential stakeholder group.

4. Conflict Resolution & the Role of Watershed Ambassadors

Enforcement and compliance are two very distinct concepts that are often confused and bundled together. Governments, especially the provincial government, will continue to play an important role in enforcement, as it has the authority and capacity to ensure rules are followed and consequences occur when they are not. However, a local WE can play an important role in promoting and monitoring compliance. By using a variety of tools, from persuasion and moral suasion, to public reporting and direct engagement, they can go a long way to providing the first line of engagement

to ensure activities or behaviour comply with the formal legal rules or promote practices that are appropriate to local ecological and social priorities. Beyond promoting compliance, an equally crucial role for WEs is gathering evidence in support of more formal enforcement procedures initiated by governments or other enforcement agencies or even simply alerting the enforcement bodies that an infraction has occurred (or is likely to occur). A common example of this kind of approach is well developed in the community-policing model.⁵⁷

The provincial government has some existing capability to resolve disputes among water licensees where rules on allocation priority may create conflicts in times of water shortage.⁵⁸ For example, conflicts can be adjudicated formally by a water bailiff (as set out in the *Water Act*) or, occasionally, by the users themselves. The role of WEs—as kind of watershed ambassador—would be to support and augment this capacity by engaging a broader set of community representatives in both education (to avoid disputes in the first place) and dispute resolution when necessary.

This watershed ambassadors approach is being piloted in select watersheds in the U.K., including the Wissey basin in Norfolk.⁵⁹ To some extent, some of the existing watershed organizations in B.C. are beginning to play such ambassadorial roles, as seen in Coquitlam and Lake Windermere, and in the Okanagan and Cowichan basins. The overall purpose of ambassadorial work is to engender a “sustainable water culture” at the community level. This involves a coordinated network of people playing various roles according to their familiarity with local water issues, history, culture, and their standing in the community. Ambassadors are critical in informing, negotiating, communicating, and building a sense

of watershed-level awareness and trust. They also act as a buffer between stakeholder groups and formal water management organizations, and are able to reflect the broader public interest and community intent in the context of the local watershed.

5. Data, Information & the Integration of Indigenous Knowledge & Science to Support Decision-Making

Access to data on water supply, water use, water quality, and riparian condition is critical for successful governance. In B.C. there is no single comprehensive database on water and watersheds. Rather, there is a network of information

that is not always compatible and not fully integrated. The core of B.C.'s water supply information comes from the hydrometric monitoring network, which is jointly administered by the provincial and federal governments and has 450 stations that monitor flows. These two levels of government, industry, and crown corporations share funding for this roughly equally. In addition, local groups, such as the Okanagan Basin Water Board, undertake some of their own hydrological monitoring. Generally, there is very little monitoring of licensed water use, although the Oil and Gas Commission has initiated such a program in northeast B.C. Under the proposed new *Water Sustainability Act*, all

BC Water Use Reporting Centre

The BC Water Use Reporting Centre^{xxvii} is a web-based system designed to help utilities and large water users regularly record surface and groundwater use. The data is securely held and allows easy production of detailed reports. This practical water-use reporting platform was developed in partnership by the B.C. Government, Environment Canada, BC Water Supply Association, BC Agriculture Council, ARDCorp, District of Nanaimo, and the Okanagan Basin Water Board. It is currently being piloted in the Okanagan and Nanaimo watersheds.^{xxviii}

The BC Water Use Reporting Centre offers options for water licence holders and groundwater users, including the ability to:

- record and report from anywhere with cell phone access;
- access data quickly and easily online;
- review last year's (or any time period's) data for benchmarking and analysis;

- review other utilities' data for comparison;
- predict tomorrow's usage and make better management decisions today; and
- build lasting water supplies for utilities, the watershed, and beyond.

Detailed water-use and watershed knowledge is critical to good management and, ultimately, to good decision-making. This type of water-use reporting is about more than just meeting regulatory requirements. It has the potential to offer real-time and detailed understanding about water use in the watershed context. The more often data is reported, and the more accurate the data is, the more responsive managers and local practitioners can be to shortages or changing local circumstances and ensuring effective adaptive management.

large water users (surface water and groundwater) would be required to measure, record, and report the volume of water actually used, which would assist in increasing the information about water use in the province.

Given the current status of disaggregated data systems in B.C., it will be a challenge for WEs to organize appropriate data and information in preparing watershed plans. The B.C. Ministry of Environment should integrate existing databases to allow groups to effectively access data on specific watersheds and obtain meaningful information for watershed governance. Government should also help develop data standards and templates so that standardized information can support mapping, analysis of trends, and comparisons across regions. When thinking through social and ecological factors, it is important that data integration go beyond simply compiling government data. A balance between top-down (e.g. government) and bottom-up (e.g. community monitoring) data and management information is needed.¹⁷ Traditional ecological knowledge is also a critical part of understanding and knowing a watershed; this will require a process to integrate this kind of knowledge into formal databases and indicator systems.

A strong link between good governance and knowledge and learning exists—especially regarding knowledge systems that deal with uncertainty and complexity. In the scholarly reviews, it is generally recognized that new modes of governance require new ways of knowledge generation and management.⁶¹ Including a broader set of stakeholders provides access to different kinds of knowledge, which may be vital for a full assessment of a resource governance problem and for finding innovative and adaptive solutions.⁶²

WEs would be well suited to integrate a variety of knowledge systems from a broad set of stakeholders to ensure a thorough and complete understanding of local decisions and their likely impacts. Building capacity for these new forms of “knowing and understanding” will be absolutely critical.

6. Sustainable Funding

A well-established barrier to real progress on watershed governance and better on-the-ground practices is the lack of reliable revenue streams for governance bodies and their activities over time.⁶³ The proposed changes in governance involving support for WEs—and, in particular, their role in watershed planning, cumulative effects analysis, engaging and educating the community, resolving disputes as they arise, and facilitating critical communications and interaction between users, rights holders, and other key players—will require significant additional funding, over and above what senior governments might be able to currently provide. Government staff and complementary resources will be required to support such organizations, provide data and information, and undertake new monitoring to provide essential information for watershed governance. Without secure, ongoing support, these types of entities will not survive or will be relegated to ad hoc initiatives chasing project-specific funds. Unfunded mandates will simply create failed forums of “inaction.” While there are certainly direct costs involved in supporting this model of watershed governance, as outlined in Section 1.1 there are also significant costs associated with inaction and the current status quo approach to watershed governance in British Columbia.



Options for Sustainable Funding & Social Finance

A wide array of funding options is available to generate resources to sustain local watershed governance efforts. The options listed here are a sampling to highlight the range of possibilities and some of the more common or emerging options. In general, the areas of sustainable funding and social finance are emerging as priorities, and additional research and learning from practical implementation are urgently needed.^{xxxix}

Local Taxation, Levies, and Fees—The Province of B.C. currently provides taxation powers to municipalities or regional districts. Similar per capita or parcel taxation powers could be provided to WEs.

Existing examples include the Okanagan Basin Water Board, which generates the bulk of its funding from levies from member regional districts, and the Regional District of Nanaimo, which financed its Drinking Water Protection Action Plan through a parcel levy. Stormwater utility fees can also help pay for the rising cost of managing a city’s stormwater runoff and addressing water quality and quantity concerns in the context of the entire watershed, as was done in the city of Portland, Oregon.^{xxxii}

Water Licence Fees, Resource Royalties, and Pollution Permits—Currently, water licence fees in B.C. are set to cover only a portion of the administrative costs for regulating and managing water use. They are well below the true value associated with water. Even a modest increase in water rentals could go to the WE in that watershed to provide reliable base funding.

A similar option exists for the local dedication of funds associated with pollution permits (or other watershed-related activities, such as stumpage fees or mineral royalties). Consistent with the user-pays and polluter-pays principles, much of the necessary financial resources could be generated from local water(shed) users and polluters. This user-pay approach is common in France as part of the European Union’s *Water Framework Directive*.^{xxxiii}

Philanthropy and Charitable Trusts—Trusts and public or private foundations all offer sources of revenue. In theory, a company, business, or industry might be willing to put an endowment in place to support a local WE as part of its efforts towards corporate social responsibility or to secure the “social licence” to operate locally. In B.C., the Columbia Basin Trust is an example of a trust set up under legislation.^{xxxiv} Similarly, the Habitat Conservation Trust Fund was provided with investments of \$140 million to enhance fish and wildlife populations and their habitat as part of modernizing the *Wildlife Act* in 1980s.^{xxxv} Similar models could be used on a more systematic, watershed basis.

