THE WALKERTON INQUIRY

Commissioned Paper 1

WATER SUPPLY AND SEWAGE INFRASTRUCTURE IN ONTARIO, 1880–1990S: LEGAL AND INSTITUTIONAL ASPECTS OF PUBLIC HEALTH AND ENVIRONMENTAL HISTORY

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Abstract

Jamie Benidickson surveys the evolution of water supply and sewage treatment in Ontario from the late 1880s to the late 1990s. Dividing the period into historical segments, the author focuses on legislative and institutional development, provincial government activity, the growth of municipal infrastructure, international influences, and legal and enforcement considerations that resulted in Ontario's water supply and sewage treatment arrangements at the end of the1990s.

The author describes and discusses key legislative initiatives and significant legal cases that influenced water delivery and sewage treatment in Ontario. In surveying the activity, the paper indicates attitudes and approaches to water and its uses, tracing the developing realization of the importance of maintaining a reliable supply of 'pure and wholesome' water. This realization led to public health measures for water protection and, hence, government involvement, with the local level as the supplier of the water and the province as the responsible agent for supervising its distribution and protecting its quality.

Benidickson leads the reader through the development of boards of health, conservation organizations, and water management agencies, including the Pollution Control Board of Ontario and the Ontario Water Resources Commission, as well as federal (*Canada Water Act*) and international measures (*Great Lakes Water Quality Agreement*). In examining the instruments that protect our water and enable its distribution, and in outlining the activities – such as environmental court cases – that instigated those instruments, the author presents a context in which to understand the status quo of water supply and wastewater treatment in the Ontario of the early twenty-first century.

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1 Introduction

This paper surveys the evolution of water supply and sewage arrangements in Ontario from the late-nineteenth to the late-twentieth centuries.[1] For this purpose, the overall time frame has been divided into a series of roughly equal periods loosely characterized according to some dominant feature or features: the public health era; depression and wartime; postwar reconstruction; the Ontario Water Resources Commission; and environment, efficiency, and economy. To provide a measure of continuity between these periods, certain common elements are addressed in each: legislative and institutional developments; water and sewage infrastructure; federal government activity; international considerations; and legal and enforcement matters.

Whether lessons may be drawn from a historical survey of this nature, and, if so, what they might actually be is open to debate. Yet, in the context of an inquiry concerned with the long-term future security of water supply in Ontario, a minimal desire is to have some appreciation of how we have arrived at the status quo. Both professional and popular understanding of water quality has evolved significantly in the past century and a half. Concurrently, important developments have occurred in connection with the technology and institutional framework employed to safeguard water quality, even as new threats have arisen. While the provision of public water supplies has been referred to fairly consistently as a matter of local responsibility, the array of supportive provincial initiatives has been remarkable and will receive considerable attention here. And, although the tendency to regard water quality management as primarily a matter of provincial responsibility has been strong, federal and international influences have frequently been important.

To provide some context for Ontario's water quality and sewage disposal story as recounted here, certain background matters require noting. First, the consumption of water as a beverage was by no means widespread at the outset of the nineteenth century. Preferred alternatives frequently included gin and

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[1] Bearing in mind that detailed consideration is given to the contemporary operation of water supply systems in other work for the Inquiry, this paper makes no attempt to duplicate that work. Readers seeking additional detail on the Walkerton tragedy and matters relating to it in the spring of 2000 are referred to other commissioned papers prepared for the Inquiry.

beer, but temperance forces and changing fashions combined with the introduction of facilities to provide running water to residential premises in rapidly expanding urban centres increased the ranks of those inclined to drink the clear liquid that had often previously been the subject of suspicion, if not hostility.[2] It also is worth noting that measures taken in other jurisdictions to provide some assurance about the quality of water supplied for domestic purposes were not often significantly in advance of developments in Ontario. Major initiatives in relation to public health, including matters connected with water quality, had been unfolding in Britain from about mid-century, culminating in the 1870s with important public health and rivers protection legislation. In the United States, state boards of health (beginning with Massachusetts in 1869) and legislation to protect water supply sources were recent developments as comparable activity got underway in Ontario.

Considerable interaction and exchange occurred within a small professional medical community on matters of public health and within the limited ranks of engineers who began to concern themselves with municipal water and sanitation. American public health physicians and engineers toured Britain and Europe in search of insights and innovations that were readily assimilated across North America; in some cases immigrant engineers brought with them knowledge of the European experience. Canadian cities, despite the emergence of a respectable degree of domestic engineering expertise, regularly solicited the advice of American and British experts when considering significant expenditures in relation to water and sewage infrastructure. In addition – at least by the late-nineteenth century – various forums existed for professional interaction. Here, Canadian officials might meet with their counterparts to exchange information on current developments in public health, water supply, and sanitary engineering when the latter field began to emerge as a distinct field or specialization.

