

The Evolution of Canadian Water Law and Policy: Securing Safe and Sustainable Abundance

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Canadian water law has evolved over an extended period of time as a complex mixture of federal and provincial legislation and case law with provincial arrangements influenced by both riparian and prior appropriation doctrine as well as by the civil law tradition of Quebec. The article reviews highlights from the long-term evolution of Canadian water law, policy and institutions following a chronological path from Confederation in 1867 to the present. Three key shifts that have more recently begun to appear in background assumptions of Canadian water law are then identified. In particular, it is noted (1) that general confidence in the abundance

of water is giving way to concerns over security and occasional scarcity, (2) that the primacy of human water uses is gradually being moderated by acknowledgement of the importance of environmental flows, and (3) that international considerations may be relevant to a greater degree than previously contemplated. The concluding section of the paper presents emerging policy directions in relation to the legacy of historic water law and policy decisions and the shifting assumptions previously reviewed with emphasis on sustainability, conservation initiatives and watershed frameworks.

Le droit canadien de l'eau a évolué au fil des ans formant un mélange complexe de lois fédérales et provinciales et de jurisprudence renfermant des dispositions provinciales influencées par la doctrine de l'appropriation riveraine et par la doctrine antérieure ainsi que par la tradition de droit civil du Québec. Cet article passe en revue les faits saillants de l'évolution à long terme de la législation, de la politique et des institutions canadiennes en matière d'eau, par ordre chronologique depuis la Confédération en 1867 à ce jour. Sont ensuite abordés les trois changements clés qui se retrouvent plus récemment dans les hypothèses de base du droit canadien de l'eau. En particulier, il est noté (1) que la confiance générale dans

l'abondance de l'eau cède la place aux préoccupations de sécurité et de pénurie occasionnelle, (2) que la primauté des usages humains de l'eau est progressivement atténuée par la reconnaissance de l'importance des flux environnementaux et (3) que les considérations internationales sont peut-être plus pertinentes qu'envisagé antérieurement. La conclusion de l'article présente les orientations politiques émergentes relatives à l'héritage des décisions historiques de droit et de politiques en matière d'eau et aux hypothèses changeantes précédemment examinées, tout en mettant l'accent sur la durabilité, les initiatives de conservation et les cadres de bassin versant.

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INTRODUCTION	61
1. PART I <i>FIFTEEN DECADES OF CANADIAN WATER LAW</i>	62
1.1. 1860s: NAVIGATION AND FISHERIES IN THE CONFEDERATION ERA	62
1.2. 1870s: POWERING SAWMILLS AND DELIVERING MUNICIPAL WATER SUPPLY	63
1.3. 1880s: RIVERS AND STREAMS RECONFIGURE CONFEDERATION	64
1.4. 1890s: FISHERIES, IRRIGATION AND WATER POWER	65
1.5. 1900s: INTERNATIONAL WATERS AND MUNICIPAL WASTES	67
1.6. 1910s: THE CONSERVATION OF WATER RESOURCES AND A RIGHT TO PURE WATER	68
1.7. 1920s: WATER POWER AND POLLUTION	69
1.8. 1930s: MANAGING WATER SCARCITY AND DIVERSIONS	70
1.9. 1940s: INDUSTRIAL WATER POLLUTION AND SUBURBAN GROWTH	73
1.10. 1950s: ADMINISTRATIVE WATER GOVERNANCE MID-CENTURY	74
1.11. 1960s: WATER RESOURCES AND THE EXPORT DEBATE	76
1.12. 1970s: NATIONAL WATERSHEDS	79
1.13. 1980s: MAKING WATER POLICY	82
1.14. 1990s: WATER TRADERS	84
1.15. 2000s: DRINKING WATER SAFETY	85
1.16. BUILDING ON THE FOUNDATIONS	88
2. PART II <i>BACKGROUND ASSUMPTIONS IN TRANSITION</i>	88
2.1. THE AVAILABILITY OF WATER	89
2.2. ENVIRONMENTAL VALUES OF WATER	90
2.3. ACKNOWLEDGING THE INTERNATIONAL CONTEXT	91
3. PART III <i>SECURING SAFE AND SUSTAINABLE ABUNDANCE</i>	93
3.1. SUSTAINABILITY	93
3.2. WATER VALUATION AND CONSERVATION MEASURES	96
3.3. WATERSHED MANAGEMENT AND PARTICIPATION	100
CONCLUSION	103

INTRODUCTION

Amidst widespread contemporary agreement on the importance of water policy in Canada,¹ and a proliferation of reform proposals,² inadequate attention is devoted to the continuing influence of long-established legal and institutional arrangements that frame decision-making. This framework, the accumulated product of historic evolution and innovation, is firmly grounded in law, practice, assumptions and attitudes that continue to affect the implementation of new policy proposals. Or, as recently expressed elsewhere, “institutional arrangements for water develop and change over time, but earlier decisions and rules set limits on what can happen.”³ This paper elaborates and confirms that observation by recalling some of those earlier decisions and rules as the established context for contemporary water policy initiatives. Thus, prominent twenty-first century initiatives oriented towards environmental sustainability,

¹ See Québec, Ministère de l'Environnement, *L'eau. La vie. L'avenir. Politique Nationale de l'eau* (Québec: 2002), online: <www.mddelcc.gouv.qc.ca/publications/2002/ENV20020310.htm>; British Columbia, Ministry of Environment Environmental Sustainability Division, *British Columbia's Water Act Modernization: Policy Proposals on British Columbia's New Water Sustainability Act* (Victoria: December 2010), online: <www2.gov.bc.ca/assets/gov/environment/air-land-water/water/water-planning/wam_wsa-policy-proposal.pdf>.

² Reform proposals that have been brought forward in several jurisdictions or produced under the auspices of the Conference Board of Canada, the Walter and Duncan Gordon Foundation, the NRTEE, and the Polis Project on Ecological Governance, among others are noted and discussed later in this essay; see *infra* notes 181, 210, 239, 253, 278.

³ Carolyn Johns & Ken Rasmussen, “Institutions for Water Resource Management in Canada” in Mark Sproule-Jones, Carolyn Johns & B Timothy Heinmiller, eds, *Canadian Water Politics* (Montreal & Kingston: McGill-Queen's University Press, 2008) 59 at 63.

conservation, and watershed management are profoundly influenced by a legal and institutional framework—and its supporting assumptions—established over many decades.

In keeping with the argument that historic arrangements remain influential, Part I surveys Canadian water law, policy and institutions following a chronological path from Confederation in 1867 to the present. This decade by decade approach reflects water law and policy as the cumulative result of past decisions whose significance and impact will not readily be overcome or eliminated by the next round of innovations. Selected examples underscore the ongoing significance of longstanding arrangements.

Part II identifies three key transitions in background assumptions. In particular, it is noted (1) that general confidence in abundance and water quality now occasionally gives way to concerns over scarcity, public health, and even security; (2) that the predominant focus on human water uses is being moderated by acknowledgement of the importance of environmental considerations; and (3) that international considerations may be more relevant than previously contemplated.

Part III describes three emerging policy directions—sustainability, water valuation and conservation, and watershed management—with reference to the legacy of historic water law and policy decisions and the shifting assumptions previously reviewed.

1. PART I FIFTEEN DECADES OF CANADIAN WATER LAW

Legal frameworks governing water allocation and quality predate Canadian Confederation: riparian principles associated with the ownership of shoreline property were applicable through the common law in Ontario and the Atlantic provinces,⁴ civil law principles with antecedents in Roman law operated in Quebec, and elements of a licensing scheme along the lines of the American prior appropriation—or first in time, first in right model—had already been introduced in British Columbia.⁵ This part of the paper notes highlights in the evolution of these systems, including the implementation of federal and provincial legislative frameworks.

I. I. 1860S: NAVIGATION AND FISHERIES IN THE CONFEDERATION ERA

The nineteenth century rafts and timber slides of the Ottawa River valley and other forest regions of central and eastern Canada are frequently understood to symbolize the vital significance of inland navigation to the economy.⁶ Fisheries, already extensively regulated within individual colonies prior to the *British North America Act*,⁷ became the subject of important

⁴ See *Miner v Gilmour* [1858] 12 Moo PC 131, 14 ER 861. See also Joshua Getzler, *A History of Water Rights at Common Law* (New York: Oxford University Press, 2004), ch 6.

⁵ See David R Percy, *The Framework of Water Rights Legislation in Canada* (Calgary: Canadian Institute of Resources Law, 1988) at 2–5.

⁶ See Gerard V La Forest & Associates, *Water Law in Canada: The Atlantic Provinces* (Ottawa: Department of Regional Economic Expansion, 1973); ARM Lower, *Great Britain's Woodyard: British North America and the Timber Trade, 1763–1867* (Montreal & Kingston: McGill-Queen's University Press, 1971); Sandra J Gillis, *The Timber Trade in the Ottawa Valley, 1806–54* (Parks Canada: Manuscript Report No. 153, 1975); Graeme Wynn, *Timber Colony: A Historical Geography of Early Nineteenth Century New Brunswick* (Toronto: University of Toronto Press, 1981).

⁷ See Margaret Beattie Bogue, *Fishing the Great Lakes: An Environmental History: 1783–1933* (Madison: University of Wisconsin Press, 2000) at 179–180.

federal legislation very shortly after Confederation. The *Fisheries Act* of 1868 addressed both industry regulation and resource protection, with the latter promoted through, for example, prohibitions on “prejudicial or deleterious substances” that could result in injuries to fishing grounds or pollution.⁸

Navigation and fisheries found their places among enumerated federal powers in constitutional arrangements and have been a persistent source of conflict in the legal order.⁹ To be reminded of the enduring legal, cultural, and economic significance of traditional water uses, it is only necessary to mention recent changes to navigable waters legislation or controversial amendments to the *Fisheries Act*.¹⁰

1.2. 1870S: POWERING SAWMILLS AND DELIVERING MUNICIPAL WATER SUPPLY

Nineteenth century waterways provided crucial mechanical power for industrial activity concentrated along their shores. Water power sites, (though not yet utilized for hydro-electric power production) generated legal controversy, with access to water flow regulated on the basis of riparian rights, an array of contractual arrangements, and legislative intervention.¹¹

Certain forms of water pollution also attracted official attention. Sawdust and associated debris from lumber mills were particularly problematic in light of three adverse impacts: this material impeded navigation, interfered with fish and fish habitat, and its decomposition presented risks to public health and safety.¹² So, even before environmental considerations such as biological oxygen demand levels, for example, were well understood, legislative efforts were made to maintain water quality. In 1873, Parliament prohibited the discharge of lumber mill waste, including sawdust, into navigable waterways. To the extent that exemptions were preserved to allow waste discharges for the benefit of industry, applicants were required to demonstrate that “the public interest would not be unjustly affected.”¹³

Simultaneously, the 1870s witnessed the transformation of provincial legislative frameworks for municipal water supply and finance, as local governments acquired private water companies. Toronto, for example, assumed control of a water system previously developed by a pioneering private investor with public commissioners assuming responsibility for supplying

⁸ *An Act for the Regulation of Fishing and Protection of Fisheries*, SC 1868, c 60, s 14.

⁹ See *La Forest & Associates*, *supra* note 6 at 195–199. Recent environmental assessment cases contested with respect to their federal-provincial implications in relation to fisheries include: *Mining Watch Canada v Canada (Fisheries and Oceans)*, 2010 SCC 2, [2010] 1 SCR 6 and *Quebec (Attorney General) v Moses*, 2010 SCC 17, [2010] 1 SCR 557 [*Moses*].

¹⁰ See e.g. provisions respecting “serious harm to fish” as introduced by the *Jobs, Growth and Long-term Prosperity Act*, SC 2012 c 19, s 135. *Fisheries Act*, RSC 1985, c F-14; *Navigation Protection Act*, RSC 1985, c N-22.

¹¹ See *Miner v Gilmour*, [1858] 14 ER 861, 7 WR 328 (JCPC).

¹² See John PS McLaren, “The Tribulations of Antoine Ratté: A Case Study of the Environmental Regulation of the Canadian Lumbering Industry in the Nineteenth Century” (1984) 33 UNBLJ 203 at 221; Jamie Benedickson, *The Culture of Flushing: A Social and Legal History of Sewage* (Vancouver: UBC Press, 2007) at 38–40 [Benedickson, *Culture of Flushing*].

¹³ *An Act for the Better Protection of Navigable Streams and Rivers*, SC 1873, c 65, s 4.

“an abundant supply of pure and wholesome water.”¹⁴ Communities elsewhere undertook the civic challenge of delivering water through a network of pipes that replaced urban wells and various forms of privately sponsored water systems with public infrastructure.¹⁵

The expanded role of municipalities in water supply engaged competing conceptions of water as an economic or public good, with divergent perceptions a source of contention even today.¹⁶ And although private wells disappeared from the urban landscape, groundwater and applicable legal principles remain central to the overall policy agenda as awareness has increased of the inter-relationship of surface and groundwater systems.

1.3. 1880S: RIVERS AND STREAMS RECONFIGURE CONFEDERATION

During the late nineteenth century, Confederation arrangements were reconfigured by controversies over, for example, such things as liquor licenses and insurance regulation.¹⁷ Perhaps not as iconic, the legal controversies over water and its role in shaping and eroding the constitutional structure should not be overlooked.¹⁸

Prime Minister John A. Macdonald had a both political and legal conflict with Ontario Premier Oliver Mowat over provincial legislation concerning access to valuable river facilities that had been strategically installed to assist the timber drive. From the perspective of water management, even though the legal dispute between rival lumbermen Caldwell and McLaren reflected a significant conflict between private rights and public interests in waterways, the limited scope of those public interests is striking. In part because the lumber industry contributed substantially to government revenues, officials customarily equated the well-being of the industry with the public interest.¹⁹

Given the economic contributions of the lumber trade, little consideration was given to the environmental implications of forest industry practices, including impacts on waterways. Yet forest operations had serious environmental effects, including altered runoff patterns and in-stream flows. So-called river “improvements” that altered channels to accommodate timber

¹⁴ *Municipal Water Works Act*, SO 1882, c-25 s 32(2); Elwood Jones & Doug McCalla, “Toronto Waterworks, 1840–1877: Continuity and Change in Nineteenth Century Toronto Politics” (1979) 60 *Can Historical Rev* 300 at 302.

¹⁵ See Michèle Dagenais, *Montréal et l'eau : une histoire environnementale* (Montréal: Boréal, 2011) at 68–78.

¹⁶ See e.g. “No such thing as free water”, *The Globe and Mail* (21 July 2009).

¹⁷ See Richard Risk, “Constitutional Thought in the Late Nineteenth Century” (1991) 20 *Man LJ* 196 at 196–198; *The Citizens Insurance Company of Canada and The Queen Insurance Company v Parsons*, [1881] 7 AC 96 (PC), [1881] UKPC 49; and *The Attorney General for the Dominion of Canada (Appeal No. 10 of 1914) v The Attorney General for the Provinces of Alberta, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec and Saskatchewan, The Canadian Insurance Federation and the Manufacturers Association of Canada and another*, [1916] 1 AC 588, [1916] UKPC 12.

¹⁸ See *McLaren v Caldwell*, [1882] 8 SCR 435, 1882 CanLII 3 (SCC); *Caldwell v McLaren*, [1884] UKPC 21.

¹⁹ See Jamie Benidickson, “Private Rights and Public Purposes in the Lakes, Rivers and Streams of Ontario, 1870–1930” in David H Flaherty, ed, *Essays in the History of Canadian Law*, Vol 2 (Toronto: University of Toronto Press, 1983) 365; Paul Romney, *Mr. Attorney: The Attorney General for Ontario in Court, Cabinet and Legislature 1791–1899* (Toronto: University of Toronto Press, 1986) at 255–256.

drives accelerated the scouring of riverbeds and shorelines. When bark, sunken logs, and discarded slabs decomposed, like other organic wastes from industrial sources these materials placed heavy demands on the oxygen supplies of inland waterways.²⁰

In the same era, judicial decisions concerning fishing rights along non-navigable waterways (especially in maritime Canada) undermined federal licensing arrangements despite apparently explicit foundations in the constitution.²¹ Eastern provinces found themselves called upon to establish or to re-introduce administrative regimes alongside the federal fisheries program.²² The federal government, however, consolidated its authority over navigation and shipping both in the courts and by means of the *Navigable Waters Protection Act* [NWPA], a statute whose constitutional ambit has been repeatedly tested and explored.²³ Conflicts arose frequently between provincial hydro-electric power development and the federal navigation power while more recently the scope of federal environmental assessment authority triggered by decisions about navigation has been contested.

1.4. 1890S: FISHERIES, IRRIGATION AND WATER POWER

Persistent uncertainty concerning regulatory control of fisheries during the 1890s was addressed through an elaborate reference to the judiciary for an opinion.²⁴ The outcome, confoundingly imprecise in operational terms, was widely understood to have further extended provincial authority. Thus, the *Globe* pronounced: “The Dominion gets decidedly the worst of it.” Ottawa could “protect, preserve and propagate fish,” while the Provinces enjoyed “the sole right to catch the fish so preserved and protected.” The durability of this configuration was doubtful, “for the Dominion government can hardly be expected to expend considerable sums in maintaining hatcheries to put fish into the great lakes that become the property of the Province of Ontario whenever they enter the water.”²⁵

When the case moved to the Judicial Committee on appeal, that body simultaneously affirmed provincial proprietary rights in the fisheries while upholding federal legislative jurisdiction.²⁶ The federal and provincial governments, exceptionally, agreed to the administrative reorganization necessitated by this outcome. Federal regulatory authority over

²⁰ See Alice Outwater, *Water: A Natural History* (New York: Basic Books, 1996) at 146–147; R Peter Gillis & Thomas R Roach, *Lost Initiatives: Canada's Forest Industries, Forest Policy and Forest Conservation* (New York: Greenwood Press, 1986).

²¹ Following a series of prosecutorial decisions in lower courts, the constitutional question was resolved in *R v Robertson*, [1882] 6 SCR 52, 1882 CanLII 25 (SCC).

²² See “The Question of Riparian Rights”, *The Globe* (2 May 1882).

²³ *Navigable Waters Protection Act*. RSC 1985, c N-19, s 1; see also Chris Armstrong, *The Politics of Federalism: Ontario's Relations with the Federal Government, 1867–1942* (Toronto: University of Toronto Press, 1981); *Friends of the Oldman River Society v Canada (Minister of Transport)* [1992] 1 SCR 3, 88 DLR (4th) 1 [*Oldman River Society*].

²⁴ See *Re Provincial Fisheries*, [1896] 26 SCR 444, 1896 CanLII 76 (SCC).

²⁵ “The Fisheries Judgment”, *The Globe* (15 October 1896); see *Moses*, *supra* note 9 for recent developments.