Recreational User Fees—Recreational access to land or other facilities can create an ongoing stream of user fees for outdoor activities, such as camping, using recreation areas, and education. Conservation Authorities in Ontario routinely operate a variety of conservation areas, parks, campgrounds, and outdoor education facilities that provide income for the local management of the watershed.^{xxxvi}

Payment for Ecosystem Services, Watershed Bonds, Offsets, and Banking^{xxxvii}

—New York State’s efforts to better protect source water are an oft-cited example of ecosystem services payment. Land users in the Catskill/Delaware watershed system, upstream from New York City, accepted voluntary limitations on activities that have detrimental impacts on watershed health. In return, they receive economic benefits. As a result, instead of building a much more expensive filtration plant, the NYC Authority invested in projects to reduce water pollution, including purchasing upwards of 85,000 acres of environmentally sensitive and undeveloped land throughout the watershed as part of the Land Acquisition Program. This social payment scheme was funded by downstream (New York City) water supply users. Many others examples of creative financing for an ecosystem service exist throughout North America, from water quality trading and environmental flow trusts, to stormwater fee-bates and green taxes.^{xxxix}

Community Contribution Company or Community

Co-ops—These are legal structures for social enterprise and offer an avenue for entrepreneurial energy to develop potentially self-sustaining revenue streams.^{xl} They are not funding models per se (rather they are kinds of incorporation models), but they do offer a potentially innovative and resilient way to think through a successful model for watershed governance by considering the sustainable business aspects of certain activities in the watershed. For example, tangible assets like wood waste or other by-products could go towards profit-

generating enterprises like bio-energy development. Other less tangible activities, such as quantifying the value of environment services provided by the watershed as part of a carbon market, could also provide a potential source of funding for a WE. In the case of co-ops, membership fees might help generate some funds and help create a community culture that is focused on the watershed, embedding the notion that the watershed co-op is collectively owned.^{xli}

Crowdsourcing and Social/Environmental Impact Bonds^{xlii}

—These are emerging tools that offer innovative ways to support governance or local activities that promote the protection and restoration of watersheds. They embody the notion of collective public investment for tangible, positive results. These likely wouldn’t provide a steady source of income, but can be potentially powerful in the start-up phase of specific projects when public excitement about the projects may be especially high.

An environmental impact bond (EIB) is a “pay-for-performance” contract that addresses environmental issues.^{xliii} EIBs hold significant potential for addressing environmental issues, such as water quality improvement. For example, the City of Philadelphia is revamping its stormwater management plan to include fees that are based on square footage of impervious structures. This approach to stormwater management is conducive to an EIB structure, as it can provide funds for green infrastructure and investor returns,^{xliiv} while improving local water quality.^{xliv}

The key opportunity that lies ahead is to reinvigorate and channel the energy, skills and commitment of key individuals and groups towards new models for governance and stewardship . . . If government loosens the reins and allows communities and stakeholders to experiment with what is possible outside of the box of the existing regulatory, policy and industrial paradigm, innovative solutions will emerge.⁶⁷

—M'GONIGLE, M., ET AL. (2001).
WHEN THERE'S A WAY, THERE'S A WILL.

ECO-RESEARCH CHAIR IN ENVIRONMENTAL LAW AND POLICY, UNIVERSITY OF VICTORIA, P. 65.

SECTION III

A Blueprint for Action in British Columbia

British Columbia has a long history of incremental changes to resource legislation, including land, forests, and water laws. However, the Province has only just begun the challenging process of integrating nature's water needs, protecting broader watershed health and function, and engaging more local watershed interests as part of its formal decision-making fabric.

For WEs to be successful and thrive, certain conditions must be in place. We call these our winning conditions. To be clear, these are not necessities. Instead, they are a set of circumstances or elements that, when brought together, increase the likelihood of achieving success. The winning conditions are explored in this section, and we also offer a proposed road map with milestones and a sequence of steps to transform watershed governance in B.C. over the next 10 years. We certainly recognize that this is an ambitious reform agenda, but we also believe it to be possible given the emerging priority and broad-based recognition of the importance of water for communities, ecosystem health, and economic prosperity.

3.1 WINNING CONDITIONS

The following nine winning conditions represent priorities for action. We suggest these as the critical foundations for creating change and building the necessary institutional architecture for moving towards an ecologically based watershed governance regime in B.C. These winning conditions summarize the basic requirements for success based on the challenges and opportunities currently available in B.C., as well as national and international experience. They are clearly linked to and shaped by the six principles for watershed governance that we described in the opening section on page 8.

Winning Condition 1

Enabling Powers in Legislation for Watershed Entities

There is an urgent need for both legislative authority and funding to develop, implement, and monitor (and revise) watershed visions and plans. If WEs are empowered with a clear mandate to act, they can undertake their designated roles based on the collective vision and values of the local communities, First Nations, and stakeholders in their watersheds.

The most successful watershed organizations operating in the province today are those with some form of legislated authority or backing, such as the Columbia Basin Trust, or those functioning through the cooperation of local governments, such as the Okanagan Basin Water Board. This mirrors trends internationally, where successful models in Australia and Europe have legislated frameworks that provide a mandate, scope of powers, institutional “space” to exist, and a clear set of roles and responsibilities for formal watershed-level organizations. This kind of clarity is critical for building local legitimacy, leveraging financial and human resources, and providing a focal point to engage communities throughout the watershed to be part of a collective decision-making process.

Key Principles Embodied:

- Transparency and Engagement of Affected Parties
- Subsidiarity and Clear Roles for Decision-Making
- Sustainable Financing and Capacity

Winning Condition 2

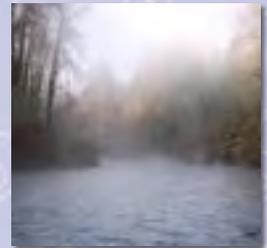
Co-Governance with First Nations

Some form of formal co-management and shared decision-making between the Province and First Nations is a necessary condition for success. The most effective WEs will be those that can develop (or have already developed) a working relationship with local First Nations in the context of their traditional territories and acknowledgement of aboriginal rights and title. Ensuring First Nations are engaged from the outset and are fundamentally part of any such institutional structure will be critical for long-term success. To achieve this, the enabling framework must explicitly acknowledge First Nations as rights (and responsibility) holders and create the foundation to ensure that local bands can participate—in some cases perhaps as co-chairs—and share a formal role in decisions in their watersheds.

Financial resources will have to be provided to engage First Nations and build their capacity to participate. Although challenging in today’s economic climate, commitment and sharing of local resource benefits to ensure sufficient capacity to be involved and effectively participate is likely required for a genuine co-governance arrangement to work.

Key Principles Embodied:

- Transparency and Engagement of Affected Parties
- Subsidiarity and Clear Roles for Decision-Making
- Sustainable Financing and Capacity



Winning Condition 3.

Support from & Partnership with Local Government

The support of, and a strong partnership with, local government is the third critical winning condition. All effective, existing watershed organizations in B.C. work closely with local governments at both the municipal and Regional District level. In many cases, local government officials are represented on these existing boards or roundtables, with many being instigated and directly supported by local government.

Local governments have a long history of effectively engaging around issues of direct consequence to local citizens, and the creation of WEs would be a further manifestation of such community-level engagement. WEs should not be viewed as another intrusive layer of bureaucracy, and they need not undermine the current constellation of activities undertaken by the various levels of government. Rather, they would be a significant complement to the efforts of local government seeking to improve watershed sustainability. The ability to “draw down” powers (as opposed to “downloading” by senior government) will be critical for building genuine local buy-in and for emphasizing the “opt-in” nature of this arrangement. Formal actors across levels of government must reinforce this shared and collaborative approach for it to be effective and robust over time.

Insufficient funding already limits the role of local government in many areas. Thus, financial and capacity support for this model cannot rely on local government alone. As such, some funding opportunities will inevitably

have to be shared between all levels of government, as well as leveraging program-specific support or expertise from a variety of community organizations.

Key Principles Embodied:

- Transparency and Engagement of Affected Parties
- Subsidiarity and Clear Roles for Decision-Making
- Sustainable Financing and Capacity

Winning Condition 4.

Sustainable Long-Term Funding

Another winning condition is access to sustainable funding sources for WEs. In Section 2.4, we explore the urgency for and provide some detail around potential sources of such funding. An initial list of creative options is identified in **Options for Sustainable Funding & Social Finance** (pages 34–35). This is an emerging area with new, innovative examples appearing regularly.

An early priority will be for the Province—or supporting research groups or collaborating enablers, such as the Real Estate Foundation of British Columbia—to assess some of these sources and provide watershed organizations (or eventual WEs) with a suite of options appropriate to B.C. It will also be important to review potential new sources of funding being experimented with in other jurisdictions.⁶⁸ At a minimum, the Province and local governments must enable access to local taxation and resource royalties that can be used to leverage further funds from other sources.

Key Principle Embodied:

- Sustainable Financing and Capacity

Winning Condition 5

A Functional Legal Framework for Sustainable Water & Watershed Management

A strong legal framework for ecologically based resource and land management is a vital requirement for improving governance. Comparative international research demonstrates that a legal framework supporting environmental management, achievement of sustainability goals, adaptive capacity and the ability to deal with cumulative effects underpins the most effective river basin organizations.⁶⁹ For example, citizen enforcement provisions and robust watershed planning processes that can be easily triggered and are legally enforceable are needed to strengthen environmental management. As well as transparency and review requirements, including third party standing of key licence and permit decisions are crucial.