By way of introduction, we can observe that important advances in scientific understanding were continuing to unfold as Ontario's Provincial Board of Health began operations in the 1880s. The manner in which diseases might be transmitted remained controversial, with contagionists and anti-contagionists still struggling; advocates of miasma theory and the perils of putrefaction continued to exercise considerable influence; and the detailed role of bacteria in the transmission of water-borne diseases was yet to be determined. Indeed, theories of disease causation were experiencing a profound transformation away from multi-causal models.[3]

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[2] A. Barr, 1999, *Drink: A Social History of America* (New York: Carroll and Graf), pp. 206–7.

[3] C. Hamlin, 1990, *A Science of Impurity: Water Analysis in Nineteenth Century Britain* (Bristol: Adam Hilger), pp. 129, 240–69.

Credit for analyzing the water-borne character of the typhoid bacillus in the early 1890s is frequently given to William Thompson Sedgwick for investigative research work following a severe outbreak at Lowell, Massachusetts.[4]

Water treatment in the form of filtration was employed in Scotland as early as 1804 and two years later in Paris. Adopted intermittently elsewhere, it was by no means a universal technique. In the aftermath of Sedgwick's work, disinfection by adding chlorine became an increasingly common protective measure. This technique was pioneered in Europe in 1902 in Middlekerke, Belgium; its North American debut occurred six years later in 1908 in Jersey City, New Jersey. For many in the public health field, the declining incidence of typhoid deaths in the subsequent decades represented an indication of the new protective measures' success in safeguarding municipal water supplies.

2 The Public Health Era: 1880–1930

The period from about 1880 to 1930 saw the first province-wide initiatives relating to water supply and quality. Some appeared as public health measures and others were associated with the powers of municipal institutions and public utilities commissions. Federal authorities, too, considered water quality initiatives in connection with questions of health, conservation, and international responsibility for the Great Lakes. Chlorine treatment of drinking water supplies was increasingly promoted by provincial officials whose inspection and advisory roles helped to circulate information to municipal officials. For a variety of reasons, including competing demands for water – notably fire protection – and the limited financial base of local government, it was not always a priority to secure the highest quality drinking water. Death rates from water-borne diseases were high and tragedies of epidemic proportions not unknown.

2.1 Legislative and Institutional Developments

In response to the late-nineteenth-century failure or inability of local municipalities throughout Ontario to respond effectively to the pollution of local water supplies, a province-wide solution was introduced in the form of mandatory local boards of health and a provincial board of health (PBH). Established in 1882, the PBH, in collaboration with local and, later, district health officials, provided leadership

[4] B.G. Rosenkrantz, 1972, *Public Health and the State: Changing Views in Massachusetts, 1842–1936* (Cambridge, Mass.: Harvard University Press), pp. 98–107.

to encourage the implementation of modern water supply and protection systems along with sewerage across the province.[5] Thus, in connection with its duty to "take cognizance of the interests of health and life among the people of the Province," the PBH was charged, "when required or when they deem it best" to "advise officers of the Government and local boards of health in regard to the public health, and as to the means to be adopted to secure the same, and as to location, drainage, water supply, disposal of excreta, heating and ventilation of any public institution or building."[6] Other responsibilities soon followed as the PBH presided over 610 municipalities organized to report to it by 1886. The comparatively lengthy tenure of the PBH's secretaries during its 45-year period of operation (Peter Bryce 1882–1904; Charles Hodgetts 1904–1912; John W. S. McCullough 1912–1927) doubtless added a degree of stability to the public health enterprise in the province.

In many respects, the institutional framework implemented during the PBH era remained in place following the creation of a formal provincial department of health in the 1920s. Indeed, the careers of certain senior PBH personnel extended into the middle of the twentieth century. For example, Dr. McCullough's career spanned much of the PBH era and extended into the formative years of the provincial Department of Health, and A.E. Berry, who took an appointment as the PBH's assistant engineer in September 1919, later held senior positions in the Department of Health and the Ontario Water Resources Commission (OWRC).

As of 1884, municipalities contemplating public water supply and sewerage systems were required to consult with the PBH and to submit plans for consideration.[7] A decade later, that is, shortly after Sedgwick's demonstration of the water-borne transmission of the typhoid bacillus at Lowell, Mass., the PBH's authority was strengthened. In relation to public water supply proposals, legislation in 1895 conferred authority on the board to approve the source of supply:

> In case the source of any proposed public water supply, does not in the opinion of the Provincial Board of Health, meet the sanitary requirements of the municipality, either by reason of the quality of the water, or because the water is likely, owing to the situation of the proposed source of supply, to become contaminated, it shall not be lawful to establish such waterworks without first obtaining from

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[5] *Public Health Act*, SO 1882, c. 29, s. 1 [hereinafter *Public Health Act*, 1882].
[6] *An Act to Amend the Act respecting the Public Health*, SO 1887, c. 34, s. 9.
[7] *An Act to make further provisions respecting the Public Health*, SO 1884, c. 38, s. 38.