²⁶ See *Ontario (AG), Quebec (AG) and Nova Scotia (AG) v Dominion of Canada (AG)*, [1898] UKPC 31 (BAILLI).

the manner of fishing (including times and seasons), remained intact while the provinces assumed control of leasing.²⁷

In the 1890s, with tariffs, railway building, and immigration as pillars of the National Policy, competition for access to prairie water supplies and the importation of new legal principles curtailing riparian rights, culminated in the *North West Irrigation Act*, an unacknowledged cornerstone of western settlement and expansion.²⁸ By asserting Crown ownership of water, this legislation established the foundations for water licensing, and, accordingly, placed western Canadian water law on a different footing than in the original federating provinces where a common law riparian regime and its civil law counterpart held sway.²⁹

In eastern Canada, efforts to employ emerging technology to secure hydro-electric power from Niagara Falls and other locations accelerated through the 1890s. Through recognition of state ownership and supervision of water power developments, Niagara foreshadowed a flurry of new water power leases. Privately produced power, often under the direction of American interests, initially remained the norm until Ontario's Hydro Electric Power Corporation took shape in the early 1900s.³⁰

Hydro power developments profoundly altered the ecological processes of major waterways through damming, flooding, scouring and diversion, often triggering new conflicts with other river users such as the lumber industry and railway interests.³¹ Notably, improved technological capacity to transmit hydro-electric power allowed twentieth-century Canadians to live at growing distances from river-based power sites, even as they became more dependent upon those water powers for comfort and convenience. Succeeding generations have extended the hydro-electricity production system and, amidst mounting concern over greenhouse gas emissions, now seek greater efficiencies from many early hydro installations or greenfield sites.³²

²⁷ See "Canada's Fisheries", *The Globe* (23 June 1898).

²⁸ See David R Percy, "Water Law of the Canadian West: Influences from the Western United States" in John McLaren, Hamar Foster & Chet Orloff, eds, *Law for the Elephant, Law for the Beaver* (Regina: Canadian Plains Research Center, 1992) 274 at 282 (many of these doctrines curtailing riparian rights were originally developed in the arid conditions of the western frontier, largely by gold-rush miners, migrants, and Mormon settlers in Utah and later Alberta, at 276–277, 281).

²⁹ *North West Irrigation Act*, SC 1894 c 30, s 4. See La Forest & Associates, *supra* note 6. On the relationship between the revised Civil Code of Quebec and water law reform, see Madeleine Cantin Cumyn, "L'eau, une ressource collective" (2010) 51 C de D 595; see also Madeleine Cantin Cumyn, "Recent Developments to the Law Applicable to Water in Quebec" (2010) 34:4 Vermont L Rev 859.

³⁰ See John T Saywell, "One More River: An Essay on the History of Hydro Electric Construction" (Economic Council of Canada, 1975); HV Nelles, *The Politics of Development: Forests, Mines and Hydro-electric Power in Ontario, 1849–1941* (Toronto: Macmillan, 1974) at 32–39; for historical reference, see also TW Gibson Papers, MU1142 Engineering, Toronto, Archives of Ontario (F 1020).

³¹ See e.g. letter from Angus MacMurchy, Canadian Pacific Railway Company, to W.E. Raney, Attorney General (29 September 1920) in Public Attorney's Office, Attorney General's Papers, RG 4-32, 1921, File 1712.

³² Ontario, Ministry of Natural Resources, "Waterpower Site Release: Crown Land" Renewable Energy Program (16 April 2010), online: <dr6j45jk9xcmk.cloudfront.net/documents/2914/280451.pdf>.

1.5. 1900S: INTERNATIONAL WATERS AND MUNICIPAL WASTES

At the turn of the 20th century, several transboundary water issues figured prominently alongside federal-provincial controversies on the public agenda. When the city of Chicago reversed the flow of the Chicago River away from Lake Michigan in 1900, it initiated the diversion of waters out of the Great Lakes basin and precipitated a stream of inter-jurisdictional controversies.³³ The Chicago diversion, in conjunction with irritants elsewhere in the Great Lakes system and disputes over use of other shared waters, stimulated interest in broader solutions. For example, when international negotiations culminated in the *Boundary Waters Treaty* of 1909 and creation of the International Joint Commission (IJC),³⁴ the Milk and St. Mary River system that worked its way back and forth across the 49th parallel between Montana and Alberta, was “to be treated as one stream for the purposes of irrigation and power.”³⁵

Meanwhile, municipal sewage systems and sewerage installations proliferated.³⁶ Designed to remove organic human wastes, these subterranean conduits also facilitated the waterborne removal of industrial effluent and chemicals from manufacturing establishments with largely unintended consequences in the form of contamination and potential for epidemic disease.³⁷ These impacts prompted severe, yet rarely enforced, legislative intervention, such as an 1897 prohibition against the discharge of “manure or other refuse, or vegetable or animal matter, or other” into Ontario waters.³⁸

While prominent waterworks engineers asserted that the diluting effect of the Great Lakes was such that “there is no chance of infection being carried from one of the great cities to another,”³⁹ American President Theodore Roosevelt echoed progressive era contemporaries by insisting that “civilized people should be able to dispose of sewage in a better way than by putting it into drinking water.”⁴⁰ Shortly thereafter, an IJC investigation refuted engineering complacency while new developments in drinking water protection permitted many communities to circumvent Roosevelt’s challenge. Specifically, it was realized that public

³³ See Benidickson, *Culture of Flushing*, *supra* note 12 at 183–210.

³⁴ See NF Dreiziger, “Dreams and Disappointments” in Robert Spencer, John Kirton & Kim Richard Nossal, eds, *The International Joint Commission Seventy Years On* (Toronto: Centre for International Studies, University of Toronto, 1981) at 8.

³⁵ See *Boundary Waters Treaty*, United States and Canada, 5 May 1910, art VI; see also Nigel Banks & Elizabeth Bourget, “Apportionment of the St. Mary and Milk Rivers” in Emma S Norman, Alice Cohen & Karen Bakker, eds, *Water Without Borders* (Toronto: University of Toronto Press, 2013) 159.

³⁶ See Leo G Denis, *Water Works and Sewerage Systems of Canada* (Ottawa: Commission of Conservation, 1916) at 176.

³⁷ See Benidickson, *Culture of Flushing*, *supra* note 12 at 107–115, 244–258; Dagenais, *supra* note 15 at 71–73, 82, 138–141; Chris Armstrong, Matthew Evenden & HV Nelles, *The River Returns: an Environmental History of the Bow* (Montreal & Kingston: McGill-Queen’s University Press, 2009) at 188.

³⁸ *An Act Respecting Public Health*, RSO 1897, c 248, Schedule B, s 4.

³⁹ Allen Hazen, *Clean Water and How to Get It*, 2nd ed (New York: John Wiley, 1914) at 31.

⁴⁰ “Mr. Roosevelt and the People”, *Outlook* 96 (1910), at 1 as quoted in Joel A Tarr, “Environmental Risk in Historical Perspective” in Branden B. Johnson and Vincent T Covello, eds, *The Social and Cultural Construction of Risk: Essays on Risk Selection and Perception* (Dordrecht, Holland: D Reidel, 1987) 317 at 320; see generally Samuel P Hays, *Conservation and the Gospel of Efficiency* (Cambridge: Harvard University Press, 1959).

health could now be protected by means of water treatment through chlorination, a subject of experimentation from the 1890s and then successfully introduced to North America in 1908 at Jersey City. Two years later, Toronto began chlorination of the municipal supply.⁴¹ The mechanical or chemical protection of drinking water thereafter accommodated contamination of surface waters into which sewage would continue to flow for many decades with treatment efforts regularly falling short.⁴² National sewage treatment standards remained under development in Canada even after the turn of the twenty-first century,⁴³ with astronomical infrastructure costs associated with renewing existing systems across Canada.⁴⁴

1.6. 1910S: THE CONSERVATION OF WATER RESOURCES AND A RIGHT TO PURE WATER

Under the leadership of Clifford Sifton, the Commission of Conservation addressed water issues of the Great War era alongside forests, mines, and agricultural resources. Inquiries were launched to assess Canada's hydro-electric power production potential⁴⁵ and to ascertain how many communities had installed municipal water supply and sewerage systems.⁴⁶ The limitations of local action and the inter-jurisdictional dimensions of water quality and supply were closely examined: according to one participating engineer, "Ontario may have the most stringent laws relative to water pollution, and after putting its house in order would be yet dependent upon the action taken by ... Quebec relative to the pollution of the Ottawa River whose banks are interprovincial."⁴⁷

Conservationists of the era invoked a business-like principle also characteristic of American progressivism: "We are prosperous now, but we must not forget that it is just as important that our descendants should be prosperous in their turn." Accordingly, the analysis continued, "each generation is entitled to the interest on the natural capital, but the principal should be handed on unimpaired."⁴⁸ Although this insight is hardly a direct precursor of sustainable development per se, elements of conceptual overlap such as intergenerational equity are evident. Other twenty-first century challenges such as a human right to water were also under consideration.

⁴¹ See Benidickson, *Culture of Flushing*, *supra* note 12 at 229.

⁴² See Canada, Office of the Auditor General, *Status Report of the Commissioner of the Environment and Sustainable Development*, (Ottawa, March 2008) ch 7, online: <www.oag-bvg.gc.ca/internet/English/parl_cesd_200803_07_e_30133.html>.

⁴³ See Canada, Canadian Council of Ministers of the Environment, *General Backgrounder, "Municipal Wastewater Effluent in Canada"*, (Ottawa: December 2006) at 4, online: <www.ccme.ca/assets/pdf/mwwe_general_backgrounder_e.pdf>; Canadian Council of Ministers of the Environment, *Canada-wide Strategy for the management of Wastewater Effluent*, (Ottawa, February 2009), online: <www.ccme.ca/files/Resources/municipal_wastewater_effluent/cda_wide_strategy_mwwe_final_e.pdf>.

⁴⁴ For discussion of infrastructure renewal requirements, see Canada, Federation of Canadian Municipalities, *Canadian Infrastructure Report Card*, vol 1, "2012 Municipal Roads and Water Systems" (2012), online: <www.fcm.ca/Documents/reports/Canadian_Infrastructure_Report_Card_EN.pdf>.

⁴⁵ H.G. Acres, *The Water Powers of Canada* (Canada: Department of Interior, 1915).

⁴⁶ See Denis, *supra* note 36.

⁴⁷ T Aird Murray, *The Prevention of Pollution of Canadian Surface Waters* (Ottawa: Commission of Conservation, 1912) at 7.

⁴⁸ Frank D Adams, *The National Domain in Canada and Its Proper Conservation* (Presidential Address before the Royal Society of Canada, delivered at the Commission of Conservation, Ottawa, 1914) (Ottawa: COC, 1915) at 7.

In the midst of perilous typhoid outbreaks, Senator Napoleon Belcourt championed legislation that aimed to safeguard vulnerable populations from sewage contamination. In so doing—ultimately without success—Belcourt (well in advance of the 1948 *Universal Declaration on Human Rights* and derivative pronouncements), asserted a powerful claim that remains to be realized: “the individual and the public as well, have an inalienable and indefeasible right to pure water.”⁴⁹ Determined efforts to ensure access to clean water continue today including in the United Nation’s Sustainable Development Goals,⁵⁰ and in proposals for a human right to water.⁵¹

Though not elevated to the level of a right, international consideration of water quality and public health occupied the IJC in its first boundary waters pollution reference, launched in 1912. The IJC reported that “[t]he communities along their banks which have sewerage systems all discharge raw sewage into the streams.”⁵² By implication, then, neither country regarded the international context as a source of limitation on (waste) water management.

Other notable developments in this period included the formal introduction of irrigation districts in southern Alberta,⁵³ and Nova Scotia’s *Water Act* of 1919 designed to bring private riparian rights in the province under public authority.⁵⁴

1.7. 1920S: WATER POWER AND POLLUTION

Private companies and public agencies such as Ontario’s HEPC vigorously pursued major water power projects across Canada during the 1920s.⁵⁵ However, the potential impacts of new power generation facilities on navigation accentuated federal-provincial wrangling with proposed developments involving the St. Lawrence, the Ottawa River and the Lake of the Woods-Winnipeg River system among the early controversies.⁵⁶ Federal officials sought to establish that legislative impacts on hydro-power were merely incidental in constitutional terms to federal authority over navigation while their provincial counterparts endeavored to secure recognition as owners of the water resource in order to insulate themselves against suggested federal interference.⁵⁷

⁴⁹ *Debates of the Senate of the Dominion of Canada 1909–1910*, 11th Parl, 2nd Sess, vol 1 (2 March 1910) at 335 (Napoleon Belcourt).

⁵⁰ *Sustainable Development Goals*, GA Res 70/1, UNGAOR, 70th Sess, Supp No 49, A/RES/70/1, (2015).

⁵¹ *The Human Right to Water and Sanitation*, GA Res 64/292, UNGAOR, 64th Sess, Supp No 49, A/RES/64/292 (2010) [*Human Right to Water*].

⁵² International Joint Commission, *Final Report of the International Joint Commission on the Pollution of Boundary Waters Reference* (Washington & Ottawa: Government Printing Office, 1918) at 26.

⁵³ See Stan Klassen & John Gilpin, “Alberta Irrigation in the Old and New Millennium” (1999) 24 *Can Water Resources J* 61.

⁵⁴ See Jennifer Nedelsky, “Displacing the Common Law: The Emergence of Administrative Control of Water Resources” in Philip Girard & James Phillips, eds, *Essays in the History of Canadian Law: The Nova Scotia Experience*, vol 3 (Toronto, University of Toronto Press, 1990) 326.

⁵⁵ See Nelles, *supra* note 30 at 468–469; John H Dales, *Hydroelectricity and Industrial Development: Quebec, 1898–1940* (Cambridge: Harvard University Press, 1957).

⁵⁶ See Armstrong, *supra* note 23 at 160–165.

⁵⁷ *Ibid* at 167.

In a judicial reference to Canada's Supreme Court, the ruling was non-committal and offered very little illumination in the form of a legal "it depends": "The extent to which the provincial legislatures may be restricted in, or excluded from, the control of provincial property by the enactment of Dominion laws operative under section 91 cannot be defined in the abstract."⁵⁸

At the municipal level, the use of chlorination to treat water supply expanded during the 1920s. With this proverbial "magic bullet" more generally available, public health officials disengaged from a half-century struggle on the environmental front to protect sources of water supply; it seemed much less necessary to worry about wastewater discharges to natural waterways when chemicals added at a treatment facility promised more affordable security. Public health concerns were therefore decoupled from the issue of ambient water quality,⁵⁹ a policy assumption that remained largely unquestioned until the Walkerton drinking water tragedy of May 2000 resulted in seven deaths and widespread illness, thus highlighting the virtues of a multi-barrier approach involving source-to-tap protection of drinking water as discussed below.⁶⁰

The judiciary, for its part, offered mixed signals regarding the role of law in protecting water sources. Justice Rinfret wrote in *Groat v City of Edmonton* that "pollution is always unlawful and, in itself, constitutes a nuisance."⁶¹ Simultaneously, however, the court acknowledged the undeniable necessity of sewers and drains, even confirming that their environmental impacts might actually enjoy legal authorization where "the statute expressly so states."⁶² Sewers have continued to figure prominently in the Supreme Court's subsequent efforts to elaborate a general doctrine of statutory authorization.⁶³

1.8. 1930S: MANAGING WATER SCARCITY AND DIVERSIONS

Drought produced desperate economic conditions for many engaged in western Canadian agriculture, prompting heightened official attention to water shortages. One prominent legislative response, the *Prairie Farm Rehabilitation Act*, specifically sought "the best methods ... to secure the rehabilitation of the drought and soil drifting areas in ... Manitoba, Saskatchewan and Alberta, and to develop ... within those areas systems of farm practice, tree culture, water supply, land utilization and land settlement that will afford greater economic security."⁶⁴ This intermingling of water and security agendas with land-use and settlement represents a comparatively early version of integrated resource planning.

The prairie response to drought also encompassed new programs to enhance water storage or to regularize flows. Moreover, when the Natural Resources Transfer arrangements

⁵⁸ *Reference Re Waters and Water Powers*, [1929] SCR 200 at 213, 1929 CanLII 72 (SCC).

⁵⁹ Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, DC: Island Press, 1994) at 53–59.

⁶⁰ *Walkerton Report*, Part I, *infra* note 180 at 108–112; *Walkerton Report*, Part II, *infra* note 187 at 3–6.

⁶¹ *Groat v City of Edmonton*, [1928] SCR 522 at 532, 1928 CanLII 49 (SCC).

⁶² *Ibid* at 532–533; see also *Fieldhouse v Toronto* (1918), 44 DLR 392, 43 OLR 491.

⁶³ See *Tock v St. John's (City of) Metropolitan Area Board*, [1989] 2 SCR 1181, 64 DLR (4th) 620.

⁶⁴ *Prairie Farm Rehabilitation Act*, SC 1935, c 23, s 4.

of 1930 assigned more direct responsibilities to western provinces for lands and resources,⁶⁵ local legislators became directly involved in water management and allocation. Building on some of the foundations of the earlier *North West Irrigation Act*, Alberta and Saskatchewan assumed legislative responsibility for establishing a water law framework adapted to provincial circumstances.⁶⁶

For its part, the federal Bureau of Mines embarked on a survey of “industrial waters” in 1934. The description reflected understanding that “some waters are much better adapted for certain industries than others.”⁶⁷ Previous disregard of industrial water quality concerns was widely attributed to the understanding that “water is an abundant and cheap commodity and its impurities, in most cases, are not easily detected except by chemical analysis.”⁶⁸ The study sought to identify a wide range of impurities capable of interfering with the quality of manufactured products in major economic sectors such as paper, sugar, textiles and leather goods.⁶⁹ Purification and treatment techniques extending from chlorination through aeration and water softening were increasingly sophisticated and widespread. Many had positive intentions about expanding wastewater treatment through the adoption of generally available techniques such as activated sludge.⁷⁰ But in the face of financial constraints during the Great Depression, these were often abandoned or deferred.⁷¹

Ontario’s energy requirements in the 1930s drew attention to opportunities for power generation along northern rivers, several of which also appeared to be prime candidates for diversion.⁷² Viewed through the provincial lens, power generation and river diversion were internal matters. Yet because of their implications for flows and levels within the Great Lakes, certain possible diversions were inevitably intertwined with the management of boundary waters and existing international power-sharing arrangements.