A new *Water Sustainability Act* for B.C. could go a long way to bringing a more integrated and robust approach to resource decisions in the province. To achieve its goal of sustainability, the new Act will require a clear definition of provincial water objectives that provides a firm foundation for water and related resource decisions and stewardship across sectors. This kind of overarching framework and enforceable objectives will be critical for WEs to ensure more ecologically sustainable outcomes. For example, minimum environmental flows, source protection requirements, and water quality objectives would illuminate the requirements for a higher duty of care from resource developers to protect basic watershed functions and drinking water sources.

Key Principles Embodied:

- Water for Nature
- Whole-Systems Approaches
- Subsidiarity and Clear Roles for Decision-Making

Winning Condition 6

Availability of Data, Information & Monitoring

Effective governance in watersheds will require detailed information that is not only compatible across existing databases, but also accessible. Housing this kind of information in a central location is a potentially important role for WEs, in partnership with senior and local governments. First steps would involve ensuring a network of hydrometric monitoring stations, including groundwater test wells, and monitoring current actual water use.

As noted in sections 1.2 and 2.4, given senior government funding constraints, it will be important to align other partners, including funders, who are willing to invest in collecting, housing, and making data for watershed planning accessible. For example, one of the large forestry companies on Vancouver Island funded a series of overlay thematic maps for the Shawnigan watershed and the Department of Fisheries and Oceans contributed to a grant for the local community to conduct an assessment of watershed health.⁷⁰ It is essential that the Province work with existing watershed organizations to integrate this type of information with government databases, and make this data publicly available to inform critical decisions. It is also essential that WEs are able to house their own repository of relevant local information and knowledge.

Key Principle Embodied:

- Accountability and Independent Oversight

Winning Condition 7

Independent Oversight & Public Reporting

International experience demonstrates the importance of establishing an independent oversight body and the benefit of public reporting on a range of issues, from financial management aspects and administrative functioning, to watershed conditions, to create institutional learning. Such independent bodies already exist in British Columbia, including the Ombudsmen, the Forest Practices Board, and the Auditor General. In Canada, a number of jurisdictions, including Ontario and the federal government's Auditor General Office, have Commissioners for the Environment and Sustainability who are specifically tasked with investigation, citizen complaint response, and monitoring compliance with key legislation.

A simple step for the provincial government would be to expand the mandate of the Forest Practices Board to include water and other aspects of watershed sustainability, thereby becoming a Watershed (or Natural Resource) Practices Board.⁷¹ It would be tasked with regular reporting to the public, investigation of functions triggered by concerned public or other agencies, fact finding, and potentially acting as “friend to the court” in disputes or tribunal hearings. Enhancing the independence of such a board would require it to become an officer of the legislature, instead of the current arrangement in which members of the Forest Practices Board are appointed by cabinet. The New Zealand Parliamentary Commissioner for the Environment is a potentially useful model; it investigates and reports on government actions and policies and acts as an impartial advisor to its parliament.⁷²

Key Principle Embodied:

- Accountability and Independent Oversight

Winning Condition 8

Assessing Cumulative Impact

Due to the fragmented nature of senior governments, many decisions under the current resource management model occur in isolation. This is often referred to as “silo thinking.” Even existing integrative processes, such as landscape-level planning or environmental assessments, don't yet effectively account for cumulative impacts. Furthermore, assessing cumulative impact is often viewed as a constraint on economic development and frequently unwelcomed as an additional burden by industry.

Long-term economic and ecological sustainability will, however, require a more enlightened perspective, and assessing cumulative impact must be a priority. The accumulation of damage and overshooting of natural carrying capacity in watersheds are being increasingly felt and will only intensify over time. The ability to understand and predict the cumulative impacts from multiple land- or water-use activities will be critical to making more sustainable decisions about resource use. However, fully understanding, let alone addressing, cumulative impacts is no easy task.

The B.C. Ministry of Forests, Lands and Natural Resource Operations is undertaking some pilot demonstrations of cumulative impact assessment on a number of watersheds in various parts of the province. The purpose of these pilot demonstrations is to establish a “risk matrix” and indicators for the health and function of watersheds. To be effective, decisions must ensure these indicators are maintained or development proposals are adjusted to mitigate or offset impacts. The goal of cumulative impact assessments must be to improve practices on the land, and also to enable decisions against proceeding with development in cases where watershed function is threatened.

Key Principles Embodied:

- Water for Nature
- Whole-Systems Approaches

Winning Condition 9

Continuous Peer-to-Peer Learning & Capacity Building

Strong networks and interpersonal trust can facilitate rapid uptake of new practices or lessons learned from other jurisdictions, either across Canada or internationally. One of the best ways for practitioners in new organizations to learn is through the experiences of others in similar situations. This type of peer-to-peer learning requires opportunities to gather and learn from both the successes and failures of other places. For example, Ontario's Conservation Authorities meet annually to exchange this kind of practical information and learn about new initiatives.⁷³

Another important learning process is to undertake pilots to test out new tools, data systems, and interactions between watershed groups and established levels of government. In the U.K., such pilot projects are underway and have developed essential experience, which can be adapted to a broader set of watersheds. In the Wissey catchment in West Norfolk, England there is an experimental scheme to create an overarching group of stakeholders with shared interests. This group of stakeholders advises on catchment management priorities, helps with water allocation disputes, and is in touch with the local schools to increase understanding and awareness.⁷⁴ B.C. can benefit from learning from such examples internationally and across Canada, and also by experimenting with “made-in-B.C.” solutions to see what works, what needs to change, and how to adaptively govern over time.⁷⁵

Key Principles Embodied:

- Whole-Systems Approaches
- Subsidiarity and Clear Roles for Decision-Making
- Sustainable Financing and Capacity

3.2 KEY MILESTONES & REFORMS OVER TIME

The winning conditions outlined in section 3.1 represent, in part, our priorities for action. They also summarize the basic requirements for (or likely indicators of) success, based on the challenges and opportunities outlined in this Blueprint. In addition, over the next two pages, we offer a proposed set of key milestones with a sequence of steps to transform watershed governance in B.C. over the coming decade.

A number of these milestones are oriented toward ensuring the effective implementation of a new provincial watershed governance regime. Although many of these identified actions require initiation by the provincial government, the responsibility may ultimately fall to a variety of actors as a more sophisticated collaborative model for watershed governance is introduced in B.C.

Key Milestones & Reforms Over Time

Short Term (1–2 years)

- Appropriate consultation, engagement, and accommodation with First Nations on the proposed new water legislation (*Water Sustainability Act* and its supporting regulations), including a focus on establishing a viable framework for First Nations’ engagement in local watershed governance
- Arrangements and setting key, context-specific thresholds, such as environmental flows, groundwater licensing, and water objectives.
- Pass (and implement) a provincial *Water Sustainability Act* that:
 - acknowledges aboriginal right and title with recognition that water allocations are subject to those rights and title or treaty rights;
 - regulates groundwater in the context of its broader ecological interactions;
 - sets minimum standards to establish environmental flows (including critical low flows) as legal requirements for statutory decision-makers) with overall clear priorities for protecting environmental flows and drinking water sources through enforceable provincial water objectives;
 - creates mechanisms to “share the pain” during periods of drought or scarcity and helps avoid or resolve local water conflicts;
 - enables local watershed-based authorities (WEs) to be created and to “draw down” powers that impact water and watersheds (as listed in Section II), and legislatively empowers WEs to access local taxation and revenue generation from water pricing or other resource activities; and
 - promotes efficiency, equity, and conservation in water use and new rules for water allocations that are more adaptable to changing circumstances
- Initiate of strategic watershed-based pilot projects—for example, in the Cowichan or Shawnigan watersheds on Vancouver Island, St Mary’s Lake on Salt Spring Island, in the Okanagan or Columbia river basins in the interior, or the Skeena or Horn river basins in the northeast of the province—that delegate specific watershed planning and additional source protection or management powers to local watershed boards and authorities for decision-making; all delegated functions to be consistent with *Water Sustainability Act* principles and regulations
- Review all water and Crown land fees (such as stumpage or surface and groundwater water-use royalties) and explore potential additional funding sources to support key activities of government, First Nations, and WEs, including monitoring, planning, establishing minimum flow requirements, and promoting water efficiency and conservation
- Establish a provincewide watershed governance capacity-building forum as a regular (annual or bi-annual) event⁷⁶
- Complete draft regulations, consultation, and finalization for:
 - provincial water objectives
 - beneficial use
 - regulation of surface water
 - regulation of groundwater
 - environmental flow needs
 - critical flow needs
 - water sustainability plans
 - allowances for essential household uses
 - review of licence terms and conditions
 - agriculture water reserves
 - delegation of governance functions to local government
 - area-based regulations
 - implementing new water licence fee regulations

Medium Term (3–5 years)

- Release report on state of B.C.'s watersheds (as committed to in Living Water Smart) and identify priority watersheds, water sustainability plans, or area-based regulations based on Proper Functioning Condition and pilot framework for cumulative impact assessment
- Complete water sustainability plans in identified priority watersheds (to be led or supported by newly formed WEs where appropriate)
- Create comprehensive provincewide water-use database system
- Reform the Forest Practices Board to expand its jurisdiction to a Natural Resources Board, with a focus on water and watershed function
- Review science supporting environmental flow allocations
- Ensure provincial objectives for watershed health and function are clearly defined in regulation and included in legislation
- Pilot the watershed ambassadors concept through training and provincewide network development
- Initiate review of all natural resource legislation—and related strategies, such Liquefied Natural Gas, Jobs, and Clean Energy—to remove duplication, address inconsistencies, and align resource decisions through a watershed health and function priority

Longer Term (5–10 years)

- Implement new, ongoing funding mechanisms for watershed organizations to support innovative local activities and build capacity for additional draw down of powers
- Refine and finalize management framework for cumulative impact assessment
- Continue completion of water sustainability plans across province beyond high priority areas
- Apply environmental low flow minimums to all major rivers and streams
- Complete natural resource legislative review and introduce legislative package to support framework for cumulative impact assessment and integrated decision-maker decision model
- Evaluate performance of WEs and new water legislation and regulations; initiate additional watershed based law reforms

“In a healthy society, economy always follows ecology, and education precedes them both.”⁷⁷

—CAREY, K. (1991).