> the Provincial Board of Health a certificate signed by the chairman and secretary stating that the proposed source is the best practicable, having regard to all the circumstances of the case, and that all proper measures have been taken to maintain the supply in the highest possible and practicable state of purity.[8]

At the same time, PBH approval was required in the case of sewerage, the board having authority to "impose any conditions with regard to the construction of such sewer or system of sewerage or the disposal of sewage therefrom as it may deem necessary or advisable in the public interest."[9]

In 1906, PBH officials issued a clear public call for increased legislative authority in relation to the protection of both surface waters and public water supply systems in the province. The request for "a more direct oversight and control of all water systems, together with the streams, lakes and rivers from which the supplies are taken" was intended to permit the board

> to direct the prosecution of those offending by polluting the pure waters of our lakes and rivers, be they either corporations, municipalities, or individuals, and at the same time the inspection should be periodical of every system – samples being examined by the laboratory whenever deemed necessary, and when a supply is in the opinion of this Board, not safe guarded as it should be, the corporation or owners of the particular system should be required under heavy penalties to make provisions for the protection or purification of the water.[10]

Also in 1906, the *Public Health Act* was amended to enhance the protection of water supplies from pollution. Subject to some amendment over the years, this provision endured and significantly influenced several pivotal transitions in Ontario's efforts to safeguard water in the province:

> No sewage, drainage, domestic or factory refuse, excremental or other polluting matter of any kind whatsoever, which, either by itself or in connection with other matter corrupts or impairs or may corrupt or impair the quality of the water of any source of public

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[8] *An Act to make further provision for the Public Health*, SO 1895, c. 49, s. 3(1).
[9] Ibid., s. 3(3).
[10] Ontario, Public Board of Health, 1907, *Annual Report, 1906* (Toronto: PBH), p. 9.

> water supply for domestic use in any city, town, incorporated village or other municipality, or which renders or which may render such water injurious to health, shall be placed in or discharged into the waters, or placed or deposited upon the ice of any such source of water supply, near the place from which any such municipality shall or may obtain its supply of water for domestic use.[11]

The prohibition, entailing a penalty of $100.00 for each offence, extended to the placing of sewage, drainage, domestic or factory waste, excremental or other polluting matter on the bank or shore of any source of water supply in the vicinity of a municipal intake, "nor within such distance thereof as may be considered unsafe by the Provincial Board of Health, after an examination thereof by a member or officer of the said Board."[12] The supervisory responsibility of the PBH in relation to pollution matters was extended by the *Public Health Amendment Act, 1923* following a series of incidents in which agricultural interests complained about water quality:

> The Provincial Board shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used as a source for a public water supply or for agricultural, domestic or industrial purposes with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time when the necessity for such examination arises, and inquire what, if any, pollution exists and the causes thereof.[13]

In 1912, a significant process of consolidation and revision was completed. The new legislation provided for a chief officer of health for the province to serve as an ex officio member and secretary of the PBH and to exercise that body's authority during intervals between its quarterly meetings. The board's powers continued to include responsibility to "advise the officers of the Government in regard to public health generally, and as to drainage, water supply, disposal of garbage and excreta," among other matters.[14]

In the interests of clarity, the relevant provisions are reproduced in full:

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[11] *Statute Law Amendment Act*, SO 1906, c. 19, s. 32, amending SO 1882, c. 29, s. 30.
[12] Ibid., s. 32.
[13] SO 1923, c. 52, s. 3.
[14] *Public Health Act 1912,* SO 1912, c. 58, s. 6(b).

Public Health Act 1912

Installation of Public Water Supply

89. (1) Whenever the council of any municipality or any municipal board or commission or any company or person contemplates the establishment of or the extension of or any change in an existing waterworks system, they shall submit the plans, specifications, and an engineer's report of the water supply and the works to be undertaken, together with such other information as may be deemed necessary to the Provincial Board, and no such works shall be undertaken or proceeded with until the source of supply and the proposed works have been approved by the Board.

(2) The Board upon the application for such approval may direct such changes to be made in the source of supply or in the plans submitted as it may deem necessary in the public interest.

90. The Provincial Board shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used as a source for a public water supply with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time when the necessity for such examination arises, and inquire what, if any, pollution exists and the causes thereof ...

91. (1) No garbage, excreta, manure, vegetable or animal matter or filth shall be discharged into or be deposited in any of the lakes, rivers, streams or other waters in Ontario or on the shores or banks thereof.

(2) The owners and officers of boats and other vessels plying upon any such lake, river, stream or other water shall so dispose of the garbage, excreta, manure, vegetable or animal matter or filth upon such boats or vessels as not to create a nuisance or enter or pollute such lake, river, stream or other water.

(3) Residents of a health resort or summer resort shall so dispose of garbage, excreta, manure, vegetable or animal matter or filth as not to create a nuisance or permit of its gaining entrance to or polluting any such lake, river, stream or other water.

(4) Any person who contravenes any of the provisions of this section shall incur a penalty not exceeding $100.