The broader prospects for economic development along the St. Lawrence presented the overall setting for international negotiations, federal-provincial friction and inter-provincial acrimony. As negotiations between Canada and the United States over development of the St. Lawrence foundered in the depression era, Ontario independently pursued diversions of the Kenogami (1939) and Ogoki (1943) rivers in a quest for electricity, access to timber

⁶⁵ On the confirmation of the transfer of waters and water powers in 1938, see David R Percy, *The Framework of Water Rights Legislation in Canada* (Calgary: Canadian Institute of Resources Law, 1988) at 11.

⁶⁶ *Water Rights Act*, SS 1931, c 17; *Water Resources Act*, SA 1931, c 71.

⁶⁷ *Industrial Waters of Canada, Report on Investigations, 1934 to 1940* (Ottawa: Department of Mines and Resources, 1942) at 8.

⁶⁸ *Ibid.*

⁶⁹ *Ibid* at 11–21.

⁷⁰ See Daniel Schneider, *Hybrid Nature: Sewage Treatment and the Contradictions of the Industrial Ecosystem* (Cambridge: MIT Press, 2011) at 51–57.

⁷¹ Jamie Benidickson, *Water and Sewage Infrastructure in Ontario, 1880–1890s: Legal and Institutional Aspects of Public Health and Environmental History* (Ontario: Walkerton Inquiry, Commissioned Paper No 1, 2002) at 39.

⁷² See *Correspondence and Documents Relating to St. Lawrence Deep Waterway Treaty 1932, Niagara Convention 1929, and Ogoki River and Kenogami River (Long Lake) Projects and Export of Electrical Power* (Ottawa: JO Patenaude ISO, Printer to the King’s Most Excellent Majesty, 1938) at Part II [*Correspondence St. Lawrence*].

resources, and resulting provincial revenues.⁷³ On the basis of an exchange of notes in October and November of 1940 and as re-affirmed in the 1950 *Niagara River Water Diversion Treaty*, waters diverted into the Great Lakes through the Long Lac-Ogoki works were not subject to equal sharing for power production between the United States and Canada.⁷⁴ Substantially larger diversions were subsequently implemented elsewhere.⁷⁵

The potential for controversy over international hydro-electricity exports had been recognized early in the century but became more clearly apparent during the Great Depression.⁷⁶ Thus, in 1937, when Montreal Light, Heat and Power offered surplus electricity to the Aluminum Company of America, Quebec readily approved the sale subject to conditions regarding allocation of the proceeds and employment opportunities in construction. But when federal approval of the export proposal was not immediately forthcoming, company officials sought authority for “disposing, temporarily, of some surplus power and bringing into the Dominion of Canada a substantial amount of money which would otherwise be lost.”⁷⁷ Safeguards in the form of one-year license terms failed to alleviate the national concerns arising from the thought that any attempt to reclaim power exports for domestic needs would produce “international complications.”⁷⁸ Subsequent proposals to export power from Ontario encountered similar objections which, decades later, were echoed in the water export debates of the 1960s.⁷⁹

The twentieth century hydro-electricity boom entailed adverse consequences for waterways, and in many instances for indigenous communities. Aboriginal settlements were displaced; harvesting grounds and hunting territories were inundated and destroyed, with much of this activity concentrated in the 1930s when Ontario’s HEPC took advantage of improved transmission technology to expand aggressively into the northeastern region of the province.⁸⁰

⁷³ JC Day & Frank Quinn, *Water Diversion and Export: Learning from the Canadian Experience* (Waterloo: University of Waterloo, 1992) at 75–83.

⁷⁴ *Treaty Between Canada and the United States of America Concerning the Diversion of the Niagara River*, 10 October 1950, CTS 1950 No 3 art 3.

⁷⁵ Frédéric Lasserre, “Drawers of Water: Water Diversions in Canada and Beyond” in Karen Bakker, ed, *Eau Canada* (Vancouver: UBC Press, 2007) 143 at 143, 151; see also Day & Quinn, *supra* note 73.

⁷⁶ See *Correspondence St. Lawrence*, *supra* note 72, Part III; see generally AE Grauer, “The Export of Electricity from Canada” in RM Clark, ed, *Canadian Issues: Essays in Honour of Henry F. Angus* (Toronto: University of Toronto Press, 1961).

⁷⁷ Letter from JS Norris, President of Montreal Light, Heat & Power Consolidated, to WL MacKenzie King, Prime Minister of Canada (10 August 1937) in *Correspondence St. Lawrence*, *supra* note 72 at 63–64.

⁷⁸ Memorandum from TH Hogg, Chairman, Hydro-Electric Power Commission of Ontario, to MF Hepburn, Premier of Ontario (20 November 1937) in *Correspondence St. Lawrence*, *supra* note 72 at 67–71.

⁷⁹ See *infra* note 112.

⁸⁰ See Jean L Manore, *Cross-Currents: Hydroelectricity and the Engineering of Northern Ontario* (Waterloo, Ont: Wilfrid Laurier University Press, 1999) at 95–110; for comparable developments later in western Canada, see James B Waldram, *As Long as the Rivers Run: Hydroelectric Development and Native Communities in Western Canada* (Winnipeg: University of Manitoba Press, 1988).

1.9. 1940S: INDUSTRIAL WATER POLLUTION AND SUBURBAN GROWTH

Public officials anticipated a massive post-war reconstruction effort—including water-related infrastructure—following the disruptive impact of World War II on resource allocation and investment. On a grand scale, this entailed potential enhancement of the St. Lawrence for navigation and power,⁸¹ with local activities across the country to facilitate urban expansion.⁸² After pioneering experiments, notably along the Grand River, a broader initiative was directed towards watershed-based conservation authorities with a range of responsibilities.⁸³ Additionally, post-war automobile traffic enhanced awareness of the recreational potential of Canada's lakes, rivers and streams.⁸⁴

Yet that recreational potential was threatened by industrial activity, including—ominously—the burgeoning pulp and paper sector.⁸⁵ Fishing interests and camp owners along the Spanish River above its entry to Lake Huron protested the impact of a paper mill that re-opened in 1946 upstream from their operations. The manufacturing process rendered Spanish River waters unfit for swimming; fish were killed or driven elsewhere; and wild-rice beds were destroyed.⁸⁶ Despite strong judicial sympathy for the riparian victims of industrial effluent, the government of Ontario ultimately intervened to facilitate the continued operation of the mill.⁸⁷ Decades later, the overall sector remained a regulatory challenge for federal and provincial authorities.

Federal-provincial financing enabled suburban expansion during the 1950s. Generations of rhetoric affirming the responsibility of local governments for water and sewerage services were overlooked in the face of formidable capital costs, and inter-governmental financial transfer programs were then implicated in the massive expansion of water and sewage infrastructure across Canada.⁸⁸ Post-war appliances—dishwashers and clothes washing machines, for

⁸¹ See Daniel Macfarlane, *Negotiating a River: Canada, the U.S. and the Creation of the St. Lawrence Seaway* (Vancouver: UBC Press, 2014), at 48–49 [Macfarlane, *Negotiating a River*].

⁸² For a discussion of investment in housing and social capital, including water supply, to facilitate urbanization, see Canada, *Royal Commission on Canada's Economic Prospects: Final Report* (Ottawa: Queen's Printer, 1957), ch 15.

⁸³ *Conservation Authorities Act*, SO 1946, c 11; see Arthur Herbert Richardson, *Conservation by the People: The History of the Conservation Movement in Ontario to 1970* (Toronto: University of Toronto Press, 1974); B Mitchell and D Shrubsole, *Ontario Conservation Authorities: Myth and Reality* (Waterloo, Ont: University of Waterloo, Department of Geography, 1992) at 45–51, 64–66.

⁸⁴ For a discussion of the impacts of post-war automobile traffic on camping and recreational activity, see W Robert Wightman & Nancy M Wightman, *The Land Between: Northwestern Ontario Resource Development, 1800 to the 1990s* (Toronto: University of Toronto Press, 1997) at 350–352.

⁸⁵ P Boyer, *A Passion for Justice: The Legacy of James Chalmers McRuer* (Toronto: Osgoode Society for Legal History, 1994) at 228–235.

⁸⁶ Jamie Benidickson, “KVP: Riparian Resurrection in 20th Century Ontario” in Eric Tucker, James Muir & Bruce Ziff, eds, *Property on Trial: Canadian Cases in Context* (Toronto: Osgoode Society for Canadian Legal History, 2012) 71 at 74–76.

⁸⁷ *Ibid.* See also *McKie v KVP Co Ltd*, [1948] 3 DLR 201, [1948] OR 398; *KVP Co Ltd v McKie*, [1949] SCR 698, [1949] 4 DLR 497; *KVP Company Ltd Act*, SO 1950, c 33, s 1.

⁸⁸ See Canada, *Royal Commission on Canada's Economic Prospects, Final Report* (Ottawa: Queen's Printer, 1957) at 292, 297, 598–509.

example—utilized that infrastructure and furthered the transfer to the environment of domestic residuals, including phosphate-based detergents. These costs had not been anticipated.⁸⁹

Consumption of phosphorus-based detergents grew rapidly following their introduction in the late 1940s. Passing through most treatment facilities and flowing without impediment through the sewerage conduits of any community still lacking a treatment plant, phosphorus wastes stimulated excessive algal growth. They thus undermined the quality of the aquatic environment, particularly in vulnerable waters such as shallow Lake Erie where daily loads—principally from municipal discharges—reached 137,000 pounds per day.⁹⁰

The condition of Lake Erie and other boundary waters prompted Canada and the United States to seek IJC advice in 1946 and again in 1948, leading to a comprehensive report on boundary waters pollution in 1950. The document, including recommended “Objectives for Boundary Waters Quality Control,” contributed only modestly, however, to immediate reforms.⁹¹ A valiant effort by Toronto MP Rodney Adamson to protect navigable waters in the aftermath of devastating oil pollution of Lake Ontario during the summer of 1949 was no more successful than Napoleon Belcourt’s earlier foray into water quality. Fellow parliamentarians criticized this otherwise commendable idea for its poor execution, although a few were sufficiently candid to acknowledge the concern that lakeshore communities would no longer be able to dump sewage if the legislation were to be enacted.⁹² To this day, the problem of excess nutrients persists.⁹³

1.10. 1950S: ADMINISTRATIVE WATER GOVERNANCE MID-CENTURY

Provincial agencies with responsibility for pollution control were generally in place across the country by the 1950s, with a number of their forebears pre-dating this era. Such bodies were customarily constituted in conjunction with health departments, although organizations specifically dedicated to water quality or management were beginning to appear. Notable examples included British Columbia’s Pollution Control Board and the Ontario Water Resources Commission.⁹⁴ Recognizing that “pollution of the water of rivers and lakes is a serious danger to public health,” Quebec’s Legislative Assembly established a committee to investigate the problem in 1955.⁹⁵

⁸⁹ Arnold W Reitze Jr, *Environmental Law*, 2nd ed, vol 1 (Washington, DC: North American International, 1972) at four-25–four-27.

⁹⁰ *Ibid* at four-25–26. See also A Davidsohn & BM Mildwidsky, *Synthetic Detergents*, 7th ed (London: Longman Higher Education, 1987) at 4–5.

⁹¹ See LM Bloomfield & GF Fitzgerald, *Boundary Water Problems of Canada and the United States* (Toronto: Carswell, 1958) at 172.

⁹² See “Anti-Pollution Bill Defeated in Commons”, *The Globe and Mail* (7 October 1949).

⁹³ See David W Schindler & John R Vallentyne, *The Algal Bowl: Overfertilization of the World’s Freshwaters and Estuaries* (Edmonton: The University of Alberta Press, 2008).

⁹⁴ See JR Menzies, “Water Pollution in Canada by Drainage Basins” in *Resources for Tomorrow: Conference Background Papers*, vol 1 (Ottawa: Queen’s Printer, 1961) 358; *Pollution of Waters (Prevention) Act*, RSS 1965, c 352; *Public Health Act*, RSA 1955, c 255; *Pollution Control Act*, SBC 1956, c 36; *Pollution of Waters Prevention Act*, RSM 1954, c 201.

⁹⁵ *Water Pollution Act*, SQ, 1955–56, c 11, preamble, ss 1–4.

Saskatchewan Premier and public health care pioneer T.C. Douglas urged Prime Minister St. Laurent to take preventive action against water pollution in the aftermath of a prolonged pollution incident affecting his province.⁹⁶ “Had the Criminal Code made adequate provisions for the prevention of the pollution of streams by the careless disposal of waste chemicals it is entirely unlikely that the present pollution of the North Saskatchewan River would have occurred.”⁹⁷ Alternatively, Douglas observed, had there been “an agency ... with authority to prevent any industrial plant from putting any effluent into a river, it is again unlikely that this pollution would have ... continued over such a period of time.”⁹⁸ Despite these entreaties, a federal preference for infrastructure spending,⁹⁹ and an enduring federal disinclination to address the matter comprehensively, have left the provinces largely responsible for safeguarding water quality.¹⁰⁰

Government officials must be accorded considerable credit for pursuing mid-century water protection initiatives, though it is also important to note that forerunners of Canada’s environmental public interest groups were already active in the 1950s. The Conservation Council of Ontario, for example, intervened in the 1955 election to exhort candidates to address water pollution as “a concern of extreme urgency.”¹⁰¹ However, the cautionary interventions of pioneering public interest organizations were of limited effect alongside accelerating expenditure on major water-related infrastructure whether under private auspices such as Alcan’s diversion of the Netchako River in British Columbia, or in connection with public works such as the St. Lawrence Seaway,¹⁰² or water and sewerage development to meet the needs of an expanding population.¹⁰³ A new source of massive water demand—nuclear power—was also now under development. It promptly resulted in disaster, namely, the December 1952 accident at Chalk River, Ontario. There, contaminated water was pumped from the damaged experimental nuclear reactor for disposal in nearby trenches.¹⁰⁴

⁹⁶ Letter from TC Douglas, Saskatchewan Premier, to LS St Laurent, Prime Minister of Canada (27 April 1954), Ad Hoc Interdepartmental Committee on Water Pollution in the Prairie Provinces, Library and Archives Canada (RG12, vol 2986, file 8352-9, Part 1).

⁹⁷ *Ibid.*

⁹⁸ *Ibid.*

⁹⁹ L Booth and F Quinn, “Twenty-five years of the Canada Water Act” (1995) 20:2 *Can Water Resources J* 73 at 69, 71; see also *Canada Water Conservation Assistance Act*, SC 1953, c 21.

¹⁰⁰ See Kathryn Harrison, *Passing the Buck: Federalism and Canadian Environmental Policy* (Vancouver: UBC Press, 1996) at 4.

¹⁰¹ Letter from FH Kortright, President of the Conservation Council of Ontario, to “Mr. Candidate” (27 May 1955) in Ontario Archives, Pollution Control Board Minutes, 1951–55, RG84-12-0-146 RC Box E 196.

¹⁰² See Maxwell Cohen & Gilbert Nadeau, “The Legal Framework of the St. Lawrence Seaway” [1959] *University Illinois L Forum* 29 at 34, 46; Daniel Macfarlane, “Rapid Changes: Canada and the St. Lawrence Seaway and Power Project” (2011) Munk School of Global Studies, Program on Water Issues Working Paper at 6; see also Macfarlane, *Negotiating a River*, *supra* note 81.

¹⁰³ See Jennifer Read, “Managing water quality in the Great Lakes basin: Ontario border municipalities, Queen’s Park, and Ottawa confront sewage pollution control, 1951–60” in L Chambers and EA Montigny, eds, *Ontario Since Confederation: A Reader* (Toronto: University of Toronto Press, 2000) 339 at 354.

¹⁰⁴ “December 1952: Major nuclear accident at Chalk River”, *The Globe and Mail* (13 December 2007).

I. I. I. 1960S: WATER RESOURCES AND THE EXPORT DEBATE

Environmental awareness and citizen efforts to stimulate laggard governments into action are frequently associated with the 1962 publication of Rachel Carson's *Silent Spring*, whose Canadian content included an account of DDT poisoning of Mirimachi River salmon in the previous decade.¹⁰⁵ Popular interest associated with the book may well have heartened government officials who were already labouring on the environmental file. In this regard, remarks of the Hon. Walter Dinsdale, Minister of Northern Affairs and National Resources in the Conservative government of John Diefenbaker, are noteworthy.

In 1961 Dinsdale greeted delegates to the Federal-Provincial Resources for Tomorrow Conference with the observation that they had convened "to seriously discuss the wise management of renewable resources; not with a view to immediate personal gain, but rather in the interest of generations yet unborn."¹⁰⁶ Dinsdale subjected resources management, water including, to scrutiny from the perspective that would later be named inter-generational equity.¹⁰⁷ He also welcomed the public discussion stimulated by the conference as "an encouraging development in the Canadian body politic" on the grounds that "conservation is a moral issue."¹⁰⁸ More or less simultaneously, however, when the Columbia River Treaty was signed and ratified to control flood damage and produce hydropower in the United States on the basis of storage reservoirs in Canada,¹⁰⁹ the agreement failed to respect fishing and other environmental considerations, including aboriginal concerns, with the result that these matters return intermittently to the negotiating agenda.¹¹⁰

Proposals to divert water flows on a continental scale were actively promoted during the 1960s in such forms as NAWAPA (North American Water and Power Alliance) and the GRAND Canal (Great Recycling and Northern Development) scheme.¹¹¹ Utah Senator

¹⁰⁵ Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962) at 129–131.

¹⁰⁶ Walter Dinsdale, "Historical Perspectives and Expectations of the Conference" in *Resources for Tomorrow: Proceedings of the Conference*, vol 3 (Ottawa: Queen's Printer, 1961) at 5.

¹⁰⁷ See Edith Brown-Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Tokyo & Dobbs Ferry, NY: United Nations University & Transnational Publishers, 1989).

¹⁰⁸ Dinsdale, *supra* note 106.

¹⁰⁹ See John V Krutilla, *The Columbia River Treaty: The Economics of an International River Basin Development* (Baltimore: Johns Hopkins Press, 1967).

¹¹⁰ See John M Volkman and Willis E McConnaha, "Through a Glass Darkly: Columbia River Salmon, the Endangered Species Act, and Adaptive Management" (1993) 23:4 *Envtl L* 1249; Neil A Swainson, "The Columbia River Treaty: Where do we go from here?" (1986) 26:2 *Natural Resources J* 243; Nigel Bankes, "The Flood Control Regime of the Columbia River Treaty: Before and After 2024" (2012) 2:1 *Washington J Environmental L & Policy* 1; and Eileen Delehanty Pearkes, *A River Captured: The Columbia River Treaty and Catastrophic Change* (Rocky Mountain Books, 2016).