STARSEED: THE THIRD MILLENNIUM: LIVING IN THE POSTHISTORIC WORLD

CONCLUSION

First Steps on a Long Path ...

In practical terms, decisions around watersheds are fragmented because responsibilities around watershed management—and especially land-use decisions that affect fresh water—are complex and involve a multitude of actors, both formal and informal. This reality is inescapable. This is also why collaboration is a necessity.

Many jurisdictions in Canada and around the globe have initiated significant reforms of governance to move towards more ecologically and watershed-based approaches. Some of these reforms have been led by government, while others have developed from the ground up, being instigated by civil society. The motivations and benefits associated with these reforms vary, but generally include the need to:

- create social resilience to adapt to a changing climate;
- promote social and technical management efficiency;
- enhance incentives for greater water efficiency and conservation;
- leverage expertise and resources;
- clarify roles and responsibilities;
- protect and enhance ecological health and function; and
- reduce (or avoid) conflict.

British Columbia has demonstrated innovative approaches to resource management over the past 20 years. It has established a platform to begin better integration of natural resource decision-making and has proposed a policy framework for water governance that provides a foundation for the reforms outlined in this Blueprint.

This Blueprint proposes a governance arrangement that can assist B.C. in moving towards deeper integration between nature and economy, given that existing institutional, regulatory, and market regimes are insufficient to develop either economic or ecological sustainability. If a more localized form of watershed governance is to take root, new institutional and legal arrangements will be needed to reduce the inherent conflict between watershed protection and resource use. As well, reconciliation between aboriginal and non-aboriginal interests must be central to any new model or approach.

Watershed-level organizations can bring partners, rights holders, and communities together so that decisions are better integrated. They can also reinforce the priorities of ecological health of the watershed and community prosperity. The watershed governance framework envisioned in this Blueprint represents an innovative and comprehensive vehicle to refocus critical decisions that benefit watersheds, and also promote community development and create a space to begin serious dialogue with and accommodation of First Nations' rights and integration of a more holistic world view.

All of the reforms proposed in this paper have been tried and tested in some form or another, either elsewhere in Canada or abroad. However, no one place has implemented them collectively and comprehensively. Thus, we underscore that such a transformation in governance here in B.C. will likely take a decade, at a minimum. This process of transformation necessarily includes implementing, through legislative change, new mechanisms for financing,

new approaches through pilots to demonstrate proof of possibility, capacity building for watershed managers and practitioners, and integrated science-based information systems.

More broadly, education will also play a key role for successful implementation. This must take the form of both formal education, in schools and within the post-secondary education system, and broader community-based awareness that informs and engages citizens about how their watersheds work, the benefits that individuals and communities receive, and how they can improve stewardship. In essence, it involves building a genuine place-based watershed culture.

At its core, reform in British Columbia will require a fundamental shift from the notion of managing watersheds for the benefit of people to one of managing people, and their collective behaviour, within the broader ecological system.



ENDNOTES FOR MAIN TEXT

- 1 Conca, K. (2006). *Governing Water—Contentious Transnational Politics and Global Institution Building*. Cambridge, MA: MIT Press.
- 2 To this end, POLIS has released a number of research publications, participated in formal technical advisory committees, delivered workshops, provided numerous strategic briefings to government and key influencers, and contributed to a number of civil society-focused efforts and campaigns. Publications and information on these activities can be found at <http://poliswaterproject.org/>
- 3 Bakker, K., & Nowlan, L. (2007, November). *Delegating Water Governance: Issues and Challenges in the BC Context*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from <https://watergovernance.ca/publications/#water-in-canada>
- 4 In 2008, the Fraser Basin Council, through the Collaborative Watershed Governance Initiative (CWGI), spearheaded a conference and widespread engagement on collaborative watershed governance across the province to help support and move forward key governance aspects of *Living Water Smart*. This process resulted in a set of principles—developed with input from resource users, stewardship groups, First Nations, and local government—which coalesced as the Collaborative Watershed Accord: Fraser Basin Council. (2012, April 10). *A Collaborative Watershed Governance Accord for BC*. Retrieved from http://www.fraserbasin.bc.ca/_Library/Water/water_cwg_accord_draft.pdf
- 5 Ministry of Environment Water Act Modernization. (n.d.). *Background on Water Act Modernization*. Retrieved from <http://www.livingwatersmart.ca/water-act/>
- 6 British Columbia Minister of Environment. (2013, October). *A Water Sustainability Act for B.C.: Legislative Proposal Overview*. Retrieved from http://engage.gov.bc.ca/watersustainabilityact/files/2013/10/WSA_overview_web.pdf
- 7 Simms, G., & de Loë, R.C. (2010). *Challenges for Water Governance in Canada: A Discussion Paper*. Governance for Source Water Protection in Canada Report No. 2. Waterloo, Canada: Water Policy and Governance Group. Retrieved from <http://www.governanceforwater.ca/publications/67>
- 8 de Loë, R., & Murray, D. (2012, October). *Governance for Source Water Protection in Canada: Synthesis Report*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from http://www.governanceforwater.ca/sites/default/files/CWN%20project%20Synthesis%20Report_0.pdf
- 9 For a more detailed discussion of the character of that potential transformation see: M’Gonigle, M., & Takeda, L. (2013). The Liberal Limits of Environmental Law: A Green Legal Critique. *Pace Environmental Law Review*, 30, 1005–1115; Michael, R., & M’Gonigle, M. *Earth Rules: On the Laws, Behind the Laws that holds us to Account*. (forthcoming 2014)
- 10 Fort Nelson First Nation. (2012, June). *Respect for the Land: Fort Nelson First Nation Strategic Land Use Plan*.p.13. Retrieved from http://lands.fnnation.ca/sites/default/files/project-files/respect_for_the_land_-_fnfn_slup_june_27_2012.pdf
- 11 Bates, B.C., Kundzewicz, Z.W., Wu, S., & Palutikof. (Eds.).(2008). Climate Change and Water. In *IPCC Technical Paper VI of the Intergovernmental Panel on Climate Change*. IPCC Secretariat, Geneva, Switzerland; Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M., & Miller, H.L. (Eds.). (2007). Summary for Policy Makers. In *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, USA.
- 12 Schindler, D.W., & Donahue, W.F. (2006, February). An Impending Water Crisis in Canada’s Western Prairie Provinces. *Proceedings of the National Academy of Sciences of the United States of America*, 103(19).
- 13 For a more detailed review of the water crisis and its implications, see: Hassan, R., Scholes, R., & Ash, Neville. (eds.). (2005). *Ecosystem and Human Well-being: Current State and Trends, Volume 1*. Washington, D.C.: Island Press.
- 14 Carpenter, S.R., Stanley, E.H., & Zanden, M.J.V. (2011). State of the World’s Freshwater Ecosystems: Physical, Chemical, and Biological Changes. *Annual Review of Environment and Resources*, 36: 75–99.
- 15 See, for example, British Columbia Ministry of Environment. (2010). *British Columbia’s Water Act Modernization: Report on Engagement*. Retrieved from http://livingwatersmart.ca/water-act/docs/wam_report-on-engagement.pdf; British Columbia Ministry of Environment. (n.d.). *Living Water Smart: BC’s Water Plan*. Retrieved from <http://livingwatersmart.ca/>
- 16 *Constitution Act, 1982*, Section 35, being Schedule B to the *Canadian Act 1982 (UK)*, 1982, C. 11.
- 17 Union of BC Indian Chiefs. (2010, April). *UBCIC Submission to BC Water Act Modernization Initiative*. Retrieved from http://www.ubcic.bc.ca/News_Releases/UBCICNews04301001.htm#axzz2ngMAJYpW