92. Water boards, water companies, water commissioners and the proper officers of any municipal corporation making use as a source of water supply of any well or any other source within or partly within Ontario, and distributing the waters thereof for public, domestic or general uses, shall, from time to time, and whenever required by the Provincial Board, make returns to the Board upon forms to be furnished by it of such matters as may be required by the Board and called for by such forms, and any such water board, water company, water commissioner or officer who shall, for the space of thirty days after being furnished with such forms, fail or neglect to make any such reports required shall incur a penalty of $100.

93. (1) No sewage, drainage, domestic or factory refuse, excremental or other polluting matter of any kind, which, either by itself or in connection with other matter corrupts or impairs or may corrupt or impair the quality of the water of any source of public water supply for domestic use in any municipality, or which renders or may render such waters injurious to health, shall be placed in or discharged into the waters, or placed or deposited upon the ice of any such source of water supply, or be placed or suffered to remain upon the bank or shore of any such source of water supply, near the place from which the supply of water for domestic use is obtained, nor within such distance thereof as may be considered unsafe by the Provincial Board, after an examination thereof by a member or officer of the Board.

(2) Every person who contravenes any of the provisions of subsection 1 shall incur a penalty of not more than $100 for each offence, and each week's continuance after notice by the Provincial Board or local board to discontinue the offence shall constitute a separate offence.

Sections 90 and 92 of the 1912 legislation were essentially new and represented a further enhancement of the supervisory authority of the PBH over water quality. The board's powers in relation to sewage as set out below indicate its role in anticipating potential problems from the perspective of the public interest and in imposing conditions on municipal undertakings for this purpose.

Sewerage System and Sewage

94. (1) Whenever the construction of a common sewer or of a system of sewerage or an extension of the same is contemplated by the council of any municipality, the council shall first submit the plans and specifications of the work together with such other information as may be deemed necessary by the Provincial Board, for its approval.

(2) The Board shall inquire into and report upon such sewer or system of sewerage, as to whether the same is calculated to meet the sanitary requirements of the inhabitants of the municipality; and as to whether such sewer or system of sewerage is likely to prove prejudicial to the health of the inhabitants of the municipality, or of any other municipality, liable to be affected thereby.

(3) The Board may make any suggestion or amendment of the plans and specifications or may impose any condition with regard to the construction of such sewer or system of sewerage or the disposal of sewage therefrom as may be deemed necessary or advisable in the public interest.

(4) The construction of any common sewer or system of sewerage shall not be proceeded with until reported upon and approved by the Board, and no change in the construction thereof or in the disposal of sewage therefrom shall be made without the previous approval of the board.

(5) The Board may from time to time modify or alter the terms and conditions as to the disposal of sewage imposed by it, and the report or decision of the Board shall be final, and it shall be the duty of the municipal corporation and the officers thereof to give effect thereto.

(6) Whenever required by the Board, the Clerk of every municipal corporation having, using, owning, leasing or controlling a sewerage system or sewage disposal plant, shall make returns to the Board upon forms to be furnished by it of such matters as may be required by the Board and called for by such forms, and in the case of default the clerk shall incur a penalty of $100.

The provisions respecting by-laws represent an early recognition of the significance of municipal finance for the security of water supplies. Section 96 in particular gives precedence to public health needs – as determined by the PBH – over local democracy.

By-Laws for Borrowing for Waterworks and Sewerage

95. (1) No by-law shall be passed for raising money for any of the purposes mentioned in sections 89 and 94 until the proposed water supply or sewerage system as the case may be has been approved by the Provincial Board of Health, and such approval has been certified under the hand of the chairman and secretary of the board.

(2) The By-law shall recite the approval of the Board.

96. (1) Where the Provincial Board reports in writing that it is of opinion that it is necessary in the interest of the public health that a waterworks system or a sewer or a sewerage system should be established for any municipality, it shall not be necessary to obtain the assent of the electors to any by-law for incurring a debt for either of such purposes.

(2) The by-law shall not be finally passed until the approval of the Board has been obtained to the work to be done as herein before provided, and shall recite such approval.

97. (1) Every waterworks system and sewerage system established for public use shall at all times be maintained, repaired and improved as may be necessary for the protection of the public health and as may be directed by any special order of the Provincial Board or by the regulations.

(2) Any municipal corporation or body or person refusing or neglecting to carry out the provisions of subsection 1, after notice from the Board so to do, shall incur a penalty not exceeding $100 for every day during which such default continues.

Municipalities were still required to maintain a local board of health and to appoint a medical practitioner as medical officer of health, and also sanitary

inspectors.[15] The local boards, specifically served by the medical officer of health as executive officer, were expected to "superintend and see to the carrying out of the provisions of this Act and of the regulations, or of any by-law of the municipality, and to execute, do and provide all such acts, matters and things as are necessary for that purpose."[16]

In addition to requiring local boards and the chief officer of health, the 1912 statute formally recognized district officers, an administrative innovation credited to Dr. J.W.S. McCullough. Thus, the legislation envisaged as many as ten such officials in portions of the province designated as health districts. Cities whose populations exceeded 50,000 were excluded from health districts.[17]

In 1919, after nearly four decades of association with the provincial secretary, the PBH was transferred to the Department of Labour where health-related matters were temporarily accommodated. Ontario created a Department of Health in 1924, and by 1927, had transferred all powers and duties of the PBH to the new government department.