¹¹¹ See Anthony Scott, John A, J Olynyk & Steven Renzetti, "The Design of Water Export Policy" in Commission on the Economic Union and Development Prospects for Canada, *Canada's Resource Industries*, vol 14 by John Whalley, ed, (Toronto: University of Toronto Press, 1986) at 184–185, 187–188; John K Grant, "Against the Flow: Institutions and Canada's Water-Export Debate" in Sproule-Jones, Johns & Heinmiller, *supra* note 3 at 158–162; Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Penguin Books, 1993) at 486–495; Richard C Bocking, *Canada's Water: For Sale?* (Toronto: James Lewis & Samuel, 1972).

Frank Moss celebrated the NAWAPA proposal as “a continent-wide plan for the collection, redistribution, and efficient utilization of waters now running off to the seas totally unused or only partially used.”¹¹² For its part, the GRAND Canal plan called for the conversion of James Bay into a freshwater lake to supply water that would be pumped and channeled southward to reach Lake Huron via the French River. In addition to regulating Great Lakes water levels, this scheme was promoted as allowing for increased water withdrawals by Canada and the United States.¹¹³ Water transfer to the United States would be facilitated by the existing Chicago Diversion or other possible canal arrangements.¹¹⁴

There was some political sympathy at the time for these remarkable engineering proposals which are intermittently revived as “zombie water projects.”¹¹⁵ Indeed, the then-Minister of Northern Affairs and National Resources argued in 1964 that “we in Canada, as I say, are especially fortunate in our water resources; our job now is to redirect these resources before they reach the ocean.”¹¹⁶ While the Leader of the Opposition agreed that, “these rivers that flow into the Hudson Bay ... will have to be reversed and their waters brought into those portions of our country which need them.”¹¹⁷

Critical response to diversion proposals was soon evident. General A.G.L. McNaughton denounced NAWAPA as “a monstrous concept, a diabolic thesis.”¹¹⁸ McNaughton presented an important corollary to the model of resource use that portrayed an abundant water supply as the eternal blessing of providence: “It is our responsibility to use these resources with discretion, and to treasure the more basic of them for the generations of Canadian citizens who will come after us is a paramount responsibility.”¹¹⁹

The critical voice of a youthful John N. Turner emerged in the same era. Turner, then Parliamentary Secretary to the Minister of Northern Affairs and National Resources, addressed a Washington audience on his assigned topic, “North American water resources development.”¹²⁰ Cautioning that the concept of North American water was deceptive, he observed that it “sounds suspiciously like the suggestion that the waters of North America should be considered as a ‘continental water supply.’”¹²¹ Canadians, he insisted, say “there is

¹¹² Frank Moss, “Toward a North American Water Policy” in Claude E Dolman, ed, *Water Resources of Canada* (Toronto: University of Toronto Press, 1967) at 4–7.

¹¹³ Anthony Scott, John Olynyk & Steven Renzetti, “The Design of Water Export Policy” in John Whalley, ed, *Canada’s Resource Industries and Water Export Policy* (Toronto: University of Toronto Press, 1986) 161 at 187.

¹¹⁴ *Ibid.*

¹¹⁵ See Peter H Gleick, Matthew Heberger & Kristina Donnelly, “Zombie Water Projects” in Peter H Gleick, ed, *The World’s Water*, vol 8 (Washington, DC: Island Press, 2014) 123.

¹¹⁶ *House of Commons Debates*, 26th Parl, 2nd Sess, Vol 3 (5 May 1964) at 2932 (Hon Arthur Laing).

¹¹⁷ *Ibid* at 2937.

¹¹⁸ AGL McNaughton, “A Monstrous Concept, a Diabolic Thesis” in Dolman, *supra* note 112 at 16.

¹¹⁹ *Ibid* at 16.

¹²⁰ John N Turner, “A Canadian’s View of North American Water Resources Development” (Notes for a speech to the National Water Conference, Washington DC, 9 December 1965), Department of Northern Affairs and National Resources, Information Service Division.

¹²¹ *Ibid* at 1.

Canadian water, and there is American water ... but we do not like the new vocabulary which calls our water 'continental water.'"¹²²

Turner then directly confronted the conventional rationale for water diversion associated with shortages in the American West and Southwest.

Given extraordinary quantities of water utilized for irrigation in the American Southwest, Turner questioned the demand side by asking whether there was "a shortage of water - or an excess of consumptive use." Leaving the demand-side question for his American audience to resolve, he speculated that "much irrigation water is ineffectively used," and urged careful consideration of the advantages of greater efficiency in irrigation use "in releasing water for household, commercial, or industrial purposes."¹²³ It took some time, however, for the importance of managing water demand through efficiencies to gain more widespread recognition.¹²⁴

A few years after the NAWAPA controversy, Canada's Science Council did little to discourage the possibility of alleviating limitations in American water supply by means of transfers when it stated that Canada "may contain one third" of the world supply of fresh surface water. The council highlighted the "lavish" per capita supply, and pointed to conditions of "superabundance in many parts" of the country.¹²⁵ On the other hand, the Science Council more appropriately underlined the need for research—"detailed estimates on future supply and demand"—as one foundation for decision-making about the export of fresh water from Canada.¹²⁶

Against the dramatic backdrop of the Canada-US water export debate, internal Canadian negotiations secured agreement on inter-provincial entitlements across the prairie provinces. The 1969 Master Agreement on Apportionment governing the allocation of flows between Alberta and Saskatchewan and between Saskatchewan and Manitoba elaborated and confirmed arrangements: two decades earlier the Prairie Provinces Water Board had been established with federal participation as a successor to an organization consisting exclusively of provincial government representatives with a mandate largely restricted to record-keeping.¹²⁷ Later described as "the most significant interjurisdictional water management arrangement in Canada,"¹²⁸ the 1969 Master Agreement and the Prairie Provinces Water Board, like many of the initiatives reviewed here, plays a continuing role.

¹²² *Ibid.*

¹²³ *Ibid* at 3.

¹²⁴ See Part III below.

¹²⁵ Canada, Science Council of Canada, *Report No. 3: A Major Program of Water Resources Research in Canada* (Ottawa: Queen's Printer, 1968) at 5.

¹²⁶ *Ibid* at 6.

¹²⁷ See Inger Weibust, "Playing a Zero Sum Game: Sharing Water Between Jurisdictions in Federations" in I Weibust and J Meadowcroft, eds, *Multilevel Environmental Governance* (Northampton, MA: Edward Elgar, 2014) 80 at 97–99.

¹²⁸ See Canada, Committee of Inquiry on Federal Water Policy, *Currents of Change: Final Report*, by Peter H Pearse, Francois-Xavier Bertrand & JW MacLaren (Ottawa: Environment Canada, 1985) at 164 [Pearse].

I.12. 1970S: NATIONAL WATERSHEDS

As the 1960s ended, the *Canada Water Act* (CWA) was under development.¹²⁹ This controversial legislation asserted significant federal authority over water quality and management, but never met the aspirations of its proponents. Its influence, for example, on the continuing challenge of broadening the perspective of decision-makers to the basin or watershed level remained limited. CWA funding arguably facilitated a transition toward new objectives, including sustaining the functions of freshwater environments.¹³⁰ Nevertheless, federal financing flowed disproportionately to conventional water power and infrastructure projects, encouraging the unsympathetic observation that “an inclement institutional environment” tended to curtail promising and innovative measures.¹³¹

The CWA also addressed “any aspect of water resource management that relates to restoring, maintaining or improving the quality of water” in parts of the country where water quality management had become (in constitutional terms) “a matter of urgent national concern.”¹³² The federal government, in conjunction with a province or provinces—or on a unilateral basis in the case of interjurisdictional waters where reasonable efforts had failed to secure agreement—might create agencies with specific responsibility to plan for the restoration, preservation, and enhancement of environmental water quality.¹³³ Recommendations would address water quality standards, waste treatment and discharges, sampling, aspects of a comprehensive plan, even including the novel possibility of effluent fees.¹³⁴

To their advocates, discharge fees represented economic incentives for polluters to identify beneficial alternatives to existing production arrangements. Yet detractors viewed “pay-as-you-go pollution” as an endorsement of environmental contamination.¹³⁵ In the end, the theoretical promise of the CWA’s effluent fee proposal remained dormant.

Coincident with the CWA, changes to historic federal fisheries legislation enhanced its utility as a mechanism for environmental protection. Eschewing the theoretical allure of certain CWA provisions, fisheries officials adopted a less overarching approach to water quality, one also designed—so they must have hoped—to avoid or reduce inter-governmental complications.¹³⁶ Jack Davis, the pragmatic federal minister of fisheries who oversaw the 1970 amendments, viewed fish as a “first line of defence” against water pollution. “Anything that harms fish,” he asserted, “may be harmful to man himself,” thus, “a healthy environment and a healthy fishery” represented our “best insurance policy” against water pollution.¹³⁷

¹²⁹ *Canada Water Act*, SC 1970, c 52.

¹³⁰ See Booth & Quinn, *supra* note 99.

¹³¹ Melville McMillan, “Perspectives on the Restructuring of Environmental Decision-Making Institutions: The Case of the Canada Water Act” (1979) 4:1 *Can Water Resources J* 60 at 65.

¹³² *Canada Water Act*, *supra* note 129, s 13(1).

¹³³ *Ibid*, ss 9, 11.

¹³⁴ *Ibid*, ss 9, 13(1), 15.

¹³⁵ See “Pay-as-you-go pollution suggestions turned down”, *Ottawa Citizen* (4 November 1969); “Licences to Pollute: Water Act Won’t Work in Ontario”, *The Globe and Mail* (30 January 1970); “Greene defends fees in Canada Water Act as Incentives to Firms”, *The Globe and Mail* (3 February 1970).

¹³⁶ *An Act to amend the Fisheries Act*, SC 1970 c 63, s 3.

¹³⁷ *House of Commons Debates*, 28th Parl, 2nd Sess, vol 6 (20 April 1970) at 6050 (Jack Davis).

Davis campaigned to stop industrial pollution “at the factory fence.”¹³⁸ In contrast to the *CWA*, which espoused assimilation and flexibility, Davis envisaged uniform national standards that would override differences in the assimilative capacity of natural waterways. This approach was specifically intended to avert the risk that some jurisdictions would sacrifice environmental protection for short-term economic advantage.¹³⁹ But subsequent federal governments declined to assert or explore the limits of their environmental powers;¹⁴⁰ nor have courts generally sympathized with expansive constitutional interpretation of federal fisheries authority.¹⁴¹

Neither the *CWA* nor fisheries legislation provided safeguards against the devastating impact of mercury. As the *New York Times* lamented in 1970, the possibility of harmful effects had been largely disregarded on the assumption “that mercury was insoluble and would lie forever quietly and inertly at the bottom of any body of water it reached.”¹⁴²

The tragedies at Islington (White Dog) and Grassy Narrows in Northwestern Ontario that resulted from mercury use in pulp and paper manufacturing undermined the well-being of aboriginal communities and destroyed valuable fisheries.¹⁴³ A decade and a half was required to devise acceptable compensation for those along the English-Wabigoon River system who had been injured by mercury poisoning through the contamination of a food source, the loss of livelihood, or the destruction of established communities.¹⁴⁴ But the lengthy process of identifying water-related environmental services and evaluating their contribution was at last underway.

Even explicit legislative initiatives failed to safeguard the general population from mercury. When mercury contamination forced the suspension of commercial fishing in parts of Manitoba, the province sought an injunction to prohibit further discharges from pulp mills in neighbouring provinces while attempting to recover financial losses.

Manitoba’s claim was grounded on the *Fishermen’s Assistance and Polluter’s Liability Act*, provincial legislation that imposed liability on any person who discharged a contaminant “into waters in the province or into any waters whereby it is carried into waters in the province.”¹⁴⁵ Moreover, the Manitoba Act provided that the discharge was authorized through regulatory approval by declaring that such authorization would only be valid if the regulator also had jurisdiction “at the place where the contaminant caused damage to the fishery.”¹⁴⁶

¹³⁸ *Ibid.*

¹³⁹ *Ibid* at 6052–6053.

¹⁴⁰ See Harrison, *supra* note 100 at 4.

¹⁴¹ See *R v Fowler*, [1980] 2 SCR 213, 113 DLR (3d) 513; *R v Northwest Falling*, [1980] 2 SCR 292, 113 DLR (3d) 1; *R v Macmillan-Bloedel (Alberni) Limited*, [1979] 4 WWR 654; 12 BCLR 29.

¹⁴² “Poisoned Water”, *The New York Times* (25 July 1970).

¹⁴³ See Anastasia M Shkilnyk, *A Poison Stronger Than Love: The Destruction of an Ojibwa Community* (New Haven: Yale University Press, 1985).

¹⁴⁴ Mario D Faieta et al, *Environmental Harm: Civil Actions and Compensation* (Toronto and Vancouver: Butterworths, 1996) at 465–466; see also Robert J. Sharpe, *Islington and Grassy Narrows Bands Pre-Litigation Study: Final Report*, (Toronto: July 1984).

¹⁴⁵ *Fishermen’s Assistance and Polluter’s Liability Act*, CCSM 1988, c F100, s 4(1).

¹⁴⁶ *Ibid*, s 4(2).

In striking down the Manitoba statute, three Supreme Court of Canada judges insisted that Manitoba's legislative authority was territorially-limited. Manitoba's statute, accordingly, could not operate so as to undermine the effect of legislation passed in neighbouring jurisdictions, even in an obvious attempt to safeguard the interests of its own residents, and even in the context of a "truly interprovincial" pollution problem.¹⁴⁷ A judicial preference for clean jurisdictional boundary lines over politically-inconvenient watersheds was firmly in evidence.

With characteristic clarity, Chief Justice Laskin dissented. He asserted that, "a province having rights to property therein is entitled to protect those rights against injury ... by bringing or authorizing actions for damages, either at common law or under statutory provision."¹⁴⁸ In Laskin's view, Manitoba law applied to the polluting companies in neighbouring provinces because their operations "caused damage to a fishery in Manitoba by discharging a contaminant into waters flowing into Manitoba."¹⁴⁹ Although local licenses authorized the discharges, these permits could not "entitle each of them with impunity to send their pollutants into the waters of another province," in effect creating "an extra-territorial privilege."¹⁵⁰

The impact of phosphates on Great Lakes water quality was among the factors underlying the IJC Water Quality Reference leading to the Great Lakes Water Quality Agreement of 1972 between Canada and the United States.¹⁵¹ The concept of eutrophication—a process whereby nutrient enrichment stimulates excessive growth of aquatic plant life—entered the public domain as algal blooms in Lake Erie, in particular, came under renewed scrutiny. Here, 137,000 lbs. of phosphorus were added daily, some 72 percent of which came from municipal wastes, two thirds of that amount attributable to detergents.¹⁵²

In protests against James Bay hydro-electric power development, Quebec's Cree communities emphasized aboriginal interests in resource use and environment as the basis for injunctive relief. A decision by Justice Albert Malouf in 1973 to award an injunction against a massive river diversion and power development proposal in northern Quebec (although later reversed) severely constrained the immediate ambitions of Hydro-Quebec and Premier Robert Bourassa.¹⁵³ Following that landmark judgment, hydro-electric power development became

¹⁴⁷ See *Interprovincial Cooperatives et al v R*, [1976] 1 SCR 477 at 514, 525, 53 DLR (3d) 321 [*Interprovincial Cooperatives*]. Justice Ritchie, on the basis of conflict of laws principles, reached a conclusion that supported the defendant industries.

¹⁴⁸ *Ibid* at 495.

¹⁴⁹ *Ibid* at 498.

¹⁵⁰ *Ibid* at 499; see also Michael Terry Hertz, "Interprovincial, the Constitution, and the Conflict of Laws" (1976) 26:1 UTLJ 84.

¹⁵¹ See International Joint Commission, *Pollution of Lake Erie, Lake Ontario and the International section of the St. Lawrence River* (1970); United States and Canada, *Great Lakes Water Quality Agreement* (15 April, 1972) Can TS 1972 No 12, 11 ILM 694.

¹⁵² Reitze, *supra* note 89 at 4–26.

¹⁵³ *Gros-Louis c Société de développement de la Baie James*, [1974] RP 38 (CS); see also *Société de Développement de la Baie James v Kanatewat*, [1975] CA 169, leave to appeal to SCC refused, [1975] SCR 48; for description and commentary, see Roy MacGregor, *Chief: The Fearless Vision of Billy Diamond* (Markham, Ont: Penguin Books, 1990) chs 7–9; Boyce Richardson, *Strangers Devour the Land* (Toronto: Macmillan, 1975); Hans M. Carlson, *Home is the Hunter: The James Bay Cree and their Land* (Vancouver: UBC Press, 2008).

increasingly subject to questions on social, environmental, and aboriginal rights grounds, even if the momentum behind very significant projects persisted elsewhere.¹⁵⁴

I.13. 1980S: MAKING WATER POLICY

Prescient, despite its imperceptible impact, a *Globe and Mail* editorial anticipated “jolting news” on the water front: “by being almost criminally negligent about looking after our fresh water, we are headed for long-range, deep trouble.”¹⁵⁵ Domestically, this insight coincided with an important initiative by the Senate of Canada on soil and water conservation,¹⁵⁶ and the commencement of a wide-ranging Federal Water Inquiry into the use and protection of water resources.¹⁵⁷ At the international level, similar considerations were implicated as the World Commission on Environment and Development (WCED) analyzed the challenge of integrating environmental protection alongside economic development and thereby promoted awareness of sustainability.¹⁵⁸

For its part, the federal inquiry, completed in 1985, foreshadowed a statement on Federal Water Policy.¹⁵⁹ Twenty-five specific policy recommendations were formulated in conjunction with five strategic directions: water pricing, science leadership, integrated planning, public awareness, and legislation. In proposing to “renew, consolidate or otherwise strengthen the application of existing federal legislation,” the legislative strategy affirmed “a clear need to modernize the legislative base to make it more anticipatory and comprehensive and, to protect the health and safety of Canadians and the many values of water and related resources.”¹⁶⁰ Among the primary legislative challenges were inter-jurisdictional issues relating to water level and flow regulation, life-cycle management of toxic substances, water quality standards and guidelines to protect human and ecosystem health, and appropriate enforcement and compliance measures.¹⁶¹

The introduction of sustainable development to Canada’s national agenda following publication of the WCED’s Brundtland Report was immediately signaled in legislation,¹⁶² and in water policy, most explicitly perhaps in the Science Council of Canada report *Water 2020: Sustainable Use for Water in the 21st Century*, a document that signaled the end of the era of “superabundance.”¹⁶³

¹⁵⁴ See e.g. Karl Froschauer, *White Gold: Hydroelectric Power in Canada* (Vancouver: UBC Press, 1999) at 174.

¹⁵⁵ “Gift Going to Waste”, *The Globe and Mail* (30 January 1984).

¹⁵⁶ Senate of Canada, Standing Committee on Agriculture, Fisheries and Forestry, *Soil at Risk: Canada’s Eroding Future* (1984) (Chair: Senator H.O. Sparrow).