- 18 Morris, T.J. et al. (2007, February). Changing the Flow: a Blueprint for Federal Action on Water. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/publication/127>; Pearse, P.H., Bertrand, F., & MacLaren, J.W. (1985). *Currents of Change: Final Report*. Ottawa, Canada: Inquiry on Federal Water Policy.
- 19 Pentland, R. & Wood, C. (2013). *Down the Drain: How We Are Failing to Protect Our Water Resources*. Vancouver, Canada: Greystone Books Ltd.; Forum for Leadership on Water. (2012). FLOW Monitor. Volume 5 – Winter 2012. Retrieved from http://poliswaterproject.org/sites/default/files/FlowMonitor_WINTER2012.pdf
- 20 For example, the Council of the Federation responded to a lack of federal leadership on mounting water issues by developing a Water Charter in 2010, which sets out a number of principles for conservation, stewardship, and collaborative governance: Council of the Federation. (2010, August). *Water Charter*. Retrieved from http://www.conseildelafederation.ca/phocadownload/publications/water_charter_aug_4_2010.pdf
- 21 Examples include various national protests and movements, such as “Idle No More,” that have articulated a deep concern about the passing of federal omnibus budget bills which have direct implications on aboriginal rights and title, and on opportunities for First Nations to be consulted on resource decisions. They also include more regional efforts in B.C., such as the demand for increased local control by Vancouver Island’s One Cowichan, the Naniamo River Watershed Roundtable, and the Shawnigan Watershed Roundtable, or by organizations in the interior of B.C., including the WaterWealth Project in Chillwack-Hope. As well, the Lake Windermere Ambassadors have a strong, evolving interest in watershed governance. There is also growing unease from First Nations and grassroots organizations in northern areas of the province, where rapid gas development is being met with deep concern by Fort Nelson First Nation. As of November 2012, Fort Nelson First Nation had collected over 23,000 signatures for an online petition (at change.org) calling for a halt to the natural gas industry’s use of water on unceded First Nation land in northeast B.C.
- 22 Brandes, O.M., Renzetti, S., & Stinchcombe, K. (2010, May). *Worth Every Penny: A Primer on Conservation-Oriented Water Pricing*. Victoria, Canada: The POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/sites/default/files/Pricing%20Primer%20Final.pdf>
- 23 Hume, M. (2012, November 30). Fort Nelson band’s anti-fracking petition draws overwhelming response. *The Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/news/british-columbia/fort-nelson-bands-anti-fracking-petition-draws-overwhelming-response/article5828976/>
- 24 Tate, J. (2013, December 13). Preservation of Treaty Rights and Long-Term Water Management in Fort Nelson First Nation Territory. In *POLIS Water Sustainability Creating a Blue Dialogue Webinar Series*.
- 25 Simpson, S. (2012, October 7). B.C.’s Cowichan River in danger of drying up before end of October. *The Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/news/british-columbia/bcs-cowichan-river-in-danger-of-drying-up-before-end-of-october/article4595010/>
- 26 Brandes, O.M., & Brandes, L. (2012, May/June). *Think Like a Watershed*. Water Canada. Retrieved from http://poliswaterproject.org/sites/default/files/WatershedGovernance_WaterCanada_MayJune2012.pdf
- 27 Brandes, O.M., & Curran, D. (2009, May). *Setting a New Course in British Columbia- Water Governance Reform Options and Opportunities*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/publication/272>
- 28 Morris, T. & Brandes, O.M. (2013, July). *The State of the Water Movement in British Columbia: A Waterscape Scan & Needs Assessment of B.C. Watersheds-Based Groups*. Victoria, Canada: The POLIS Project on Ecological Governance, University of Victoria. Retrieved from http://poliswaterproject.org/sites/default/files/StateOfWaterMovement_HigRes.pdf; Wilkes, B., Collier, J., & Brandes, O.M. (2013, March). Inventory and Research Survey Summary: Needs and Priorities of Watershed-Based Groups in British Columbia. Victoria, Canada: The POLIS Project on Ecological Governance, University of Victoria. Retrieved from http://poliswaterproject.org/sites/default/files/WatershedSurveyReport_FINAL_Mar2013.pdf; see also the very useful article by Cook, B. R., et al. (2013). Interrogating participatory catchment organizations: cases from Canada, New Zealand, Scotland and the Scottish-English Borderlands. *The Geographical Journal*, 179(3), 234–247.
- 29 Nowlan, L. & Bakker, K. (2010, August). *Practicing Shared Water Governance in Canada – A Primer*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from http://www.wateregovernance.ca/wp-content/uploads/2010/08/PractisingSharedWaterGovernancePrimer_final1.pdf; de Loë, R., & Murray, D. (2012, October). *Governance for Source Water Protection in Canada: Synthesis Report*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from <http://>

- www.governanceforwater.ca/sites/default/files/CWN%20project%20Synthesis%20Report_0.pdf; Brandes, O.M. & Curran, D. (2009, May). *Setting a New Course in British Columbia – Water Governance Reform Options and Opportunities*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/sites/default/files/New%20Course.pdf>; Wood, C., & Pentland, R. (2013, May). *Down the Drain: How We Are Failing to Protect Our Water Resources*. Vancouver, Canada: Greystone Books Ltd.; Sandford, R. (2011, February). *Restoring the Flow: Confronting the World's Water Woes*. Victoria, Canada: Rocky Mountain Books Ltd.; Baltutis, J., & Shah, T. (2012, May). *Cross-Canada Checkup: A Canadian Perspective on Our Water Future*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/publication/452>
- 30 O'Connor, D. (2002). *Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues*. Retrieved from the Ontario Ministry of the Attorney General website: http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/WI_Title_pg_Contents.pdf
- 31 Brandes, O.M. (2005, November). At a Watershed: Ecological Governance and Sustainable Water Management in Canada. *Journal of Environmental Law & Practice*, 16(1), 79-97.
- 32 British Columbia Ministry of Environment. (2013, October). *A Water Sustainability Act for B.C.: Legislative Proposal*. Retrieved from http://engage.gov.bc.ca/watersustainabilityact/files/2013/10/WSA_legislative-proposal_web-doc.pdf
- 33 In a comprehensive study of governance by the Global Water Partnership, Rogers and Hall (2003) suggest the following principles as critical for good water governance: public participation, transparency in decisions (and allocations), effectiveness and efficiency in decision-making, equity and inclusiveness of water management processes, existence of deliberative engagement opportunities, and inclusive stakeholder participation. Rogers, P., & Hall, A. W. (2003, February). *Effective Water Governance*. Stockholm, Sweden: Global Water Partnership. Retrieved from <http://www.tnmckc.org/upload/document/bdp/2/2.7/GWP/TEC-7.pdf>
- 34 These identified principles align well with a recent global Delphi survey of leading researchers and scholars in the field of resilience who also specialize in water governance to identify common themes and priorities. Consensus themes and priorities included: participation of diverse actors/public participation; adaptability to change, including adaptive planning and authority to make changes in the face of new information; procedural equity and transparency in decision-making; building shared understanding; institutional flexibility; and decentralized systems of governance. See: Plummer, R., & Baird, J. (Forthcoming). *Governance for Resilience of Aquatic Systems: Delphi Study*. Presented at Water, Economic, Policy and Governance Network – Water Governance and Resilience Workshop Partners Meeting, May 7, 2013. Fredericton, New Brunswick.
- 35 M'Gonigle, M., & Takeda, L. (2013). The Liberal Limits of Environmental Law: A Green Legal Critique. *Pace Environmental Law Review*, 30, 1005–1115.
- 36 For a more detailed discussion around the general needed reforms for the B.C. *Water Act* see: Statement of Expectations on Reform of the BC Water Act from BC Nongovernmental Organizations. (2009, December). Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from http://poliswaterproject.org/sites/default/files/NGO_SoE_Jan05_0.pdf
- 37 See, for example, Brandes, O.M. (2013, November). *POLIS Water Act Modernization Submission on Province's Legislative Proposal for B.C.'s Water Sustainability Act*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/publication/598>; British Columbia Ministry of Environment. (2013). *Water Sustainability Act: What We've Heard*. Retrieved from <http://engage.gov.bc.ca/watersustainabilityact/what-weve-heard/>
- 38 *Ontario's Clean Water Act* contains a potentially useful provision in section 82 "... nothing in this Act shall be construed so as to abrogate or derogate from the protection provided for the existing aboriginal and treaty rights of the aboriginal peoples of Canada as recognized and affirmed in section 35 of the *Constitution Act 1982*."
- 39 Forest Practices Board. (2011, March). *Cumulative Effects: From Assessment towards Management*. Retrieved from http://www.fpb.gov.bc.ca/SR39_Cumulative_Effects_From_Assessment_Towards_Management.pdf
- 40 Also, the synergistic impacts of contaminants are important considerations, particularly with respect to sensitive species like salmon. For example, see: Laetz, C., et al. (2009, March). The Synergistic Toxicity of Pesticide Mixtures: Implications for Risk Assessment and the Conservation of Endangered Pacific Salmon. *Environmental Health Perspectives*, 117(3), 348-353. Retrieved from: http://www.eenews.net/public/25/9960/features/documents/2009/03/03/document_gw_01.pdf
- 41 M'Gonigle, M., Egan, B., Ambus, L., Mahony, H., Boyd, D., & Evans, B. (2001). *When There's a Way, There's a Will*. Report 1: Developing Sustainability through the Community Ecosystem Trust. Victoria, Canada: Eco-Research Chair in Environmental Law and Policy,