2.2 Water and Sewage Infrastructure

Remarkable as it may seem from the perspective of urban residents of twenty-first century Ontario, public water supply systems were not common in the province little more than 100 years ago. There were in fact 13 in 1882 when the PBH was created: Guelph, Hamilton, Kingston, London, Mitchell, Ottawa, Owen Sound, Sarnia, St. Catharines, Seaforth, Toronto, Walkerville, and Windsor. Brampton and Peterborough established waterworks in 1882. Outside these centres, households resorted to wells, springs, cisterns, community pumps, private water carriers, and other mechanisms to ensure the availability of water, not surprisingly at lower per capita levels of consumption than in the public supply systems.

In a number of major centres, beginning with Toronto in 1837, waterworks were installed, if not for the universal enjoyment of the population, at least to ensure adequate supplies for fire fighting in certain portions of the community.

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[15] Ibid., ss. 14 and 35.
[16] Ibid., s. 35.
[17] Ibid., s. 13.

Ordinarily, systems dating from this era were established and operated by private companies. Municipal ownership, as it got underway in Toronto (1873), was facilitated by locally applicable statutes rather than on the basis of province-wide enabling legislation. The statutory framework addressed such issues as construction financing, easements, powers of expropriation and the rights of property owners, service obligations, rates, the placement of hydrants and fireplugs, and so on. General legislation for this purpose, the *Municipal Water-works Act*, dates from 1882.[18] Originally viewed as a component of municipal legislation, the provisions of the original *Municipal Water-works Act* subsequently provided the foundation of the *Public Utilities Act*, which first appeared as such in 1913.[19]

By the mid-nineteenth century, Toronto, by means of a provincially approved charter, had secured permission to establish its own waterworks, to acquire existing private facilities, and to extend water rates to all households. Toronto thus joined a growing list of cities including London, New York, and Philadelphia, where the new option of public ownership contended with a continuation of the private approach to municipal water supply. However, as of 1858, only 900 of 9,500 houses in the city were serviced. Critics of the public model, as is so often the case, matched claims of private efficiency against the spectre of incompetent administration, extravagant expense, and even corruption attributed to the public alternative.[20] On the other hand, in view of the widespread failure of private systems to ensure either supply or quality, public provision appeared attractive to many observers.[21]

The economic crash of 1857 interrupted the shift towards municipal ownership with the result that Toronto's private supplier continued to provide water to a modestly growing customer base until the mid-1870s. By this point, *The Globe* would lament:

> We have neither the quantity nor the quality necessary to secure the health and comfort of the citizens, and we are equally destitute of what is indispensable for the safety of our houses from fire, the

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[18] SO 1882, c. 25.

[19] SO 1913, c. 41. By this time, public utilities included, in addition to waterworks, artificial and natural gas, electrical power or energy, steam, and hot water.

[20] E. Jones and D. McCalla, 1979, "Toronto waterworks, 1840–1877: Continuity and change in nineteenth-century politics," *Canadian Historical Review*, vol. 40, p. 311.

[21] N. Blake, 1956, *Water for the Cities: A History of the Urban Water Supply Problem in the United States* (Syracuse, N.Y.: University of Syracuse Press), pp. 140–1, 267–8.

> flushing of our common sewer, and the watering and cleaning of our streets. No city of the size and pretentions [*sic*] of Toronto can be mentioned where the sanitary arrangements are so inadequate, and where consequently preventable disease is so common.[22]

These sentiments were shared by the legislature, which only a few months earlier had introduced new legislation authorizing municipal waterworks with reference to "grave and frequent complaints" made against existing supplies.[23] The number of houses enjoying the water services rose from 1,375 in 1874 to 4,518 by the end of 1877, the year in which Toronto's system came under the direct control of city council.[24]

Section 16 of the *Toronto Water Works Act* of 1872, designed to safeguard the source of supply, demonstrates concerns characteristic of the era, when disease was still widely attributed to the decomposition of organic matter:

> If any person shall bathe or wash or cleanse any cloth, wool, leather, skin or animals, or place any nuisance or offensive thing within the distance of three miles from the source of supply for such water works, in any lake, river, pond, source or fountain from which the water of the said water works is obtained; or shall convey or cast, cause or throw, or put any filth, dirt, dead carcasses or other noisome or offensive things therein, or within the distance as above set out, or cause, permit or suffer the water of any sink, sewer or drain to run or to be conveyed into the same, or cause any other thing to be done whereby the water therein may be in any wise tainted or fouled, every such person shall on conviction thereof before any justice of the peace, on the oath of one credible witness, be by such justice adjudged and condemned to pay a penalty for every such offence not exceeding twenty dollars, together with costs, one half to be applied for water works purposes, and the other half to him or her who shall lay the information, and in case the party laying such information be the commissioners themselves or any of their officers or servants, then the whole of the said penalty shall be applied to the uses of the commissioners for water works purposes, and each justice shall also in his discretion further condemn such person to

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[22] *The Globe*, May 24, 1872, as quoted in Jones and McCalla, 1979, p. 316.
[23] SO 1872, c. 79 [hereinafter *Toronto Water Works Act*, 1872].
[24] Jones and McCalla, 1979, p. 320.