¹⁵⁷ See Pearse, *supra* note 128.

¹⁵⁸ *Our Common Future*, GA Res 42/187 UNGAOR 42nd Sess, Supp No 49 (1988).

¹⁵⁹ Environment Canada, “Federal Water Policy” (Ottawa: Environment Canada, 1987).

¹⁶⁰ *Ibid* at 8.

¹⁶¹ *Ibid*.

¹⁶² For a comprehensive statutory inventory on sustainability in Canada, see Natasha Affolder, “The Legal Concept of Sustainability” (Symposium Presentation, University of Calgary, March 2012), Appendix 1, online: <www.cirl.ca/files/cirl/natasha_affolder-en.pdf>.

¹⁶³ See Science Council of Canada, “*Water 2020: Sustainable Use for Water in the 21st Century*” (Ottawa: Science Council of Canada, 1988); see also Bruce Mitchell & Dan Shrubsole, *Canadian Water*

After the Brundtland Report and the 1992 Rio conference on environment and development, several Canadian legislatures aligned themselves—at least rhetorically—with the sustainable development principle. Neither the full implications, nor the applicability of sustainability to water management would have been well understood. In the years to come, however, sustainability—however difficult to define—assumed a more definite place in the framework for water governance.¹⁶⁴ Integrated water resources management (IWRM) emerged alongside sustainability. While drawing upon some earlier conceptualization, IWRM derived a significant impetus from the “Dublin Statement on Water and Sustainable Development,”¹⁶⁵ with a widely-recognized formulation: “a process which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”¹⁶⁶

As Alberta’s longstanding plans for irrigation development along the Oldman River approached fruition, historic dimensions of water law figured prominently in constitutional analysis of the scope and applicability of federal arrangements for environmental assessment.¹⁶⁷ Supreme Court Justice La Forest reviewed the evolution of the historic *Navigable Waters Protection Act*.¹⁶⁸ He linked its origins to early controversies over the constitutionality of provincially-authorized interference with the public right of navigation, but pointedly noted the environmental character of disputes over sawmill and lumber wastes: “some provisions of the *Navigable Waters Protection Act* are aimed directly at biophysical environmental concerns that affect navigation.”¹⁶⁹ La Forest’s argument was that the *NWPA*, as a consequence of the common law context in which it was enacted, “has a more expansive environmental dimension.”¹⁷⁰

At least one issue, acid rain—with its devastating impact on forest lands and water quality—was sufficiently alarming, documented and wide-ranging in its implications to compel remedial action. Through a series of international and federal-provincial agreements, successful measures were implemented to reduce damaging emissions of sulphur dioxide and nitrogen oxides dramatically in order to promote recovery.¹⁷¹

Management: Visions for Sustainability (Cambridge: Canadian Water Resources Association, 1994).

¹⁶⁴ See Part II below.

¹⁶⁵ UN, *The Dublin Statement on Water and Sustainable Development* (Ireland: International Conference on Water and the Environment, January 31 1992) online: <www.un-documents.net/h2o-dub.htm>.

¹⁶⁶ Global Water Partnership, “What is IWRM?” (2013), online: <www.gwp.org/en/ToolBox/ABOUT/IWRM-Plans/>.

¹⁶⁷ See Jack Glenn, *Once Upon an Oldman: Special Interest Politics and the Oldman River Dam* (Vancouver: UBC Press, 1999) at 61–69.

¹⁶⁸ *Oldman River Society*, *supra* note 23 at 56–59.

¹⁶⁹ *Ibid* at 66.

¹⁷⁰ *Ibid* at 67.

¹⁷¹ See G Bruce Doern & Thomas Conway, *The Greening of Canada: Federal Institutions and Decisions* (Toronto: University of Toronto Press, 1994) at 158–163; see e.g. *Agreement between the Government of the United States of America and the Government of Canada on Air Quality*, 13 March 1991, 30 ILM 678.

I.14. 1990S: WATER TRADERS

Free trade negotiations, initially conducted on a bilateral basis between Canada and the US, and then involving Mexico at the North American level, led to renewed Canadian anxiety over bulk water exports. Concern was heightened later in the decade by a series of controversial incidents: Ontario actually issued a permit authorizing the removal of Lake Superior water for export, while Quebec and Newfoundland ruminated more or less enthusiastically about offshore sales prospects.¹⁷² British Columbia's hesitant and uncertain approach to exports also provoked a potentially costly trade dispute with Sun Belt Water of Santa Barbara, California.¹⁷³

In a singularly dismissive intervention, the *Globe and Mail* scoffed at public apprehension, declaring "the fuss" over water exports to be "truly strange."¹⁷⁴ Editorialists glibly observed that "Canada has lots and lots of water." If other places wanted to buy some, "[w]hy shouldn't they?" For water which "falls from the sky" constitutes "the ultimate renewable resource." To alleviate domestic fears, the editorial emphasized that "exporting some of the water from our brimming lakes and rushing rivers will not cause anyone in Canada to go thirsty. If, for some unimaginable reason, it does, there is a simple solution: Turn off the tap."¹⁷⁵ Turning off the tap had appeared more problematic to earlier generations when hydro-electricity exports were under consideration, while, unimaginably, water shortages in Ontario—though unrelated to exports—triggered the formulation of a provincial low-water response plan later the same year.¹⁷⁶

In examining these matters, the International Joint Commission called attention to the importance of ecosystem integrity in the Great Lakes basin and underscored the linkages between surface and groundwater management on the policy agenda.¹⁷⁷ Appreciation of groundwater supplies remains uncertain, although initiatives to understand and assess Canadian

¹⁷² For commentary on the Nova Group permit, see Kathleen Cooper & Sarah Miller, "Selling our Water" (1998) 23:2 *Intervenor* 1475; see also *Gisborne Lake Water Export Undertaking Order*, Nfld Reg 97/99; and Renata D'Aliesio, "Plans to export water, though unpopular, keep springing up", *The Globe and Mail* (30 March 2011).

¹⁷³ Canada, Department of Foreign Affairs and International Trade, International Trade Policy Division, "In the Matter of the North American Free Trade Agreement: Chapter Eleven: Notice of Intent to Submit a Claim to Arbitration" (Ottawa: DFAIT, 1998), online: <www.international.gc.ca/trade-agreements-accords-commerciaux/assets/pdfs/disp-diff/sunbelt-01.pdf>; *Snowcap Waters Ltd v British Columbia* (1997), 34 BCLR (3d) 139, 70 ACWS (3d) 139.

¹⁷⁴ "Weirdness about water", *Globe and Mail* (13 February 1999).

¹⁷⁵ *Ibid*; see also Patrick Forest, *A Century of Sharing Water Supplies Between Canadian and American Borderland Communities* (Munk School of Global Affairs, Program on Water Issues, October 2010), online: <powi.ca/wp-content/uploads/2012/12/A-Century-of-Sharing-Water-Supplies-Between-Canadian-and-American-Borderland-Communities-2010.pdf>.

¹⁷⁶ See Ontario, Ministry of Natural Resources and Forestry, "Ontario Low Water Response" (Queens Printer for Ontario, 2010).

¹⁷⁷ International Joint Commission, *Protection of the Waters of the Great Lakes* (Ottawa & Washington: International Joint Commission, August 2004), online: <www.ijc.org/php/publications/html/finalreport.html>; on the development of ecological integrity in the Great Lakes Context, see Lee Botts & Paul Muldoon, *Evolution of the Great Lakes Water Quality Agreement* (East Lansing: Michigan State University Press, 2005).

groundwater resources have recently been renewed.¹⁷⁸ Recent studies highlight persistent limitations in groundwater regimes relating, for example, to the lack of integration between quality and quantity considerations or continuing disregard for ecosystem and in-stream flow protection.¹⁷⁹

1.15. 2000S: DRINKING WATER SAFETY

Public health and safety—aspects of drinking water supply that were long regarded as essentially resolved—re-emerged dishearteningly in the twenty-first century, with harmful incidents at Walkerton, North Battleford and Kashechewan spawning public inquiries into water treatment failures.¹⁸⁰ For their part, although Canada remains without national drinking water standards, provincial legislators responded with new regulations, technological changes, and investments intended to enhance drinking water safety.¹⁸¹ Drinking water quality guidelines, for example, were re-formulated as enforceable regulations in several jurisdictions.¹⁸² In addition, reporting and accountability regimes were enhanced, while legislators' interest grew in water source protection initiatives with implications for land-use and planning.¹⁸³ Indeed, a comprehensive review of drinking water and environmental challenges preceded Walkerton in the form of Quebec's Rapport Beauchamp and its endorsement of the watershed framework and the ecosystem approach.¹⁸⁴

¹⁷⁸ *Canadian Framework for Collaboration on Groundwater*, Alfonso Rivera et al, (Quebec: National Resources Canada, 2003); Linda Nowlan, *Buried Treasure: Groundwater Permitting and Pricing in Canada* (Toronto: Walter and Duncan Gordon Foundation, 2005).

¹⁷⁹ Council of Canadian Academies, *The Sustainable Management of Groundwater in Canada* (Ottawa: Council of Canadian Academies, 2009) at 99–101, 192–194 [Council of Canadian Academies, *Sustainable Management of Groundwater*]; see also Manitoba, Office of the Auditor General, “The Protection of Well Water Quality in Manitoba” in *Environmental Audits* (Winnipeg: Office of the Auditor General Manitoba, 2005) 75.

¹⁸⁰ Ontario Ministry of the Attorney General, *Part One of the Report of the Walkerton Inquiry: The Events of May 2000 and Related Issues* (Toronto: OMAG, 2002); *Report of the Commission of Inquiry Into Matters Relating to the Safety of the Public Drinking Water in the City of North Battleford, Saskatchewan* (Regina: Commission of Inquiry into Matters Relating to the Safety of the Public Drinking Water in the City of North Battleford, 2002) [Walkerton Report, Part I]; Minister of Indian Affairs and Northern Development, *Report of the Expert Panel on Safe Drinking Water for First Nations*, vol 1 (Ottawa: Minister of Public Works and Government Services Canada, 2006) [*Safe Drinking Water for First Nations*].

¹⁸¹ For discussion of drinking water management in several Canadian jurisdictions, see Mohammed H Dore, *Water Policy in Canada: Problems and Possible Solutions* (New York: Springer, 2015) at 80, 150–151, 185–188, 250–251; Gemma Dunn, Karen Bakker & Leila Harris, “Drinking Water Quality Guidelines across Canadian provinces and territories” (2014) 11:5 Intl J Environmental Research & Public Health 4634.

¹⁸² *Drinking Water Protection Regulation*, BC Reg 200/2003; *Potable Water Regulation*, Alta Reg 277/2003; *Quebec Drinking Water Regulation*, CQLR c Q-2, r 4.1; *Potable Water Regulation*, NB Reg 93-203; *Safe Drinking Water Act*, SO 2002, c 32; and *Ontario Drinking Water Quality Standards*, O Reg 169/03; *Drinking Water Safety Regulation*, Man Reg 40/2007; *Water and Wastewater Facilities and Public Drinking Water Supplies Regulation*, NS Reg 186/2005.

¹⁸³ *Drinking Water Protection Act*, SBC 2001, c 9, Part 4–5; *Clean Water Act*, SO 2006, c 22; *Règlement sur la qualité de l'eau potable*, RLRQ, c Q-2, r 18.1.1.

¹⁸⁴ La Commission sur la Gestion de l'eau au Québec, *L'eau: Ressource à Protéger, à Partager et à Mettre en valeur*, vol 1 (Montréal: Bureau d'audiences publiques sur l'environnement, 2000) online: <www.bape.gouv.qc.ca/sections/archives/eau/rapport.htm>.

Well before the widely-publicized 2005 drinking water failure at Kashechewan, a remote First Nation community on the Albany River in northern Ontario,¹⁸⁵ concerns about the vulnerability of the aboriginal water supply systems were being expressed.¹⁸⁶ Justice O'Connor, in the Walkerton report, commented specifically on First Nations water systems, insisting in a manner that questioned long-established jurisdictional frameworks that “[t]here can be no justification for acquiescing in the application of a lesser public health standard on certain residents of Ontario than that enjoyed by others in the province.”¹⁸⁷ From a national perspective, the Commissioner of the Environment and Sustainable Development reported that “residents of First Nations communities do not benefit from a level of [drinking water] protection comparable to that of people who live off reserves.”¹⁸⁸

This disparity was at least partly attributable to the absence of formal legal and regulatory requirements.¹⁸⁹ Although departmental policies and administrative guidelines did address the provision of safe drinking water in First Nations communities, this approach “does not cover all the elements that would be found in a regulatory regime for drinking water, and it is not implemented consistently.”¹⁹⁰ An expert panel on aboriginal drinking water systems reported on operational shortcomings and financial constraints in a manner that sought to be respectful towards aspirations for self-government.¹⁹¹

In a progress report, the Minister of Indian Affairs and Northern Development reviewed developments pursuant to a 2006 Plan of Action for Drinking Water in First Nations Communities, itself the successor to the First Nations Water Management Strategy of 2003. The number of high risk First Nations water systems had been brought down from 193 to 85; in addition, the list of 21 priority communities (those at high risk and subject to a drinking water advisory), had been reduced to six.¹⁹² Notwithstanding financial allocations including

¹⁸⁵ See Lauren La Rose, “Kashachewan a ‘community in crisis,’ *Toronto Star* (7 February 2007), online: <www.thestar.com/news/2007/02/07/kashechewan_a_community_in_crisis.html>.

¹⁸⁶ Indian and Northern Affairs Canada, *National Assessment of Water and Wastewater Systems in First Nations Communities* (INAC, 2003), online: <www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/watw_1100100016374_eng.pdf>. Health Canada’s Drinking Water Safety Program for Native People was underway at least as early as 1991, see *The Ontario Pilot Project: A First Nations Water Treatment Plant Operators Training Program*, by Siobhan Arnott & Jim Ranson (AFN Environment Unit, June 1996) at 3.

¹⁸⁷ Ontario Ministry of the Attorney General, *Part Two of the Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water* (Toronto: OMAG, 2002) at 487 [*Walkerton Report*, Part II].

¹⁸⁸ Office of the Auditor General of Canada, *Report of the Commissioner of the Environment and Sustainable Development to the House of Commons*, Chapter 5 (Ottawa: Minister of Public Works and Government Services Canada, 2005) at 1 [*CESD Annual Report 2005*]; see also Constance McIntosh, “Testing the Waters: Jurisdiction and Policy Aspects of the Continuing Failure to Remedy Drinking Water Quality on First Nation Reserves” (2008) 39:1 *Ottawa L Rev* 63; David R Boyd, “No Taps, No Toilets: First Nations and the Constitutional Right to Water in Canada” (2011) 57:1 *McGill LJ* 81.

¹⁸⁹ See Indian and Northern Affairs Canada, “Protocol for Safe Drinking Water in First Nations Communities”, September 2010 update (Gatineau: INAC), online: <www.aadnc-aandc.gc.ca/eng/1100100034913/1100100034920>.

¹⁹⁰ *CESD Annual Report 2005*, *supra* note 188 at 2.

¹⁹¹ *Safe Drinking Water for First Nations*, *supra* note 180.

¹⁹² Indian and Northern Affairs Canada, “Plan of Action for Drinking Water in First Nations Communities: Progress Report” (INAC, 2008) at ii, 6, online: <www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/

\$330 million in the 2008 federal budget and \$165 million in the stimulus spending plan of January 2009,¹⁹³ aboriginal drinking water and sanitation systems continue to present significant challenges related to financing, inter-governmental co-ordination, governance, and to the comparatively isolated location of a number of the communities in question.¹⁹⁴

In addition to drinking water concerns on First Nations reserves, more than 1750 boil water advisories were reported in other communities across Canada.¹⁹⁵ The broader drinking water safety issue revived discussion about appropriate roles for the public and private sectors in municipal water supply. In this context, some commentators wondered whether consumer enthusiasm for bottled water would compromise the quality of the public supply; vigorous criticism of bottled water in Canadian churches and on university campuses also reflected linkages to concerns about water access on a global basis, and to persistent pressure for some form of recognition of a human right to water.¹⁹⁶

Export proposals have been particularly prominent in Quebec, with one line of argument being that “it is our duty, as exceptionally well endowed holders of freshwater resources, to study realistically and openly the various options regarding their development.”¹⁹⁷ A broader

STAGING/texte-text/pad08_1100100034959_eng.pdf> [INAC, “Drinking Water”].

¹⁹³ See Bruce Campion-Smith, “\$1.4B for water systems and to build or repair homes, schools”, *Toronto Star* (28 January 2009), online: <www.thestar.com/article/578389>.

¹⁹⁴ INAC, “Drinking Water”, *supra* note 192; see also *Safe Drinking Water for First Nations*, *supra* note 180; Peter Ross, “Procedure for Addressing Drinking Water Advisories in First Nations Communities South of 60” (Lecture delivered at First Nations Water Symposium, Niagara Falls, 18–19 March 2008); Senate, Standing Senate Committee on Aboriginal Peoples, *Safe Drinking Water for First Nations* (May 2007) (Chair: Hon Gerry St. Germain); Earl Commanda, “First Nations Water Management Strategy Success Stories and Challenges” (Presentation delivered at the First Nations Water Symposium, Niagara Falls, 18–19 March 2008) [unpublished]. Federal legislation in the form of a *Safe Drinking Water for First Nations Act*, SC 2013, c 21 provides for regulations to address drinking water systems, operator training, and source protection, among other matters.

¹⁹⁵ “Investigative Report: 1766 boil water advisories now in place across Canada” (2008) 178:10 CMAJ 1261. The persistent scope of the challenges associated with drinking water quality is suggested by recent studies estimating severe illnesses and even death associated with contaminated municipal supplies and private wells. See HM Murphy et al, “Estimating the burden of acute gastrointestinal illness due to Giardia, Cryptosporidium, Campylobacter, E. coli O157 and norovirus associated with private wells and small water systems in Canada” (2016) 144:7 *Epidemiology & Infection* 1355; HM Murphy et al, “Estimating the number of cases of acute gastrointestinal illness (AGI) associated with Canadian municipal drinking water systems” (2016) 144:7 *Epidemiology & Infection* 1371.

¹⁹⁶ The United Church of Canada voted at the 39th General Council to “discourage the purchase of bottled water starting within its courts and congregations where possible” as stated as part of the Church’s Social Policy Positions. See “Water: Life before Profit”, *United Church of Canada* (1 December 2006), <web.archive.org/web/20160211210041/http://www.united-church.ca/beliefs/policies/2006/w143> [United Church of Canada].