- University of Victoria, p. 65. Retrieved from <http://www.polisproject.org/PDFs/WayWill1.pdf>
- 42 Ibid
- 43 Rogers, P., & Hall, A. W. (2003, February). *Effective Water Governance*. Stockholm, Sweden: Global Water Partnership. Retrieved from <http://www.tnmckc.org/upload/document/bdp/2/2.7/GWP/TEC-7.pdf>
- 44 Bloomquist, W., & Schlager, E. (2005). Political Pitfalls of Integrated Watershed Management. *Society and Natural Resources*, 18, 101-117. Retrieved from <http://woodhous.arizona.edu/geog596m13/Blomquist%20Schlager%202005.pdf>
- 45 Pentland, R. & Wood, C. (2013). *Down the Drain: How We Are Failing to Protect Our Water Resources*. Vancouver, Canada: Greystone Books Ltd.
- 46 British Columbia Ministry of Environment. (2013, October). *A Water Sustainability Act for B.C.: Legislative Proposal*, Section 2.3.8. Retrieved from http://engage.gov.bc.ca/watersustainabilityact/files/2013/10/WSA_legislative-proposal_web-doc.pdf
- 47 Fraser Basin Council. (n.d.). 7.1 *Water Management Plans (Water Act – Part 4)*. Retrieved from http://www.rethinkingwater.ca/water_management_plans.html
- 48 Halalt First Nation v British Columbia, 472 British Columbia Court of Appeal. (2012). Retrieved from <http://www.courts.gov.bc.ca/jdb-txt/CA/12/04/2012BCCA0472.htm>
- 49 Section 109 of the *Canadian Constitution Act, 1867* grants provinces “proprietary rights” over lands and resources within their boundaries subject to any other interests. Aboriginal title is another interest. For a further discussion see: Union of BC Indian Chiefs. (2010, April). *UBCIC Submission to BC Water Act Modernization Initiative*. Retrieved from http://www.ubcic.bc.ca/News_Releases/UBCICNews04301001.htm#axzz2ngMAJYpW
- 50 See: Province of British Columbia. (2008). *The New Relationship*. Retrieved from http://www.newrelationship.gov.bc.ca/agreements_and_leg/new_relationship_agreement.html
- 51 Bakker, K., & Nowlan, L. (2007, November). *Delegating Water Governance: Issues and Challenges in the BC Context*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from <https://watergovernance.ca/publications/#water-in-canada>
- 52 Administrative law is a specialty area built around this aspect of government and decision-making as it affects citizens. See: Cane, P. (2011). *Administrative Law* (5th ed.). New York, USA: Oxford University Press.
- 53 For a more detailed discussion in the B.C. or Canadian context see: Bakker, K., & Nowlan, L. (2007, November). *Delegating Water Governance: Issues and Challenges in the BC Context*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from <https://watergovernance.ca/publications/#water-in-canada>; Cohen, A., & Davidson, S. (2011). The Watershed Approach: Challenges, Antecedents, and the Transition from Technical Tool to Governance Unit. *Water Alternatives*, 4(1): 521-534; de Loë, R., & Murray, D. (2012, October). *Governance for Source Water Protection in Canada: Synthesis Report*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from http://www.governanceforwater.ca/sites/default/files/CWN%20project%20Synthesis%20Report_0.pdf; For a more global discussion see: Mody, J. (2004). *Achieving Accountability Through Decentralization Lesson for Integrated River Basin Management*. World Bank Policy Research Series Working Paper 3346, World Bank Institute. Retrieved from <http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-3346>.
- 54 For a good review of this program in the context of delegated or shared governance and accountability see: Nowlan, L. & Bakker, K. (2010, August). *Practicing Shared Water Governance in Canada – A Primer*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from http://www.watergovernance.ca/wp-content/uploads/2010/08/PractisingSharedWaterGovernancePrimer_final1.pdf; de Loë, R., & Murray, D. (2012, October). *Governance for Source Water Protection in Canada: Synthesis Report*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from http://www.governanceforwater.ca/sites/default/files/CWN%20project%20Synthesis%20Report_0.pdf
- 55 An Act to Affirm the Collective Nature of Water Resources and Provide for Increased Water Resources Protection, Government of Quebec (2009, R.S.Q.c. C-6.2, s.13). Retrieved from http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/C_6_2/C6_2_A.html
- 56 de Loë, R., & Murray, D. (2012, October). *Governance for Source Water Protection in Canada: Synthesis Report*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from http://www.governanceforwater.ca/sites/default/files/CWN%20project%20Synthesis%20Report_0.pdf; Heinrich, C.J. (2002). Outcomes-based performance management in the public sector: implications for government accountability and effectiveness.

- Public Administration Review*, 62(6), 712-725.
- 57 With community policing, police must form a partnership with people in the community, thereby allowing average citizens the opportunity to have input into the policing process in exchange for their support and participation. Community policing rests on the belief that contemporary community problems require a new, decentralized, personalized approach that draws citizens into the process of policing themselves. See: Trojanowicz, R., Kappeler, V.E., Gaines, L.K., Bucqueroux, B., & Sluder, R. (1998). *Community Policing: A Contemporary Perspective*. Cincinnati, USA: Anderson Publishing Co.
- 58 A potential significant and systematic way to avoid conflict around water allocations and entitlements is to address the current “First in Time, First in Right” regime. This “all-or-nothing” system of time-based, priority use is severely flawed in the context of increased climatic variability and mounting water scarcity. One option would be to ensure that all new licences for surface water and groundwater are adjudicated on highest- and best-use principles—not according to application date. This change would retain maximum flexibility to manage demand in times of drought or shortage. As well, shorter-term licences would enable the government to transfer water to higher and better uses as they arise and potentially gain access to additional revenue from fees and licences.
- 59 Tim O’Riordan, personal communication, December 2, 2013.
- 60 Parkes, M., & Panelli, R. (2001). Integrating Catchment Ecosystems and Community Health: The Value of Participatory Action Research. *Ecosystem Health*, 7(2), 85-106.
- 61 Comprehensive studies include Berkes, F., Colding, J. & Folke, C. (2003). *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change*. Cambridge, UK: Cambridge University Press; Parkes, M.W., Morrison, K.E., Bunch, M.J., Hallstrom, L.K., Neudoerffer, R.C., Venema, H.D., et al. (2010). Towards integrated governance for water, health and social-ecological systems: The watershed governance prism. *Global Environmental Change*, 20(4), 693-704; Pahl-Wostl, C. (2007). The implication of complexity for integrated resources management. *Environmental Modeling & Software*, 22(5), 561-569.
- 62 See for example Armitage, D., Berkes, F., Dale, A., Kocho-Schellenberg, E., & Patton, E. (2011). Co-management and the co-production of knowledge: Learning to adapt in Canada’s Arctic. *Global Environmental Change*, 21(3), 995-1004; Berkes, F., & Folke, C. (2002). Back to the Future: Ecosystem Dynamics and Local Knowledge. In Gunderson, L.H., & Holling, C.S. (Eds.). *Panarchy: Understanding Transformations in Human and Natural Systems* (pp. 121-146). Washington, USA: Island Press.
- 63 Kenney, D.S. (2001). *Overview of Observed Trends in Western Watershed Initiatives*. Paper presented at Eighth Biennial Watershed Management Conference, Riverside, USA: University of California Water Resources Center Report No. 101.
- 64 Sabatier, P.A., Weible, C., & Ficker, J. (2005). Eras of water management in the United States: implications for collaborative watershed approaches. In Sabatier, P.A., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz, A., & Matlock, M. (Eds). *Swimming Upstream: Collaborative Approaches to Watershed Management*. Cambridge, USA: MIT Press.
- 65 Melnychuk, N., Murray, D., & de Loë, R. (2012). *Water Governance Challenges and Opportunities: Lake Windermere, British Columbia*. Waterloo, Canada: Water Policy and Governance Group, University of Waterloo. Retrieved from <http://www.governanceforwater.ca/publications/82>; Grand River Conservation Authority. (2013). *Budget overview*. Retrieved from <http://www.grandriver.ca/index/document.cfm?Sec=12&Sub1=52>.
- 66 Ken Gauthier, personal communication, December 4, 2013.
- 67 M’Gonigle, M., Egan, B., Ambus, L., Mahony, H., Boyd, D., & Evans, B. (2001). *When There’s a Way, There’s a Will*. Report 1: Developing Sustainability through the Community Ecosystem Trust. Victoria, Canada: Eco-Research Chair in Environmental Law and Policy, University of Victoria, p. 65. Retrieved from <http://www.polisproject.org/PDFs/WayWill1.pdf>
- 68 Research on financial mechanisms was undertaken by the Fraser Basin Council, S. Litke, personal communication, December 18th, 2013.
- 69 Pahl-Wostl, C., Lebel, L., Knieper, C., & Nikitina, E. (2012). From applying panaceas to mastering complexity: Toward adaptive water governance in river basins. *Environmental Science and Policy*, 23, 24-34.
- 70 Frank Limshue, personal communication, December 5, 2013.
- 71 Dr. Bruce Fraser, former Chair of the Forest Practices Board, offered an intriguing discussion paper, *Conserving the Natural Capital of British Columbia: Questions and Perspectives* (2007), that outlines the need for a more integrated approach to land, water, and natural resource management in British Columbia, and the potential for adapting the Forest Practices Board into an independent Natural Resources Practices Board. On file with authors.
- 72 Government of New Zealand Parliamentary Commissioner for the Environment. (n.d.). *Functions and powers*. Retrieved from <http://>