> be confined in the common gaol for a space of time not exceeding one calendar month, with or without hard labour, as to him may seem meet.[25]

Comparable provisions subsequently appeared in general municipal waterworks and public utilities legislation.

By the 1880s, the system that Toronto officials had inherited was already showing its age. In addition, the number of households served had more than tripled between 1877 and 1883 while quantities consumed also increased as residents found more uses for water. These changes put the water supply question on the agenda as officials began to imagine either resorting to alternative sources, renovating the existing works, or both.[26] Apart from pumping Lake Ontario water, Toronto's options over the years had included local rivers. But Toronto generally rejected this option on the grounds that the costs of acquiring rights from mill owners and other riparians would be prohibitive even with provincial approval. Another possibility lay in gravitational schemes, from Lake Simcoe, for example. Despite the attractive quality of the Lake Simcoe supply, pumping from Lake Ontario was much more flexible both from the perspective of financing and in terms of the system's ability to accommodate future population growth.

Table 2-1 Potable Public Water Supply and Population Summary, City of Toronto

Year	Potable Public Water Source	Population
1803	Wells, springs, carried from harbour.	456
1823	Public pump located in Market Square.	9,254 (as of 1834, closest date for available data)
1841	Toronto Gaslight and Water Company uses harbour water.	14,249
1858–1860	Water company pipe extended out into the harbour.	45,288 (as of 1861, closest date for available data)
1877	Wooden pipe built through Island to avoid harbour sewage after sand-filter basins fail.	70,867
1877 to present	Public water taken from the open lake.	

Source: W.S. Richardson, 1980, *Toronto Harbour Study, 1976–1979, Vol. I: Background Information* (Toronto: Ministry of the Environment), p. 8.

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[25] *Toronto Water Works Act*, 1872, s. 16.
[26] Jones and McCalla, 1979, p. 321.

Interest in the gravitational schemes had been comparatively limited between a mid-century dismissal of the Lake Simcoe option and Christmas Day, 1892, when Toronto's still relatively recent intake pipe rose unceremoniously from the bottom of Lake Ontario. While crossing over to the city, residents of Toronto Island were greeted by the disconcerting spectacle of the municipal supply pipe, broken in at least four locations, and caught in the ice. When weeds closed off the intake valve, despite the efforts of one Captain Goodwin who was responsible for keeping the system from clogging up (but might have been more attentive), the shoreline pumping station (possibly not monitored as closely as might have been desired during the holiday festivities) drained the entire length of the line (perhaps not as well anchored as might have been desired) causing it to float to the surface. It took a day for news of the accident to reach the public. In the aftermath, certain opinion leaders reflected that this was perhaps not as prompt a notification process as might have been desired.

With the supply temporarily restored, and the location of the actual breaks carefully studied, residents were encouragingly, if mystifyingly, advised "that the water is at least two-thirds pure and that the impure portion comes not from the bay near the sewer outlets, but from the point furthest from such pollution."[27]

As the finger pointing died down, a more positive line of inquiry got underway. This process caused Alderman Shaw to call upon James Mansergh in London, England, in September 1894. Mansergh, a member of the recently concluded royal commission into the water supply of that city, outlined his professional services for the benefit of Toronto, but it was not until September 1895 that he was invited to visit, and to do so immediately. By this point the intake pipe had again floated to the surface of Toronto harbour, an incident giving rise to "considerable excitement in the City in consequence of the fouling of the water, which was the inevitable consequence of such an accident."[28]

Mansergh inspected several alternative sources of supply, including the limited volume of water available in the Briar Hill district that was intriguingly described by its promoters: "The situation and the abundance of the water precludes the idea of its being a mere rain or natural drainage catchment."[29] Mansergh declined to spend much time on what he acidly described as a freak of nature, noting

[27] *The Globe*, 1892, (December 27).
[28] J. Mansergh, 1896, "The Water Supply of the City of Toronto, Canada" (Westminster), [unpublished], p. 5.
[29] Ibid., p. 9.

simply: "I hope I might say without offence that it is a delusion, and that if the water is not the product of rain but is supernaturally produced, then it is something of which I have had no prior experience, and am utterly incompetent to advise you upon."[30]

Writing at the turn of the century, Peter Bryce, secretary of the PBH, noted the remarkable growth in public water supply systems from the original dozen or so in 1882 to 110 in 1901. He estimated the total cost of this expansion at over $11 million, observing that the 2.2 million residents of the province were well served by the development, as declining typhoid death rates demonstrated.[31] But typhoid rates would fall considerably further in the coming decades, for chlorination was not yet a widespread practice in Ontario. Nor was filtration in general use at the turn of the century, with only six plants being installed from 1890 to 1900, as indicated in Appendix 1, a chronological list of water filtration plants established in Ontario from 1890 to 1936.