¹⁹⁷ Marcel Boyer, *Freshwater Exports for the Development of Quebec’s Blue Gold* (Montreal: Montreal Economic Institute, 2008) at 26; see also F Pierre Gingras, *Northern Waters: a Realistic, Sustainable and Profitable Plan to Exploit Quebec’s Blue Gold* (Montreal: Montreal Economic Institute, 2009); for a less elaborate proposal in the Manitoba context, see Daniel Klymchuk, “Water Exports: the 1% Solution” (2008) 62 *Frontier Centre for Public Policy Backgrounder* 1.

Canadian approach to exports and the ecological integrity of water basins was formulated by independent experts and eventually appeared in revised bulk water export legislation.¹⁹⁸

I.16. BUILDING ON THE FOUNDATIONS

Major water allocation decisions, together with public health and environmental initiatives, have historically been made on the basis of commitments reflected in legislation, public and private investments, and community expectations. Existing arrangements are both deeply entrenched and broadly grounded, for certain familiar and widespread assumptions about water have been fundamental to social and economic activity ranging through energy production, transportation facilities, municipal supply, recreation, and agriculture. Thus, we may continue to expect important elements of the established legal and institutional framework, as described in Part I, to guide or channel water-related decision-making for some time to come. This is so because “institutional arrangements for water develop and change over time, but earlier decisions and rules set limits on what can happen.”¹⁹⁹

Significant elements of the historic arrangements for water allocation and quality protection remain or are again on the agenda. Recent issues include legislative reform to fisheries and navigable water legislation, the public/private debate, sewer and drinking water systems standards and renewal, and conservation challenges. In addition, major agreements such as the Columbia River Treaty are due for reconsideration. The evolution of water policy heavily conditions the water policy future whether the issue is the infrastructure of water extraction and distribution, allocation and priorities, or environmental degradation and remediation.

Before outlining general directions in contemporary water legislation and policy initiatives in Part III, it will be helpful to assess some of the background assumptions whose evolution provides context for current developments and reform.

2. PART II BACKGROUND ASSUMPTIONS IN TRANSITION

Ideas, principles, values, and attitudes concerning water are—metaphorically—like reservoirs, channels, and pipes that constitute embedded infrastructure and are not readily dislodged or replaced. Arrangements are subject to change, of course, but that change is likely to be incremental in nature rather than sudden, comprehensive and dramatic. Short of catastrophic upheaval in response to some profound and unanticipated disruption, any lasting change in a deeply-rooted and broadly-based intellectual framework will require some re-engineering of underlying assumptions.

¹⁹⁸ “To block exports of water in bulk”, *Globe and Mail* (11 February 2008); “A Model Act to Preserve Canada’s Water” (Seminar at the Library of Parliament, 16 May 2008), online: <powi.ca/wp-content/uploads/2012/12/Library_of_Parliament_Transcript_2008.pdf>; Bill C-26, *An Act to Amend the International Boundary Waters Treaty Act and the International Rivers Improvement Act*, 3rd Sess, 40th Parl, 2010. Subsequent initiatives including private member’s bills include Bill C-267, *An Act respecting the preservation of Canada’s water resources*, 1st Sess, 41st Parl, 2011, and Bill C-383, *An Act to amend the International Boundary Waters Treaty Act and the International River Improvements Act*, 1st Sess, 41st Parl, 2012.

¹⁹⁹ Carolyn Johns & Ken Rasmussen, “Institutions for Water Resource Management in Canada” in Sproule-Jones, Johns & Heinmiller, *supra* note 3 at 63.

Three key assumptions largely underpinned the water use and management decisions described above. Firstly, with limited regional exceptions water was presumed to be in ample supply—according to the Science Council even “superabundant.” Accordingly, as explicitly articulated from time to time water was taken for granted as an essentially free resource to be allocated, utilized, or even degraded at no cost or charge. Management arrangements were designed with a virtually exclusive focus on accommodating human preferences somewhat over-inclusively described as needs. These were also effectively unlimited. Secondly, environmental considerations were subordinated, if not entirely disregarded, in the issuance of approvals for dams, diversions, and discharges. Thirdly, arrangements for governing water were generally developed within established local and domestic frames of reference. Water policy, with certain important exceptions involving IJC deliberations, was largely unencumbered by practical considerations or intellectual influences emanating from beyond national borders.

Within a relatively brief time period, these three underlying assumptions around the availability of clean water, the unquestioned precedence of human uses over environmental considerations, and the largely local and domestic priorities of Canada’s water agenda are being tested, with consequences still to be determined.

2.1. THE AVAILABILITY OF WATER

Casual interventions such as the popular characterization of water as “the ultimate renewable resource” are not unique. Over the past quarter century, widely circulated estimates have suggested that Canada has somewhere between 20 percent and two thirds of the world’s fresh water supply.²⁰⁰ Yet vigorous challenges are now directed against what is termed the “myth of abundance.” One limnologist, for example, attributes a pattern of overestimation to reliance on data regarding the volume of fresh water contained in Canadian lakes, an amount that is approximately 20 percent of the water in all of the world’s lakes. We are cautioned, however, against confusion between that water and the *renewable supply*.

The renewable supply is what falls from the sky and runs off in rivers, often passing through lakes as it moves to the sea. Some goes underground, replenishing aquifers that can be tapped by wells. These flows are renewed every year and count as the *water supply*.²⁰¹

As reported by Statistics Canada, 38 percent of the country’s renewable supply falls in the south where 98 percent of the population resides.²⁰² Taking into account that 60 percent of the renewable supply flows northward and is therefore unavailable to the bulk of the population, and noting the supply of renewable water resources available to other countries, John Sprague suggests that “the number that should spring to the minds of Canadians when they contemplate the country’s water resources” is 2.6 percent of world supply;²⁰³ that is, the supply of water available is not as generous as previously imagined.

²⁰⁰ Dixon Thompson, “Water for Sale? A Look at the Complex Issue of Bulk Water Export” (2006) 9:1 *Horizons* 28 at 29.

²⁰¹ John B Sprague, “Great Wet North? Canada’s Myth of Water Abundance” in Bakker, *supra* note 75 at 23.

²⁰² Statistics Canada, “Human Activity and the Environment: Freshwater Supply and Demand in Canada, 2010”, by Heather Dewar & François Soulard, Catalogue No 16-201-X (Ottawa: Statistics Canada, 2010) at 13.

²⁰³ Sprague, *supra* note 201 at 25.

Notwithstanding aggregate flows at a national level, Canadians have experienced local or regional water shortages. More are anticipated, notably in parts of Western Canada where climate change impacts are expected to lessen the availability of melt-water.²⁰⁴ Fluctuating or declining water levels in the Great Lakes system are also a source of concern with inquiry focussed on “how to manage fluctuating lake levels in the face of uncertainty over future water supplies to the basin while seeking to balance the needs of those interests served by the system.”²⁰⁵ For southern Canada, Statistics Canada has estimated an overall loss of 8.5 percent of the water yield or run-off in the 34 year period from 1971 to 2004.²⁰⁶ Today, therefore, it is more common to acknowledge uncertain availability, particularly on a regional level. Such uncertainty, as suggested by the National Round Table on the Environment and the Economy, signals the virtues of an anticipatory response: “New stresses and demands are likely to pose a significant challenge to the sustainability of Canada’s water resources if action is not taken now.”²⁰⁷ The prospect of shortages is thus in contemplation.

2.2. ENVIRONMENTAL VALUES OF WATER

A second aspect of re-conceptualizing water resources rests on the proposition that these might legitimately be needed for purposes extending beyond immediate human consumptive or productive use, an understanding that was significantly advanced through the Millennium Ecosystem Assessment program.²⁰⁸ Largely (if not entirely) purged from contemporary debate are covetous laments about the “waste” of water that flows uselessly into the oceans. Instead, we observe a far greater willingness to acknowledge the vital contribution of environmental flows—however poorly these may be understood.²⁰⁹ Importantly, this awareness is associated with an understanding that human demands for water may have to be moderated to respect the underlying requirements of sustainable natural systems. Thus, initiatives to safeguard in-stream flows are becoming more common and the vulnerability of groundwater supplies to over-extraction is more widely recognized.

²⁰⁴ DW Schindler & WF Donahue, “An Impending Water Crisis in Canada’s Western Prairie Provinces” (2006) 103:19 *Proceedings National Academy Sciences* 7210; Xing Fang & John W Pomeroy, “Snowmelt runoff sensitivity analysis to drought on the Canadian Prairies” (2007) 21:19 *Hydrological Processes* 2594.

²⁰⁵ International Joint Commission, *Lake Superior Regulation: Addressing Uncertainty in Upper Great Lakes Water Levels* (Ottawa: International Joint Committee, March 2012) 1; see also International Joint Commission, “Advice to Governments on the Recommendations of the International Upper Great Lakes Study” (15 April 2013), online: <www.ijc.org/files/publications/IUGLS-IJC-Report-Feb-12-2013-15-April-20132.pdf>.

²⁰⁶ Statistics Canada, *supra* note 202 at 5.

²⁰⁷ Canada, National Round Table on the Environment and the Economy, *Changing Currents: Water Sustainability and the Future of Canada’s Natural Resource Sectors* (Ottawa: NRTEE, 2010) at ii.

²⁰⁸ See Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Wetlands and Water Synthesis* (World Resources Institute: Washington, D.C., 2005) at 30–38.

²⁰⁹ See Instream Flow Council, online: <www.instreamflowcouncil.org>; Hugo Tremblay, “The Emergence of Environmental Flow Protection in Quebec Law” (2010) 5:3–4 *C de D* 801; Nigel Bankes, “Basin Closing Orders and Crown Reservation as Tools to Protect Instream Flow Requirements” (2012) 23 *J Envtl L & Prac* 17.

At a national level, the contribution of water to the natural environment has also been linked to a re-framing of historic perceptions of abundance that simultaneously responds to international perceptions of Canadian water as discussed in the following section of this paper. A senior water policy specialist, for example, addresses the proposition that the availability of water in Canada is somehow unfair or inequitable: “7 percent of the world’s renewable water supply meets the ecological needs of about the same proportion of the world’s landmass, so from an ecological perspective, we have no water to spare.”²¹⁰ Canada, in other words, receives and uses its fair share. From a sectoral perspective, however, pressure towards water conservation may be increasing, for example, in agriculture.²¹¹

2.3. ACKNOWLEDGING THE INTERNATIONAL CONTEXT

Thirdly, by way of background assumptions, it is significant that international observers express increasing interest in the Canadian water situation and assess the country’s water issues from a different perspective. Viewed from a distance, Canada “houses less than 2 percent of the world’s population but contains 23 per cent of its fresh water, compared to Asia, which is home to 60 per cent of the world’s population and has access to less than 37 per cent of global freshwater supplies.”²¹² Implicitly, this statistical comparison suggests potential unfairness in the global distribution of freshwater. Still more provocatively, a former head of the North American Commission on Environmental Cooperation reportedly remarked: “You know you have 27 percent of the world’s water supply. What makes you think that the world will allow you to keep it all?”²¹³ Such observations underpin speculation that “Canadian water will become a source of global envy.”²¹⁴ As the new century began, deliberations associated with the Stockholm Water Symposium (2001) were expected to involve discussion of arrangements for sharing Canada’s water and the food produced with it on a global basis.²¹⁵ Growing global demand for food is a significant driver of water-intensive agricultural production in Canada.²¹⁶

More generally, manifestations of water awareness at a global level include World Water Day and the water and sanitation objectives of the UN Millennium Development Goals and their post-2015 successors, the Sustainable Development Goals. It is notable that United Nations institutions have identified elements of a “global water agenda” and suggestions

²¹⁰ Ralph Pentland, “The Future of Canada-U.S. Water Relations: The Need for Modernization”, *Policy Options* 30:7 (1 July 2009) 61 at 61, online: <policyoptions.irpp.org/magazines/canadas-water-challenges/the-future-of-canada-us-water-relations-the-need-for-modernization/>.

²¹¹ See Council of Canadian Academies, *Water and Agriculture in Canada: Towards Sustainable Management of Water Resources* (Ottawa: Council of Canadian Academies, 2013) at 11–12 [Council of Canadian Academies, *Water and Agriculture*].

²¹² Carolyn Johns, Mark Sproule-Jones & B Timothy Heinmiller, “Water as a Multiple-Use Resource and Source of Political Conflict” in Sproule-Jones, Johns & Heinmiller, *supra* note 3 at 22–23, citing the UN’s *World Water Development Report, 2003*.

²¹³ Quoted by L Ian MacDonald, “A conversation with Jim Prentice”, *Policy Options* 30:7 (1 July 2009) 7 at 7, online: <policyoptions.irpp.org/magazines/canadas-water-challenges/a-conversation-with-jim-prentice/>.

²¹⁴ Paul Muldoon & Theresa McClenaghan, “A Tangled Web: Reworking Canada’s Water Laws” in Bakker, *supra* note 75 at 257.

²¹⁵ Alanna Mitchell, “Canadian water on tap for future trade talks”, *Globe and Mail* (13 August 2001).

²¹⁶ Council of Canadian Academies, *Water and Agriculture, supra* note 211 at 11–20.

concerning “global water governance” are now in circulation.²¹⁷ It has also been suggested that freshwater resources might usefully be considered “a common concern of humankind.”²¹⁸

On the basis of its international and humanitarian significance, segments of Canadian society embraced possible recognition of a human right to water.²¹⁹ It has even been argued that the endorsement of such a right might serve, instrumentally, to inspire domestic water management reform: “Adopting water as a basic human right ... would offer a unifying theme, which will drive and compel us to organize our thinking and resources in a collaborative manner.”²²⁰ This collaboration would apparently extend to data systems, policy formation, the re-structuring of relevant organizations, and to new forms of governance. Moreover, it is argued that Canadian commitment to a human right to water could even be expected to promote discussion of “the financing of water supply and treatment systems, demand-side management, and watershed planning and management.”²²¹ Whatever one might make of the leverage potential attributed to the human rights paradigm, it provides some indication concerning increasing international influences on Canadian deliberations regarding water.²²²

Commentators and policy makers are also now actively exploring global opportunities to promote water research, technological innovation, and investment related to the possibility that Canada might be conceived of as “a water solutions country.”²²³

To summarize, the overall shift in background assumptions encompasses three elements: (1) acknowledgement that Canada’s available water supplies are not so unlimited as might once have been imagined, (2) understanding that the importance of water to environmental sustainability can no longer be disregarded, and (3) recognition that there may be international interest in the effectiveness of Canadian water stewardship, especially in efforts to promote conservation and drinking water quality. Although it would be premature to suggest that the attitudinal transformation has been complete or comprehensive, the influence of these shifts is becoming apparent in water law and policy. Part III examines a number of key developments

²¹⁷ UN, *Water Security and the Global Water Agenda: a UN Water Analytical Brief* (Hamilton, Ont: United Nations University, 2013); Jamie Linton, *What is Water? The History of a Modern Abstraction* (Vancouver: UBC Press, 2010); see also Heather Cooley et al, “Global Water Governance in the Twenty-First Century” in Peter H Gleick, *supra* note 114 at 1.

²¹⁸ Edith Brown Weiss, “The Coming Water Crisis: A Common Concern of Humankind” (2012) 1:1 *Transnational Environmental L* 153.

²¹⁹ See Maude Barlow & Tony Clarke, *Blue Gold: The Battle Against Corporate Theft of the World’s Water* (London: Earthscan, 2003), ch 10; United Church of Canada, *supra* note 196; *Human Right to Water*, *supra* note 53.

²²⁰ Steve Ashton, “Collaboration on Freshwater Policies for Canada” (2006) 9:1 *Horizons* 12 at 15.

²²¹ *Ibid.* Comparable suggestions that constitutional recognition of environmental rights in Canada might ensure access to safe drinking water for all Canadians are discussed in David R Boyd, *The Right to a Healthy Environment: Revitalizing Canada’s Constitution* (Vancouver: UBC Press, 2012) at 146–147.

²²² For a discussion of potential interaction between IWRM and a human right to water, see Hugo Tremblay, “A Clash of Paradigms in the Water Sector? Tensions and Synergies between Integrated Water Resources Management and the Human Rights-Based Approach to Development” (2011) 51:2 *Nat Resources J* 307.

²²³ See David Crane, *Canada as the Water Solutions Country: Defining the Opportunities* (Waterloo, Ont: Canadian Water Network, 2013); see also *Water Opportunities Act*, SO 2010, c 19, Schedule 1.

that are unfolding at the intersection of historic water management arrangements and the evolution in underlying assumptions.

3. PART III SECURING SAFE AND SUSTAINABLE ABUNDANCE

Recently, prominent water policy specialists have elaborated a concern for water security in a significant report.²²⁴ This has taken on broader significance in the twenty-first century than it did in the Depression era. Researchers have described a “multi-dimensional” concept of water security, which recognizes that “good quality water is needed for social, economic and cultural uses while, at the same time, adequate water is required to sustain and enhance important ecosystem functions.”²²⁵ The report identified seven aspects of the water security agenda: ecosystem protection, economic productivity, equity, the integration of water quantity and water quality considerations, conservation, climate variability and change impacts, and the co-ordination of trans-boundary allocation decisions.²²⁶

This thoughtful analysis ultimately encourages a course of action that might be summarized in the following way: With conscientious regard for the indispensable ecological foundations of the productive livelihoods they seek to encourage in an equitable manner, Canadians must simultaneously be attentive to the availability and quality of water (including drinking water), and bear in mind that water supply is not unlimited, but is subject to climatic impacts and in certain circumstances must be managed in collaboration with neighbouring jurisdictions. This new direction captures significant adjustments in historic assumptions and raises the question of accompanying shifts in policy and law.

Future risk of shortages and threats to water quality are currently addressed through the inter-connected cluster of laws, policies, institutions and practices whose long-term evolution has been reviewed above. These arrangements are subject to continuing adjustment and adaptation, but recognition of the underlying continuity is a reminder that emerging challenges will require carefully considered responses. There are indications, though, that initiatives associated with changing assumptions and the acknowledgement of uncertain risks are having an impact. Current initiatives are oriented generally around three broad themes: sustainability (suggesting new standards for decision-making), conservation (suggesting greater awareness of the value of water), and watersheds (representing a promising institutional re-configuration).

3.1. SUSTAINABILITY

Within Canadian legislation, sustainable development commonly appears as a loosely-defined benchmark. The federal *Auditor General Act* presents it as “a continually evolving concept based on the integration of social, economic and environmental concerns” that might entail health and ecosystem protection, promoting equity including the needs of future generations, pollution prevention, or an integrated approach to planning and natural resource

²²⁴ Rob de Loë, Jeji Varghese & Cecilia Ferreyra, *Water Allocation and Water Security in Canada: Initiating a Policy Dialogue for the 21st Century* (Guelph, Ont: Guelph Water Management Group, University of Guelph, 2007).