www.pce.parliament.nz/about-us/functions-and-powers/

73 See A.D. Latornell Conservation Symposium <http://www.latornell.ca/> for more information.

74 Tim O’Riordan, personal communication, December 3, 2013.

75 A series of B.C.-based events that embody this approach includes:

- *A Water Gathering: Collaborative Watershed Governance in BC and Beyond* – Solutions Forum (http://poliswaterproject.org/sites/default/files/A%20Water%20Gathering_Conference%20Release-1_0.pdf), which was held in Vancouver, January 27-28th, 2012;
- A roundtable meeting of 22 experts, including representatives from First Nations, all levels of government, academia, NGOs, and policy and resource experts, that was co-hosted by the POLIS Water Sustainability Project and the Water Policy and Governance Group in Victoria, B.C., June 19-20th, 2012. The themes of this event were captured in *Synthesis Report: Towards a Blueprint for Watershed Governance in British Columbia* (<http://poliswaterproject.org/publication/474>); and
- The upcoming Watersheds 2014: Towards Watershed Governance in B.C. and Beyond, to be held January 27-29, 2014, in Duncan, B.C.

76 See, for example, *Watersheds 2014: Towards Watershed Governance in British Columbia and Beyond* (<http://watersheds2014.ca>) as a viable model that can be built on and expanded as a regular opportunity to engage B.C. watershed practitioners and leaders.

77 Carey, K. (1991). *Starseed: The Third Millennium: Living in the Posthistoric World*. San Francisco, USA: HarperCollins.

ENDNOTES FOR BOXED TEXT

Governance Failure & the Costs of Inaction (page 4)

- i Brandes, O.M. & Curran, D. (2012, June). *When the Water Dries Up: Lessons from the Failure of Water Entitlements in Canada, the U.S. and Australia*. Victoria, Canada: University of Victoria Environmental Law Centre and POLIS Project on Ecological Governance. Retrieved from <http://poliswaterproject.org/publication/478>; Doremus, H.D., & Tarlock, A.D. (2008). *Water War in the Klamath Basin: Macho Law, Combat Biology, and Dirty Politics*. Washington, USA: Island Press.
- ii Kildea, P., & Williams, G. (2011). The Constitution and the Management of Water in Australia’s Rivers. *Sydney Law Review*, 32(3): 595- 616.
- iii Nowlan, L. & Bakker, K. (2010, August). *Practicing Shared Water Governance in Canada – A Primer*. Vancouver, Canada: Program on Water Governance, University of British Columbia. Retrieved from http://www.watergovernance.ca/wp-content/uploads/2010/08/PractisingSharedWaterGovernancePrimer_final1.pdf

Crisis, Convergence, and the Changing Face of Water(shed) Governance (page 6)

- iv Christian-Smith, J., Gleick, P., & Cooley, H. (2012). U.S. Water Policy Reform. In Christian-Smith, J., & Gleick, P. (Eds.), *A Twenty-First Century U.S. Water Policy*. New York, USA: Oxford University Press.
- v Pahl-Wostl, C., Jeffrey, P., Issendahl, I., & Brugnach, M. (2011). Maturing the new water management paradigm: progressing from aspiration to practice. *Water Resource Management*, 25: 837-856; Gleick, P. (2012). *The World’s Water 2011-2012: The Biennial Report on Freshwater Resources, Vol. 7*. Washington, D.C.: Island Press; de Loe, R., Varghese, J., Ferreyra, C., & Kreutzwiser, R. (2007, October). *Water Allocation and Water Security in Canada: Initiating a Policy Dialogue for the 21st Century*. Guelph, Canada: Guelph Water Management Group, University of Guelph. Retrieved from http://www.wpgg.ca/sites/default/files/1-de_Loe_et_al_2007_Final_Report.pdf; Brandes, O.M., & Curran, D. (2009, May). *Setting a New Course in British Columbia – Water Governance Reform Options and Opportunities*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/sites/default/files/New%20Course.pdf>

- vi Movik, S. (2011). Allocation discourses: South African water rights reform. *Water Policy*, 13(2): 161-177.
- vii Christian-Smith, J., Gleick, P., & Cooley, H. (2012). U.S. Water Policy Reform. In Christian-Smith, J., & Gleick, P. (Eds.), *A Twenty-First Century U.S. Water Policy*. New York, USA: Oxford University Press.
- viii Jekel, H. (2005). Sustainable Water Management in Europe – The Water Framework Directive. In Vogtmann, H., & Dobrestoy, N. (Eds.), *Transboundary Water Resources: Strategies for Regional Security and Ecological Stability*, pp. 121-127.
- x Gerlak, A., Heikkila, T., & Lubell, M. (2013). The Promise and Performance of Collaborative Governance. In Kraft, M.E., & Kamieniecki, S. (Eds.), *The Oxford Handbook of US Environmental Policy*. Oxford, UK: Oxford University Press.
- xi Sabatier, P., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz A., Matlock, M. (Eds.). (2005). *Swimming Upstream - Collaborative Approaches to Watershed Management*. Cambridge, USA: Massachusetts Institute of Technology.
- xii For example, see Pentland, R. (2009, June). *Public Trust Doctrine – Potential in Canadian Water and Environmental Management*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from http://poliswaterproject.org/sites/default/files/public_trust_doctrine.pdf
- xiii A detailed study of 29 river basin governance arrangements from around the globe confirms that new formal institutions have been introduced in most countries of the world. It analyzed key governance indicators and their impact on sustainability and environmental management criteria. See Gerlak, A., Heikkila, T., & Lubell, M. (2013). The Promise and Performance of Collaborative Governance. In Kraft, M.E., & Kamieniecki, S. (Eds.), *The Oxford Handbook of US Environmental Policy*. Oxford, UK: Oxford University Press.

What is Proper Functioning Condition? (page 16)

- xiv U.S. Department of the Interior Bureau of Land Management. (n.d.). *National Riparian Service Team*. Retrieved from <http://www.blm.gov/or/programs/nrst/index.php>

A Spectrum of Possibilities for Shared Powers & Authorities at the Watershed Scale (page 18–19)

- xv Catchment Management Authorities (CMA) have a range of functions focusing on maintenance and improvement of river health and minimization of flood risks and costs, while also preserving the natural features of the flood plain. The Water Act

1989 divested management powers over regional waterways, flood plain drainage, and environmental water reserves management to CMAs. For more detail see Department of Sustainability and Environment, Victoria State Government. (2011). *A Governance Guide to the Victorian Water Industry*. Retrieved from http://www.depi.vic.gov.au/__data/assets/pdf_file/0010/181657/Governance-Guide-Print-update2a.pdf

- xvi Smith, C. L. and Gilden, J. 2002. Assets to move from watershed councils from assessment to action. *Journal of the American Water Resources Association*, 38 (3), 653-662.
- xvii Canada Water Act (R.S.C., 1985, c. C-11)

Effective Watershed Planning in Washington State (page 23)

- xviii Mackenzie Valley Review Board. (2012). *All Boards and Decision Makers*. Retrieved from http://www.reviewboard.ca/process_information/all_boards_and_decision_makers.php
- xix International Joint Commission. (2012, March). *Guidance in Seeking Approvals for Uses, Obstructions, or Diversions of Waters Under the Boundary Waters Treaty of 1909*. Retrieved from http://www.ijc.org/rel/agree/Guidance-in-Seeking-Approval-for-Uses_EN.pdf; International Joint Commission. (2013, January). *Boards*. Retrieved from http://www.ijc.org/en/boards/boards_conseils.htm
- xx Lagace, E. (2011, February). *Shared water, one framework: What Canada can learn from EU water governance*. Retrieved from http://poliswaterproject.org/sites/default/files/SharedWaterOneFramework_BriefingNote.pdf; Brandes, O.M., Ferguson, K., M'Gonigle, M. & Sandborn, C. (2005, May). *At a Watershed: Ecological Governance and Sustainable Water Management in Canada*. Victoria, Canada: POLIS Project on Ecological Governance, University of Victoria. Retrieved from http://poliswaterproject.org/sites/default/files/report4_full_1.pdf; Chave, P. (2001). *The EU Water Framework Directive: An Introduction*. London, UK: IWA Publishing; Jekel, H. (2005). *Sustainable Water Management in Europe – The Water Framework Directive*. In Vogtmann, H., & Dobrestoy, N. (Eds.), *Transboundary Water Resources: Strategies for Regional Security and Ecological Stability*. Dordrecht, The Netherlands: Springer; House of Lords. (2012). *An Indispensable Resource: EU Freshwater Policy*. European Union Committee - 33rd Report of Session 2010-12. London, UK.
- xxi Sabatier, P., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz A., & Matlock, M. (Eds.). (2005). *Swimming Upstream – Collaborative Approaches to Watershed Management*. Cambridge, USA: Massachusetts Institute of Technology; Kildea, P., & Williams,