2.2.1 Quality and the Choice of Supply

Suppliers were generally expected to provide water in a "pure and wholesome" state, language that is also found in the legislative requirements of various British and American jurisdictions. But the universality of the legislative expression should not be taken as an assurance that these words reflected a precise and agreed understanding of what either purity or wholesomeness might mean. As chemists and microbiologists pursued their inquiries into the nature of water, the notion of purity would appear increasingly unattainable in natural sources, while the concept of wholesomeness – once simply demonstrated by the willingness of cattle to drink the liquid – also lacked certainty.[32]

Having noted the widespread destruction of the original forest cover of southern Ontario that helped to retain water supplies, and after noting the contamination by sewage of many lakeshore communities around the turn of the twentieth century, Dr. Peter Bryce of the PBH drew attention to the range of water supplies in Ontario, including groundwater sources. He provided a sense of contemporary understanding of their suitability for municipal purposes, perhaps

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[30] Ibid.

[31] Bryce, Peter H. 1901, "Underground waters as sources of public water supplies in Ontario," Bulletin No. 1 (Toronto: Public Board of Health).

[32] Hamlin, 1990, pp. 140–48.

contributing to the foundation of a widespread and surprisingly persistent popular assumption that underground water supplies were immune from contamination.

Bryce identified "distinctive classes of water," including that of the Great Lakes, waters from smaller inland lakes, from the rivers of the new or northern districts of Ontario, as well as from rivers in more settled areas.[33] There were, in addition, shallow wells, artesian wells, and "deep pipe wells for pumping." The condition of these might be expected to differ, for, as Bryce explained,

> the various chemical compounds have certain general relations according as the waters have been turned up in the Great Lakes reservoirs, have been flowing out of peat bogs, along clay banks or through limestone districts, whether they have received the surface drainage from cultivated land or from sewers, or from wells receiving a steady soakage from local sources of pollution, as soil contaminated with excreta or barn yard wash.[34]

On the question of purity, Bryce observed:

> All are aware that the rain water falling, chemically pure, at once dissolves from the surface soil whatever soluble materials are present, and that similarly as they descend into the soil they become loaded with organic impurities in the upper soils. In addition to chemical impurities, they likewise, through these impurities, become culture media through which infinite numbers of bacteria from the soil and air find abundant nutriment. Here again we find not only variations in the class of waters, which, according to their temperature, to the class of pollution and to their exposure to agitation and to the free oxygen of the air, present very different species of bacteria and enormously different numbers in a given volume.[35]

Acknowledging that "we cannot be said as yet to have any complete or classified knowledge," Bryce reported nonetheless that "we do know that as the destruction of organic matter is slow or rapid according to circumstances, so the degree of purity of water for drinking purposes must depend upon the constancy of a

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[33] Bryce, 1901.
[34] Ibid.
[35] Ibid.

settled condition unfavourable to a pollution from any source and remaining at a temperature inimical to the growth of bacterial life."[36] Insofar as bacterial contamination was seen to be threatening, Bryce was generally reassuring on the beneficial effects of the natural filtration of water penetrating through the soil to underground sources:

> Remembering that is it only through the upper three feet of soil that organic materials with their contained bacterial life usually extend, and that it is therefore in these that the descending waters receive bacterial pollution, it is apparent that in the measure the waters continue to pass downward through permeable strata, will they leave behind all suspended matter whether organic or bacterial which they receive in the upper soils. Manifestly, however, the effect of the destructive influences going on in the soil will depend upon the depth of the organic materials and the porosity of the soil as regards movement of gases and the depth at which the bacteria of the soil are found to be capable of developing.[37]

As Ontario communities contemplated their supply options, the quality of water was an essential, but not an exclusive, consideration. The questions of economy and indeed the volume of alternative supplies were also important to municipal politicians and local ratepayers. The Ottawa experience is illustrative.