²²⁵ *Ibid* at iii.

²²⁶ *Ibid*.

decision-making, among other approaches.²²⁷ More specific attempts have also been made to refine sustainability as it applies to water.

The Canadian Water Sustainability Index (CWSI) was envisaged as a composite profile of water issues that would facilitate long-term comparison between communities.²²⁸ Five key components, each further divided into more measurable indicators, constitute the assessment framework. The five key components address freshwater resources directly: ecosystem health, infrastructure, human health and well-being, and community capacity. More detailed information is assembled for each. In the case of Ecosystem Health, for example, the CWSI reports on Ecosystem Stress, Ambient Water Quality and Native Fish Populations.²²⁹ The CWSI may contribute to policy-making in several respects: fundamentally, it promotes awareness of the overall state of fresh water; secondly, it facilitates standardized comparison between different communities, and thereby helps to identify priorities between and within those communities. More generally, the index encourages progress towards integrated water resources management.²³⁰ Less elaborately, Statistics Canada indicates that “for water use to be sustainable, water withdrawals must not exceed renewal over a given time period, and there must be sufficient water of appropriate quality to satisfy ecological requirements.”²³¹

In 2003, water was identified as a federal sustainable development priority and became the focus of inter-ministerial deliberations endorsing as a vision, “clean, safe, and secure water to meet their needs in ways that also maintain the integrity of ecosystems.”²³² Endorsement of sustainability as a goal or objective raises complex issues concerning how this end will be achieved and performance measured.²³³ As monitoring and assessment tools are introduced, however, new challenges have arisen in connection with the standardization and comparison of indicators.²³⁴ Appropriate human uses and their relationship to background or instream water

²²⁷ *Auditor General Act*, RSC 1985, c A-17, s 21.1.

²²⁸ See generally Anne Morin, “Canadian Water Sustainability Index” (2006) 9:1 *Horizons* 49.

²²⁹ *Ibid* at 51.

²³⁰ Canada, PRI Project, *Sustainable Development, Canadian Water Sustainability Index Project Report* (Ottawa: Policy Research Initiative, 2007) at 2.

²³¹ Statistics Canada, *supra* note 202 at 12.

²³² *CESD Annual Report 2005*, *supra* note 188 at 24; see also Timothy J Morris et al, *Changing the Flow: A Blueprint for Federal Action on Freshwater* (Canada: The Gordon Water Group of Concerned Scientists and Citizens, 2007) which calls for enhanced federal initiatives to strengthen scientific capacity, promote conservation and manage inter-jurisdictional water conflicts. In 2009, the CCME set out Goal 1 that: “aquatic ecosystems [be] protected on a sustainable watershed basis”; see Canadian Council of Ministers of the Environment, “Setting Strategic Direction for Water” (Kingston: CCME 2009), online: <www.ccme.ca/files/Resources/communiqu%C3%A9/2009_10_29%20CCME%20Communiqu%C3%A9-Eng.pdf>.

²³³ For more on the subject, see generally Arlene J Kwasniak, “Water Scarcity and Aquatic Sustainability: Moving Beyond Policy Limitations” (2010) 13:2 *U Denver Water L Rev* 321.

²³⁴ Karen Bakker & Christina Cook, “Water Governance in Canada: Innovation and Fragmentation” (2011) 27:2 *Intl J Water Resources Development* 275 at 279 (approximately 275 indicators related to fresh water have been developed and introduced with attendant challenges in terms of comparison and standardization); on the role of monitoring and assessment tools in Canadian water management, see Emma S Norman, Karen Bakker & Gemma Dunn, “Recent Developments in Canadian Water Policy: An Emerging Water Security Paradigm” (2011) 36:1 *Can Water Resources J* 53.

requirements (increasingly in the context of additional uncertainty associated with climate change impacts on water availability), require careful consideration, as several recent national studies demonstrate.²³⁵

Whether goals are formulated around ecological health and integrity, or protection of the aquatic environment, or in relation to the security of drinking water supplies, scientific information and insight is required to support the decision-making process, and in response to uncertainty, the precautionary principle is occasionally engaged.²³⁶ Legislative and policy initiatives along these lines are underway in several jurisdictions, including British Columbia, Alberta and Quebec.²³⁷

British Columbia's *Water Sustainability Act* incorporates both "environmental flow needs" defined as "the volume and timing of water flow required for the proper functioning of the aquatic ecosystem of the stream" and the concept of "critical environmental flow" (CEF).²³⁸ The latter is explained as "the volume of water flow below which significant or irreversible harm to the aquatic ecosystem of the stream is likely to occur."²³⁹ In addition to prospective requirements that environmental flow needs be considered in licensing decisions,²⁴⁰ CEFs could operate as a regulatory trigger to authorize CEF protection orders in periods of significant water shortage.²⁴¹ More comprehensively, the new BC legislation provides for water sustainability plans to be developed in order to address conflicts between users and environmental flows, or in response to risks to water quality or ecosystem health, or to promote restoration.²⁴²

For its part, Alberta has pursued sustainability on the basis of a policy or strategy first articulated in 2003 as *Water for Life* and intermittently renewed thereafter.²⁴³ The initiative adopted performance measures to monitor effectiveness. In connection with drinking water

²³⁵ See e.g. Council of Canadian Academies, *Sustainable Management of Groundwater*, *supra* note 179 underscoring the importance of groundwater for human health, the economy and aquatic ecosystems; Natural Resources Canada, *From Impacts to Adaptation: Canada in a Changing Climate 2007* (Ottawa: NRC, 2008) [Natural Resources Canada, *Impact to Adaptation*]; Canada, National Round Table on the Environment and the Economy (NRTEE), *Degrees of Change: Climate Warming and the Stakes for Canada* (Ottawa: NRTEE, 2010).

²³⁶ See Senate, Standing Senate Committee on Energy, the Environment and Natural Resources, *Water in the West: Under Pressure* (November 2005) (Chair: Hon Tommy Banks) at 17, recommending institutional and methodological improvements to strengthen the data base and decision-making concerning western Canadian water resources; see also Nigel Bankes, "Policy Proposals for Reviewing Alberta's Water (Re) Allocation System" (2010) 20:2 J Envtl L & Prac 81; for an illustration of the precautionary principle in the context of water allocation, see *Dillon v Ontario (Ministry of the Environment, Director)*, (2000) 36 CELR (NS) 141 (Ontario Environmental Review Tribunal) at 15; *The Water Resources Conservation Act*, CCSM c W72, Preamble, para 3.

²³⁷ In addition to examples discussed below, see *Water Opportunities Act*, *supra* note 223 (Part III: "Municipal Water Sustainability Plans and Performance Indicators and Targets").

²³⁸ *Water Sustainability Act*, SBC 2014, c 15, s 1.

²³⁹ *Ibid.*

²⁴⁰ *Ibid.*, s 15.

²⁴¹ *Ibid.*, ss 86–87.

²⁴² *Ibid.*, ss 64–85.

²⁴³ "Water for Life: Alberta's Strategy for Sustainability" (Edmonton: Government of Alberta, November 2003) [Government of Alberta, "Strategy for Sustainability"]; Alberta, "Water for Life: A Renewal",

safety, the indicator addresses the performance in delivering safe drinking water and calls for continuous improvement of facilities and their operations. With reference to water quality, the strategy employs an index based on total loading on a river reach or basin basis for point source discharges. In order to assess water use efficiency and productivity, monitoring compares water consumption with productivity, population levels and economic growth.²⁴⁴ The overall effectiveness of Alberta's *Water for Life* strategy remains to be established and concerns have been expressed that steps to date fail to emphasize the need for greater efficiency in irrigation, that controls are lacking on water use in the oil and gas sector, and that local, provincial and federal water agencies are inadequately co-ordinated.²⁴⁵

Quebec, after an extended period of inquiry and deliberation, resolved to pursue the application of sustainable development principles to water management on legislative foundations.²⁴⁶ Recent water law reform not only incorporates sustainable development principles such as inter-generational equity, but specifically invokes the province's *Sustainable Development Act* and the potential of water management initiatives to further sustainable development.²⁴⁷ Quebec's legislation recognizes hydrologic units as frameworks for integrated approaches to water management which, among other objectives, should reconcile ecosystem needs with economic activities by, for example, limiting the duration of water withdrawal authorizations or establishing procedures to require restoration measures or to secure financial compensation.²⁴⁸

3.2. WATER VALUATION AND CONSERVATION MEASURES

Water conservation initiatives reflect a growing appreciation of the value and contribution of water in the urban, industrial and resource sectors. Conservation programs seek to moderate usage through efficiencies, pricing mechanisms and other demand management measures.²⁴⁹ Voluntary, regulatory, and economic instruments are evident across Canada and have been under more systematic study by the Canadian Council of Ministers of the Environment,²⁵⁰ and the Federal-Provincial Council of the Federation.²⁵¹ By way of example, British Columbia

(Edmonton: Government of Alberta, 2008); Alberta, "Water for Life: Action Plan" (Edmonton: Government of Alberta, 2009).

²⁴⁴ Government of Alberta, "Strategy for Sustainability", *supra* note 243 at 23.

²⁴⁵ See Keith Brownsey, "Enough for Everyone: Policy Fragmentation and Water Institutions in Alberta" in Sproule-Jones, Johns & Heinmiller, *supra* note 3 at 138; see also Dore, *supra* note 181 at 171–181.

²⁴⁶ See *An Act to affirm the collective nature of water resources and provide for increased water resource protection*, CQLR c C-6.2 [*Act to affirm the collective nature of water*].

²⁴⁷ *Ibid*, ss 3, 13.

²⁴⁸ The polluter pay principle and an obligation to repair damage are set out in *ibid* ss 4, 6.

²⁴⁹ See Oliver M. Brandes et al, *At a Watershed: Ecological Governance and Sustainable Water Management in Canada* (Victoria: Polis Project on Ecological Governance, 2005) at ii endorsing the concept of ecological governance with emphasis on demand-side opportunities to achieve sustainability. For an earlier inventory of relevant initiatives, see D.H. Waller et al, *Canadian Municipal Water Conservation Initiatives* (Toronto: ICURR Publications, 1997).

²⁵⁰ See Canadian Council of Ministers of the Environment, *Analysis of Economic Instruments for Water Conservation* (Marbek Resource Consultants & Steven Renzetti, 2005).

²⁵¹ Water efficiency labelling as well as conservation and efficiency plans are among the measures encouraged by the Council of the Federation in its 2010 Water Charter and now supported by a Water Stewardship

has begun to address water usage in washroom fixtures²⁵² and has also begun to implement mandatory water efficiency advances through reforms to the *Building Code*,²⁵³ in conjunction with the modernization of provincial water legislation.²⁵⁴ Municipalities elsewhere promote reduced consumption through subsidy or rebate arrangements on bathroom fixtures.²⁵⁵ Calgary, approaching conservation on a comprehensive basis, embarked upon a 30-year program to reduce overall consumption by 30 percent.²⁵⁶ In the commercial and industrial building sector, green certification programmes recognize water conservation in the assignment of credits towards certification.²⁵⁷ The agricultural sector also offers opportunities for conservation.²⁵⁸ For example, a recent study on water and agriculture draws attention to conservation for sectoral sustainability with a particular focus on conservation agriculture and approaches to water management oriented around ecosystem services.²⁵⁹ Comprehensive conservation requirements are now also incorporated within water permit regimes, notably within the Great Lakes Basin.²⁶⁰

Water pricing and economic incentives are becoming more widely used to encourage conservation.²⁶¹ The introduction of charges for water services was highlighted as a key strategic direction in the formulation of the Canadian federal water policy a quarter century ago.

Council. See The Council of the Federation, "Water Charter" (2010), online: <www.waterbucket.ca/wuc/sites/wbcwuc/documents/media/16.pdf>.

²⁵² The mandatory installation of low flow (6 litres or less) toilets in all new construction and renovations in British Columbia is set out in the *British Columbia Building Code*, BC Reg 295/98, s 7.4.9.3.

²⁵³ BC, Ministry of Housing and Social Development, News Release, 2008HSD0047-001283, "Green Standards for Buildings Come into Effect" (26 August 2008), online: <archive.news.gov.bc.ca/releases/news_releases_2005-2009/2008HSD0047-001283.htm>.

²⁵⁴ See *Water Sustainability Act*, *supra* note 238; Government of British Columbia, "Water", online: <www2.gov.bc.ca/gov/content/environment/air-land-water/water>.

²⁵⁵ See e.g. Saskatchewan Watershed Authority, "Provincial Toilet Replacement Rebate Program" (15 November 2016), online: <web.archive.org/web/20090824232335/http://www.swa.ca/WaterConservation/ToiletRebateProgram/Default.asp>.

²⁵⁶ "Water Efficiency Plan: 30 in 30 by 2033" (Calgary: The City of Calgary, 2007), online: <www.calgary.ca/UEP/Water/Documents/Water-Documents/water_efficiency_plan.pdf>.

²⁵⁷ See Canada Green Building Council, *LEED Green Building Rating System: Rating System & Addendum* (Canada: Canada Green Building Council, 2007) at 118.

²⁵⁸ See Ralph Pentland, *Comments on the International St. Mary-Milk Rivers Administrative Measures Task Force Report* (Toronto: Munk Centre for International Studies, University of Toronto, 2006) at 7; see also Daren Swanson et al, "Prairie Water Strategies: Innovation and Challenges in Strategic and Coordinated Action at the Provincial Level" (Report delivered at the IISD Prairie Water Policy Symposium, Winnipeg, 2 December 2005), online: <www.iisd.org/pdf/2005/pwps_water_strategies.pdf>; for a survey of provincial IWRM legislation and programs in agriculture, see Dimple Roy, Bryan Osborne & Henry David Venema, *Integrated Water Resources Management (IWRM) in Canada: Recommendations for Agricultural Sector Participation* (Winnipeg: International Institute for Sustainable Development, 2009).

²⁵⁹ Council of Canadian Academies, *Water and Agriculture*, *supra* note 211, ch 5.

²⁶⁰ *Water Taking and Transfer Regulation*, O Reg 387/04, s 6.

²⁶¹ According to the Second UN World Water Assessment Report, "policy is changing to one of full cost recovery, except where poverty is an issue." See UNESCO, *Water: A Shared Responsibility* (New York: Berghahn Books, 2006) at 414; R Quentin Grafton et al, "An Integrated Assessment of Water Markets: A Cross Country Comparison" (2011) 5:2 *Rev Environmental Economics & Policy* 219.

However, adoption of polluter pay and market-based instruments is by no means complete: between 1991 and 2011, the percentage of Canadian households equipped with water meters rose only from 52 percent to 58 percent.²⁶²

A leading analyst of water pricing sharply criticized Canadian water pricing practices for failing to generate the revenues needed to support water agencies, for failing to inform consumers about the full costs of water-use decisions, for failing to protect relevant ecosystems, and for a lack of basic fairness.²⁶³ The OECD advanced an equally critical assessment: “In a country where the public often regards water as a limitless resource and a gift of nature, the notion that water is also an economic good with social and ecological functions is not yet readily accepted.”²⁶⁴ This effectively affirms that in the water sector, established practices grounded on long-held assumptions are not readily displaced.

As outlined above, the Walkerton Inquiry is best known for its advocacy of source-to-tap water quality protection measures. Nevertheless, in conjunction with his overall investigation of water security arrangements, Justice O’Connor noted the importance of ongoing infrastructure finance, renewal, and upgrading²⁶⁵—all elements of the constant vigilance over drinking water he sought to encourage.²⁶⁶ Ontario responded with legislation outlining arrangements for financing that were intended to meet the full cost of water and sewerage services, with the full cost of providing water services defined to include: “source protection costs, operating costs, financing costs, renewal and replacement costs and improvement costs associated with extracting, treating or distributing water to the public.”²⁶⁷ The proposed legislation, subsequently repealed in favour of alternative measures, called for the preparation of reports that would provide an inventory and management plan for the necessary water services infrastructure accompanied by an assessment of the full cost of those water services and the revenue obtainable for that purpose.²⁶⁸ Given empirical indications that something between 16 percent and 55 percent of water supply and sewage costs are excluded or under-estimated, the challenge of closing the full-cost gap in Ontario is substantial.²⁶⁹ An administrative cost recovery charge of \$3.71 per

²⁶² See Environment Canada, “Residential Water Use in Canada”, online <www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=7E808512-1>; for a detailed study, see Steven Renzetti, “Are the Prices Right? Balancing Efficiency, Equity, and Sustainability in Water Pricing” in Bakker, *supra* note 75 at 264. As assessed by the Organisation for Economic Co-operation and Development (OECD) in OECD, *Environmental Performance Review: Canada 2004* (Paris: OECD, 2004) at 70, “Many price signals are inappropriate and subsidisation is pervasive.”

²⁶³ See Renzetti *supra* note 262 at 277; for an updated elaboration, see CD Howe Institute, “Wave of the Future: The Case for Smarter Water Policy”, by Steven Renzetti, Commentary No 281 (2009). There is little indication in recent public opinion research that water pricing and conservation incentives are widely understood or appreciated; see Canadian Partnership Initiative, RBC & Unilever Canada, “Canadian Water Attitudes Survey” (2011) at 1–2, online: <www.rbc.com/community-sustainability/_assets-custom/pdf/Water-Attitudes-Study-nr-Mar_2011.pdf>.

²⁶⁴ OECD, *supra* note 262 at 70.

²⁶⁵ *Walkerton Report*, Part II, *supra* note 187, ch 7.

²⁶⁶ *Ibid* at 8.

²⁶⁷ *Sustainable Water and Sewage Systems Act*, SO 2002, c 29, s 3(7).

²⁶⁸ *Ibid*, ss 3, 4.

²⁶⁹ See Steven Renzetti & Joseph Kushner, “Full Cost Accounting for Water Supply and Sewage Treatment: Concepts and Case Application” (2004) 29:1 *Can Water Resources J* 13 at 19.

million liters per year,²⁷⁰ introduced in 2009 to designated sectors including water bottling and beverages, fruit and vegetable canning, and concrete manufacturing, is not considered to represent a significant incentive towards conservation.²⁷¹

Quebec has most explicitly embraced user pay principles in the water context with a formal provision establishing that: “The costs related to water resource use, including protection, restoration, improvement and management costs, are to be borne by users under the conditions defined by law and on the basis of environmental, social and economic consequences and the polluter pays principle.”²⁷² British Columbia’s *Water Sustainability Act* now extends application fees and annual rental charges to non-domestic users of groundwater resources.²⁷³

The broader array of market-based instruments (MBIs), including trading of water rights, or water quality (pollution) credits, is expected to offer cost effectiveness and enhanced flexibility in terms of compliance while simultaneously promoting innovation.²⁷⁴ Again, however, implementation and understanding of their implications remains limited in Canada. Thus, a federal study of MBIs reported “surprisingly limited efforts” to assess these initiatives.²⁷⁵ The study concluded on an interim basis that data limitations preclude informed decision-making about MBIs: that the evaluation of policy effectiveness and communication of relevant learning is generally lacking, and that clear assessment measures are rarely established.²⁷⁶

At the international level, certainly within the Great Lakes context, an Ontario permit to take water for export triggered extended negotiations and deliberations that culminated in basin-wide agreement involving Canadian and American jurisdictions.²⁷⁷ More elaborate

²⁷⁰ *Charges for Industrial and Commercial Water Users*, O Reg 450/07, s 7(1).