- G. (2011). The Constitution and the Management of Water in Australia's Rivers. *Sydney Law Review*, 32(3): 595- 616; Murray Darling Basin Authority. (2013). Retrieved from www.mdba.gov.au
- xxii Postel, S. (2012, September 4). A River in New Zealand Gets a Legal Voice. *National Geographic*. Retrieved from <http://newswatch.nationalgeographic.com/2012/09/04/a-river-in-new-zealand-gets-a-legal-voice/>; Shuttleworth, K. (2012, August 30). Agreement entitles Whanganui River to legal identity. *The New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10830586; POLIS Water Sustainability Project. (2013, June 24). *Creating a Blue Dialogue Webinar Summary - Giving Nature a Voice: Legal Rights of Waterways*. Victoria, Canada: The POLIS Project on Ecological Governance, University of Victoria. Retrieved from <http://poliswaterproject.org/webinar/567> and http://poliswaterproject.org/sites/default/files/webinars/pdfs/GivingNatureAVoice_Summary_FINAL_July17.pdf
- xxiii State of Washington, Department of Ecology. (n.d.). *Background on the Watershed Planning Act*. Retrieved from <http://www.ecy.wa.gov/watershed/misc/background.html>
- xxiv U.S. Environmental Protection Agency Office of Water. (2002, April). *A Review of Statewide Watershed Management Approaches – Final Report*. Retrieved from http://www.epa.gov/owow/watershed/approaches_fr.pdf; State of Washington, Department of Ecology. (2002). Development and Implementation of Watershed Plans. Retrieved from <http://www.ecy.wa.gov/watershed/index.html>; C. Nelson, Watershed Lead, Department of Ecology, State of Washington, personal communication, August 8, 2013.
- Northern Water Boards: An Innovative Approach for Shared Decision-Making? (page 28)**
- xxv Mackenzie Valley Review Board. (2012). *All Boards and Decision Makers*. Retrieved from http://www.reviewboard.ca/process_information/all_boards_and_decision_makers.php; Mackenzie Valley Resource Management Act, Section 58 & 60, (S.C. 1998, c.25). Retrieved from <http://laws-lois.justice.gc.ca/eng/acts/m-0.2/index.html>; The NWT's Patchwork Regulatory System: A Primer. (2011, May). *Canadian Mining Journal*, 132(4); Ramin, V.(2004). The Status of Integrated Water Resources Management in Canada. In Shurbsole, D. (Ed.). *Canadian Perspective on Integrated Water Resources Management*, Canadian Water Resources Association, p. 16. Retrieved from http://afeid.montpellier.cemagref.fr/old/ILWRM/Canadian_Perspectives.pdf
- xxvi One expert commentator suggests that part of the motivation for this reversion to a single board is to reduce local and aboriginal influence on development decisions to promote faster and more streamlined development in the North. Ralph Pentland, personal communication, December 3, 2013.
- BC Water Use Reporting Centre (page 31)**
- xxvii For more information see <http://www.obwb.ca/tools/bc-water-use-reporting-centre/>
- xxviii To learn more about the BC Water Use Reporting Centre visit www.bcwaterusereporting.ca or contact info@bcwaterusereporting.ca.
- Options for Sustainable Funding & Social Finance (pages 34–35)**
- xxix Research on financial mechanisms was undertaken by the Fraser Basin Council, S. Litke, personal communication, December 18, 2013.
- xxx The Federation of Canadian Municipalities offers some useful resources and case studies for creative local government and collaborative financing of water infrastructure. See, for example: Federation of Canadian Municipalities and National Research Council. (2002). *Alternative Funding Mechanisms: A Best Practice by the National Guide to Sustainable Municipal Infrastructure*. Ottawa, Ontario. Retrieved from http://www.fcm.ca/Documents/reports/Infraguide/Alternative_Funding_Mechanisms_EN.pdf; Federation of Canadian Municipalities. (2011). *The First Nations-Municipal Community Partnership Programm (CIPP) Service Agreement Toolkit*. Ottawa, Ontario. Retrieved from http://www.fcm.ca/Documents/tools/CIPP/CIPP_Toolkit_EN.pdf
- xxxi Drinking Water-Watershed Protection Stewardship Committee, Regional District of Nanaimo. (2007). *Drinking Water and Watershed Protection Action Plan*. Nanaimo, British Columbia. Retrieved from <http://www.rdn.bc.ca/cms/wpattachments/wpID1585atID2075.pdf>
- xxxii The City of Portland Environmental Services. (2013). *Community Watershed Stewardship Program*. Retrieved from <http://www.portlandoregon.gov/bes/43077>
- xxxiii Global Water Partnership. (2009). *A Handbook for Integrated Water Resources Management in Basins*. Retrieved from <http://www.unwater.org/downloads/GWP-INBOHandbookForIWRMinBasins.pdf>
- xxxiv Columbia Basin Trust. (2008). *Investments*. Retrieved from <http://www.cbt.org/Investments/>
- xxxv Habitat Conservation Trust Foundation. (2013). *History of the Habitat Conservation Trust Foundation*. Retrieved from <http://>

- www.hctf.ca/who-we-are/history
- xxxvi Grand River Conservation Authority. (2013). *Budget Overview*. Retrieved from <http://www.grandriver.ca/index/document.cfm?Sec=12&Sub1=52&Sub2=0>
- xxxvii A detailed review of innovative approaches to funding watershed restoration and the policy changes needed to expand the restoration economy in the U.S., led by the Wildlands CPR, offers a useful background resource for British Columbians. For the full series see: Walder, B. (2009, September 30). *Political Economy of Watershed Restoration Series*. WildEarth Guardians. Retrieved from <http://www.wildlandscpr.org/political-economy-watershed-restoration-series>. For a specific analysis and survey of options see: Hurd, J. (2009). Innovative Financial Mechanisms to Fund Watershed Restoration. In *The Political Economy of Watershed Restoration Series*. Missoula, MT: Wildlands CPR. Retrieved from http://wildlandscpr.org/files/Financial_Mechanisms_0_0.pdf.
- xxxviii United States Environment Protection Agency. (2010). *New York: New York City and Seven Upstate New York Counties- Effective Watershed Management Earns Filtration Waiver for New York*. Retrieved from <http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/casestudies/upload/Source-Water-Case-Study-NY-NY-City-7-Upstate-Counties.pdf>
- xxxix For example, see Cassin, J., & Davis, A. (2008, December). *Puget Sound Partnership Action Agenda: Financing Strategy – New Innovative Funding Sources*. Puget Sound Partnership. Retrieved from http://www.wildlandscpr.org/files/puget_sound_funding_0.pdf.
- xl See: BC Centre for Social Enterprise. (2013). *Community Contribution Companies*. Retrieved from http://www.centreforsocialenterprise.com/C3_BC.html
- xli Ken Gauthier, personal communication, December 5, 2013.
- xlii A comprehensive assessment of social impact bonds has been developed by Godeke Consulting and supported by The Rockefeller Foundation: The Rockefeller Foundation. (2012, December). *Building a Healthy and Sustainable Social Impact Bond Market: The Investor Landscape*. Retrieved from <http://www.rockefellerfoundation.org/blog/building-healthy-sustainable-social>
- xliii Nicola, D.J. (2013). *Environmental Impact Bonds. Centre for the Advancement of Social Entrepreneurship*, Duke University, p. 14. Retrieved from http://sites.duke.edu/casei3/files/2013/03/CASEi3_EIB_Report_FINAL-links.pdf
- xliv Ibid 23.
- xlv Clark, C. and Nicola, D. (2013 November 26). *Bringing Social Impact Bonds to the Environment*. Stanford Social Innovation. Retrieved from http://www.ssireview.org/blog/entry/bringing_social_impact_bonds_to_the_environment.



POLIS Project on Ecological Governance

Created in 2000, the POLIS Project on Ecological Governance is a research-based organization that is part of the Centre for Global Studies at the University of Victoria. Researchers who are also community activists work to make ecological thinking and practice a core value in all aspects of society and dismantle the notion that the environment is merely another sector. Among the many research centres investigating and promoting sustainability worldwide, POLIS represents a unique blend of multidisciplinary academic research and community action.

polisproject.org

POLIS Water Sustainability Project

The POLIS Water Sustainability Project (WSP) is an action-based research group that recognizes water scarcity is a social dilemma that cannot be addressed by technical solutions alone. The project focuses on four themes crucial to a sustainable water future:

- Water Conservation and the Water Soft Path;
- The Water-Energy Nexus;
- Watershed Governance; and
- Water Law and Policy.

The WSP works with industry, government, civil society, environmental not-for-profits, and individuals to develop and embed water conservation strategies that benefit the economy, communities, and the environment. The WSP is an initiative of the POLIS Project on Ecological Governance at the Centre for Global Studies, University of Victoria.

poliswaterproject.org



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POLIS Project on Ecological Governance
Centre for Global Studies, University of Victoria
PO Box 1700 STN CSC
Victoria, BC V8W 2Y2 Canada
Tel: 250-721-8800
Email: polis@uvic.ca