²⁷¹ Environmental Commissioner of Ontario, *Getting to K(N)ow: ECO Annual Report, 2007–2008* (Toronto: Queen’s Printer, 2008) at 97.

²⁷² *Act to affirm the collective nature of water*, *supra* note 246, s 4.

²⁷³ *Water Sustainability Act*, *supra* note 238, s 125.

²⁷⁴ Bernard Cantin, “Market-Based Instruments for Water Management” (2006) 9:1 *Horizons* 38 at 39. In Alberta, subject to authorization in an approved management plan or pursuant to an order of the Lieutenant Governor in Council, certain licenses for water allocations may be transferred following administrative review and approval. See *Water Act*, RSA 2000, c W-3, ss 81–83. See also Oliver M Brandes, Linda Nowlan & Katie Paris, *Going with the Flow* (Ottawa: Conference Board of Canada, 2009), reviewing experience with water rights transfers and markets. For an analysis of the operation of water markets in Alberta, see Henning Bjornlund, “The Competition for Water: Striking a Balance among Social, Environmental and Economic Needs” (CD Howe Institute Commentary, No 302, April 2010).

²⁷⁵ Cantin, *supra* note 274 at 38.

²⁷⁶ *Ibid.* In 2010, the Lake Winnipeg Basin Summit hosted by the Water Innovation Centre of the IISD promoted significant discussion of market-based initiatives to safeguard water quality within a watershed framework. Water Innovation Centre, “Lake Winnipeg Basin Summit” (2010), online: <www.iisd.org/wic/summit_2010.aspx>.

²⁷⁷ *Great Lakes–St. Lawrence Basin Sustainable Water Resources Agreement*, 13 December 2005, online: <www.glsrregionalbody.org/Docs/Agreements/Great_Lakes-St_Lawrence_River_Basin_Sustainable_Water_Resources_Agreement.pdf> [*Great Lakes–St. Lawrence Agreement*]. For a discussion of the Nova Group permit and related Canadian water export considerations, see Rhett Larson, “The Case of Canadian Bulk Water Exports” (Canadian Global Affairs Institute, University of Calgary, Policy Paper, August 2015) at 1–2.

procedures governing withdrawals, diversions and consumptive uses of Great Lakes waters are indicative of the growing significance of efficiency and conservation in water allocation and management.²⁷⁸ Within an overall framework founded on a general prohibition against new or increased Great Lakes diversions, provision is made for exceptions where applicants demonstrate that “[t]he need for all or part of the Exception cannot be reasonably avoided through the efficient use and conservation of existing water supplies.”²⁷⁹ In any case, the exception will not exceed “quantities that are considered reasonable for the purposes for which it is proposed.”²⁸⁰ Participating jurisdictions have implemented decision-making arrangements consistent with the framework agreement.²⁸¹ At the federal level, proposals to prevent exports have been made on the basis of a prohibition against inter-basin transfers, a restriction intended to address environmental risks.²⁸²

At a still higher level of environmental concern, climate change considerations accentuate water conservation requirements and management challenges. For example, rainfall may replace snowfall as a source of precipitation with implications for run-off patterns and storage arrangements. Other scenarios forecast increased variability or seasonal adjustments in precipitation, or water shortages.²⁸³ Yet if anticipated water shortages heighten operational challenges and increase pressure for conservation as an element of adaptation to climate change, there are countervailing impulses towards greater water use: the impact of greenhouse gas emissions on climate change may promote reliance on non-carbon based energy sources such as hydro or nuclear power, each dependent on massive water usage.²⁸⁴ On the other hand, climate change presents the potential for unusually high precipitation in certain regions.²⁸⁵ The varied possibilities obviously highlight very different sets of policy responses.

3.3. WATERSHED MANAGEMENT AND PARTICIPATION

Institutional changes in the form of enhanced recognition of watersheds as appropriate frameworks for decision-making are also increasingly evident. Once popular in association with

²⁷⁸ *Great Lakes–St. Lawrence Agreement*, *supra* note 277, art 203; see generally Peter Annin, *The Great Lakes Water Wars* (Washington: Island Press, 2006).

²⁷⁹ *Great Lakes–St. Lawrence Agreement*, *supra* note 277, art 201(4)(a).

²⁸⁰ *Great Lakes Basin Sustainable Water Resources Agreement*, 13 December 2005, Article 201, cl 4.

²⁸¹ See e.g. *Safeguarding and Sustaining Ontario’s Water Act*, SO 2007, c 12, preamble. The Great Lakes–St. Lawrence River Water Resources Regional Body lists implementing legislation enacted by participating institutions; see Great Lakes–St. Lawrence River Water Resources Regional Body, “Implementation” (2007), online: <www.glsregionalbody.org/agreementimplementationstatus.aspx>.

²⁸² See *An Act to amend the International Boundary Waters Treaty Act and the International River Improvements Act*, SC 2013, c 12.

²⁸³ Stefano Barchiesi et al, “Sustaining Ecosystems through Better Water Management for Climate Change Adaptation” in Juan Carlos Sanchez & Joshua Roberts, eds, *Transboundary Water Governance: Adaptation to Climate Change* (IUCN Environmental Law and Policy Papers No 75, IUCN, Gland, 2014) 1 at 10–13.

²⁸⁴ The Canadian Nuclear Association promotes nuclear power over fossil fuels with specific reference to the issue of carbon dioxide emissions. See Canadian Nuclear Association, “Why Nuclear Energy?” (2015), online: <cna.ca/why-nuclear-energy/>. See also Shawn McCarthy, “In dry times, Brookfield’s power supply is running low”, *The Globe and Mail* (13 August 2010).

²⁸⁵ See National Resources Canada, *Impact to Adaptation*, *supra* note 235.

the objective of maximizing water resource use, the watershed perspective has experienced a revival alongside emerging concern with ecosystem health and sustainability, with implications for both water supply and the protection of aquatic ecosystems.²⁸⁶ As explained by Dan Tarlock, a leading American water law specialist, contemporary watershed management shifts attention towards pollution prevention in an ecorealistic context, reflecting awareness that “we can only sustain biodiversity by managing entire ecosystems.”²⁸⁷ From a legal perspective, an ecosystem orientation represents a noteworthy shift in so far as “it collapses all conventional conceptual and jurisdictional boundaries and potentially integrates public and private lands and water in a single functional management unit.”²⁸⁸ In-stream flow protection and minimum ecosystem requirements, alongside measures to safeguard drinking water sources, become crucial to planning and decision-making.²⁸⁹ Accordingly, watersheds offer opportunities to address longstanding governance challenges presented by jurisdictional fragmentation.²⁹⁰

The process of policy integration around watershed frameworks is underway in the Canada-US context through the IJC’s International Watershed Initiative,²⁹¹ and in several jurisdictions.²⁹² In Alberta, alongside developments associated with Water for Life, watershed planning and advisory councils are proposed or implemented for the Milk, Oldman, Bow,

²⁸⁶ Norman, Bakker & Dunn, *supra* note 234 at 61 (roughly 80 percent of Canadian water and utility managers and regulators view watersheds as the most suitable scale for watershed governance); for discussion of ecosystem and watershed-related activity associated with the *Canada Water Act* as of the 40-year anniversary of that legislation, see Environment Canada, “Canada Water Act Annual Report for April 2009 to March 2010” (Ottawa: Minister of the Environment, 2010), at 17–31; for a practical conceptual introduction, see Peter Clancy, *Freshwater Politics in Canada* (Toronto: University of Toronto Press, 2014) at 4–12.

²⁸⁷ A Dan Tarlock, “Putting Rivers Back in the Landscape: The Revival of Watershed Management in the United States” (2000) 6:2–3 *Hastings W-Nw J Envtl L & Pol’y* 167.

²⁸⁸ *Ibid* at 189; but see James M Omernik & Robert G Bailey, “Distinguishing Between Watersheds and Ecoregions” (1997) 33:5 *J American Water Resources* 935.

²⁸⁹ In Ontario, an intersecting series of water management provisions contributes to this result. *Ontario Water Resources Act*, RSO 1990, c O.40, s 34. See also *Clean Water Act*, *supra* note 183, s 1, where the “purpose ... is to protect existing and future sources of drinking water”.

²⁹⁰ See Bakker & Cook, *supra* note 234; for further discussion of attractions (as well as limitations) of planning, management and governance at the watershed level, see Alice Cohen & Seanna Davidson, “The Watershed Approach: Challenges, Antecedents, and the Transition from Technical Tool to Governance Unit” (2011) 4:1 *Water Alternatives* 1; Alice Cohen, “Rescaling Environmental Governance: watersheds as boundary objects at the intersection of science, neoliberalism and participation” (2012) 44:9 *Environment & Planning A* 2207; Deborah Curran, “Water Law as a Watershed Endeavour: Federal Inactivity as an Opportunity for Local Initiative” (2015) 28:1 *J Envtl L & Prac* 53; Margot W Parkes et al, “Towards Integrated Governance for Water, Health and Social-Ecological Systems: the Watershed Governance Prism” (2010) 20:4 *Global Environmental Change* 693.

²⁹¹ Murray Clamen, “The IJC and Transboundary Water Disputes: Past, Present and Future” in Norman, Cohen & Bakker, *supra* note 35, at 70–71; see also Emma S Norman, *Governing Transboundary Waters: Canada, the United States and Indigenous Communities* (London: Routledge, 2015) at 79–102.

²⁹² Large scale ecosystem initiatives and inter-jurisdictional water management arrangements are highlighted in the fortieth annual report of federal activity under the *Canada Water Act*; see Environment Canada, *Canada Water Act, Annual Report for April 2009 to March 2010* (EC, 2010), online: <publications.gc.ca/collections/collection_2011/ec/En1-20-2010-eng.pdf>.

Red Deer, Battle, North Saskatchewan, Cold Lake-Beaver River, and Lesser Slave Lake watersheds.²⁹³

Manitoba, in 2003, became the first province to designate a stand-alone department of Water Stewardship with sole responsibility for protecting and managing water. Here, too, the role of watersheds was more explicitly highlighted. The mandate of the Ministry of Water Stewardship (now again re-configured as a division within the Ministry of Sustainable Development) encompasses the protection of fisheries and aquatic ecosystems, drinking water safety, water and sewerage for rural communities, flood protection and the role of water in sustainability.²⁹⁴

The Manitoba Ministry assumed responsibility for the development and administration of legislation, including the Water Protection Act.²⁹⁵ This act recognizes the importance of comprehensive watershed planning and the contribution of science: where a watershed plan is required, it must “identify issues relating to the protection, conservation or restoration of water, aquatic ecosystems and drinking water sources in the watershed.”²⁹⁶ In addition, the plan is expected to address such issues as the protection of aquatic ecosystems and drinking water sources, water pollution, including wastewater, activities in water quality management zones, riparian areas, wetlands, flood areas, flood plains and reservoir areas, as well as water supply and distribution.²⁹⁷

Ontario’s *Clean Water Act* represents another watershed-based measure to safeguard sources of drinking water supply on a more comprehensive basis. The *Clean Water Act* is implemented through the actions of local committees to develop source protection plans based on identified threats to drinking water.²⁹⁸ Approximately 40 source protection areas and regions, broadly corresponding with the configuration of longstanding watershed-based Conservation Authorities, are established.²⁹⁹ Source protection committees representative of municipalities, of the agricultural, commercial and industrial sectors, and of general public interests, including environment and health, have been constituted.³⁰⁰ Source protection plans will take precedence over municipal land-use plans and zoning bylaws with the first approved plan covering the Lakehead area.

With particular reference to the water quality impacts of nutrients including nitrogen, phosphorus, and potassium, Ontario has also instituted measures to improve land-use practices

²⁹³ Government of Alberta, “Strategy for Sustainability”, *supra* note 243 at 18. In 2006, the South Saskatchewan River, Bow River and Oldman River basins became closed to new water allocations; see also *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order*, Alta Reg 171/2007.

²⁹⁴ See Manitoba Conservation and Water Stewardship, *Annual Report 2010–2011* (Winnipeg: Deputy Minister of Conservation and Water Stewardship, 2011).

²⁹⁵ *Water Protection Act*, CCSM, c W-65.

²⁹⁶ *Ibid*, s 16(1)(a).

²⁹⁷ *Ibid*, s 16(1) (b). Manitoba has now taken steps to co-ordinate groundwater use and aquifer management with watershed planning; see *The Groundwater and Water Well and Related Amendments Act*, SM 2012, c 27, s 71.

²⁹⁸ See *Clean Water Act*, *supra* note 183.

²⁹⁹ See *Source Protection Areas and Regions Regulation*, O Reg 284/07.

³⁰⁰ See *Source Protection Committees Regulation*, O Reg 288/07.

affecting water quality in the agricultural sector.³⁰¹ Other watershed oriented initiatives in Ontario include legislation “to protect and restore the ecological health of the Lake Simcoe watershed for the present generation and for future generations,”³⁰² and a similar measure addressing the Great Lakes.³⁰³

Roughly comparable initiatives may be found elsewhere,³⁰⁴ including Quebec, where measures to reform water governance on a watershed basis have been underway since the adoption in November 2002 of the Quebec Water Strategy, *Water: Our Life, Our Future*.³⁰⁵ An important legislative landmark proclaimed rights of decision-making in relation to water resources while endorsing an integrated approach to such decision-making which is to be carried out for “hydrologic units” including watersheds and sub-watersheds.³⁰⁶ Observers of the Quebec experience underscore the complexity of effective watershed governance as well as some ultimate limitations associated with inter-jurisdictional considerations and long-range air-borne pollution, for example.³⁰⁷ Important institutional adjustments around watersheds, as these examples from Alberta, Ontario, Quebec and Manitoba suggest, however, are underway.

CONCLUSION

Part I of this essay surveyed important federal and provincial developments in Canadian water law and policy from Confederation to the recent past. These activities, relating to both water supply and allocation as well as environmental and drinking water quality, were adopted

³⁰¹ See *Nutrient Management Act*, SO 2002, c 4; *General Regulation Under the Nutrient Management Act*, O Reg 267/03.

³⁰² See *Lake Simcoe Protection Act*, SO 2008, c 23, Preamble.

³⁰³ See *Great Lakes Protection Act*, SO 2015, c 24.

³⁰⁴ Environment Canada offers convenient access to core provincial statements and reports; see e.g. Environment and Climate Change Canada, “Water” (22 December 2015), online: <www.ec.gc.ca/water/en/links.cfm?category_id=8&sub_section_id=23>; see also New Brunswick, “Watershed Protection Program”, online: <www2.gnb.ca/content/gnb/en/departments/elg/environment/content/land_waste/content/reference_manual/watershed_protection.html>; Manitoba Conservation, “Development of a Nutrient Management Strategy for Surface Waters in Southern Manitoba” (2000–2001), online: <www.gov.mb.ca/waterstewardship/water_quality/nutrmgt.pdf>; Quebec, “Integrated water management at the watershed level”, online: <www.mddep.gouv.qc.ca/eau/bassinversant/index_en.htm>; Government of Alberta, “Strategy for Sustainability”, *supra* note 243. British Columbia offers valuable examples of collaborative approaches to watershed restoration and management, see the work of the Fraser Basin Council, online: <www.fraserbasin.bc.ca>; see especially *Okanagan Water Stewardship Council*, “Okanagan Sustainable Water Strategy: Action Plan 1.0” (2008), online: <www.obwb.ca/fileadmin/docs/osws_action_plan.pdf>.

³⁰⁵ For a five year review of implementation, see Politique Nationale de l’eau, *Bilan Synthèse sur la mise en oeuvre de la politique nationale de l’eau 2003–2009* (Quebec: Développement durable, Environnement et Parcs, June 2011), online: <www.mddep.gouv.qc.ca/eau/politique/bilan/bilan_synthese0307.pdf>.

³⁰⁶ See *Act to affirm the collective nature of water*, *supra* note 246, ss 7, 13–15.

³⁰⁷ See e.g. Alain Létourneau, “Gouvernance et gestion intégrée de l’eau par bassins versants : Problématique et requêtes d’une communication consensuelle” in Catherine Choquette & Alain Létourneau, eds, *Vers une gouvernance de l’eau au Québec* (Québec: Editions MultiMondes, 2008) at 203–204; Suzanne Beaulieu, “Les organismes de bassins versants : une entité en quête de légitimité” in Choquette & Létourneau, *ibid*, 227 at 228; Suzanne Comtois & Bianca Turgeon, “L’eau, chose commune à l’usage de tous: l’État québécois a-t-il les moyens de donner effet à ce statut?” (2010) 51:3–4 C de D 617.

within the context of a few key supporting assumptions. These assumptions included an expectation of overall abundance and a widespread disregard for environmental considerations with navigational, hydro-electric power infrastructure and wastewater arrangements as prominent examples.

Many of the decisions taken or institutions previously established remain influential, including the constitutional division of powers, the *Fisheries Act*, the International Joint Commission and the Prairie Provinces Water Board among others discussed above. However as Part II of the paper suggests, gradual shifts in underlying assumptions have begun to condition new initiatives. Those shifting assumptions include acknowledgement that Canada's available water supplies are not so unlimited as might once have been imagined, an understanding that the importance of water in ecological context can no longer be disregarded, and even recognition that other countries may have an interest in the effectiveness of Canadian water stewardship including efforts to promote conservation and drinking water quality.

Part III illustrates that the incorporation of water within the evolving Canadian formulation of sustainability is underway. There are indications, for example, of more significant efforts to consider the complexities of sustainable water policy such as the integration of surface and groundwater systems and perhaps increasingly to discipline human uses in relation to more realistic expectations encouraged by conservation measures. Economic incentives to promote conservation are moving beyond pilot-testing, although even basic pricing signals are by no means fully utilized. And watersheds offering new planning and management perspectives as well as additional opportunities for participation are more familiar to policy makers than ever before. To put the transition another way, sustainability as a performance standard is gaining recognition, while various conservation initiatives reflect a deeper appreciation of water's value, particularly within the poorly developed, but promising institutional framework of watersheds. There, more integrated and participatory forms of governance are beginning to appear.