2.2.2 Ottawa – The Search for an Alternative Water Supply

In the nation's capital, a singularly unhealthy set of circumstances had threatened water quality through the late-nineteenth and early-twentieth centuries. The Ottawa River was mistakenly, perhaps perversely, presumed to be pure. With that mindset, civic officials declined to spend funds to clean out a public well in which a dog had drowned. Recognition of the linkage between health and contaminated water supplies was slow in coming.[38] By 1913, a consultant's report recommended that Ottawa draw its water from Thirty-one Mile Lake, Pemichangaw Lake, and Long Lake, all just across the Ottawa River in Quebec's Gatineau Hills. Provincial and federal statutes were enacted to facilitate the

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[36] Ibid.
[37] Ibid.
[38] J.H. Taylor, 1979, "Fire, disease and water in Ottawa: An introduction," *Urban History Review,* vol. 8, no. 7, pp. 22–3, 29, 33–6.

project, and one municipal council eagerly passed a by-law to fund the new waterworks. Irate ratepayers succeeded in having that by-law quashed. A virtually identical successor, which the city claimed it had been compelled to enact by order of the province's chief officer of health, met the same fate. Justice Lennox found the consultant's study insufficiently developed in terms of planning detail to receive PBH approval, but he reflected generously on the potential scope of the board's authority. Assuming the proper steps were followed, and notwithstanding the protests of "any majority" of citizens, Lennox concluded that the chief officer of health "has the power to compel a small community like Ottawa to assume a burden of $8,000,000 or for that matter, of $13,000,000 or more."[39] He admitted, "this is a long step from government of the people by the people," but concluded nevertheless that "in view of the criminal negligence of some municipalities, it cannot be said that the provisions of the *Public Health Act* are too arbitrary or drastic in this regard."[40]

In 1914, following the election of a new city council, Ottawa ratepayers formally expressed their continued preference for water drawn from the Ottawa River – an industrial thoroughfare for the lumber trade of the nineteenth century – and filtered locally, over the more costly scheme to deliver uncontaminated water from Quebec.[41] But when the actual plans for the less costly pumping, filtration, and chlorination of river water reached the PBH under a statutory reference, that body unanimously refused to approve the scheme. The PBH observed that the Ottawa River was "beyond any question, a polluted source of supply at all points in the vicinity of the city of Ottawa."[42] Accordingly, the board concluded that it would not be consistent with its duty to the citizens of Ottawa or to visitors to the national capital to "countenanc[e] the use of water which, after mechanical filtration, constantly requires chlorination, when a pure and adequate supply, requiring no treatment whatever, may be readily procured."[43]

Ottawa's incoming civic administration took exception to the board's conduct and applied successfully for an order of mandamus to compel the PBH to address its responsibilities in relation to the river scheme. Although Justice Middleton agreed that the PBH had exceeded its authority, he offered an

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[39] *Clarey* v. *City of Ottawa* (1914), 25 OWR 615 at 616.
[40] Ibid.
[41] See J.S.P. McLaren, 1984, "The tribulations of Antoine Ratte: A case study of the environmental regulation of the Canadian lumber industry in the nineteenth century," *University of New Brunswick Law Journal*, vol. 33, p. 203.
[42] *Re City of Ottawa and Provincial Board of Health* (1914), 33 OLR 1 at 7.
[43] Ibid., p. 8.

assessment of its status that again reflected importance if it did not confer power. The board, he observed is not "a mere emanation of the Crown" but rather a body created to discharge "important administrative and quasi-judicial functions."[44]

This particular skirmish was not an isolated incident, a one-time only regulatory clash between local politicians concerned with the practical realities of municipal finance and a remote provincial agency intent on imposing abstract and artificially high standards. The need to address drinking water quality in the nation's capital had been pressing for five years, and was particularly acute since the deaths in 1911 and 1912 of 174 people in typhoid epidemics. With the outbreaks of disease attributed to pollution from the untreated sewage of the community of Hintonberg flowing down Cave Creek to Nepean Bay where it entered the city's faulty supply pipe, the situation was urgent. Nevertheless the PBH found itself struggling to impose a high quality but capital intensive plan against the resistance of local politicians who balked at the cost when compared with the alternative of filtration and chemical treatment of water from the Ottawa River. At a point when the PBH once more seemed close to succeeding, a reassessment of the city's water volume requirements for fire fighting purposes conclusively removed the Gatineau lakes plan from contention.[45]

2.2.3 Sewage Treatment – Slow to Come

The Ottawa experience was not unique. By the early 1900s, consulting engineers were increasingly inclined to urge their municipal clients to spend funds on water treatment immediately prior to delivery rather than on attempts to safeguard water supply sources with buffer zones or sewage treatment facilities.

Indeed, investment in sewerage did tend to lag behind waterworks expenditures. In Dr. Bryce's opinion this was perhaps not surprising, given the prominent influence of fire protection on the latter. He expressed optimism, however, that growing acceptance of sanitary thinking was beginning to bring about a reallocation of resources.

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[44] Ibid., p. 19.
[45] C. Warfe, 1979, "The search for pure water in Ottawa: 1910–1915," *Urban History Review*, vol. 8, p. 91.

> The evolution of the idea that sewerage is not necessarily or properly a part of drainage has been slow; since the old time ideas, represented in the great sewers of Paris, were that sewers were street drains and not necessarily carriers of house sewage. The separate system of sewerage which has been the type introduced in almost every new system for fourteen years fully illustrates that the sanitary idea has prevailed.[46]

Bryce's assessment was reinforced by the specific experience of Ontario: "That the systems more or less fully completed should be 50 as compared with 7 in 1882 equally with public water supplies indicated the growing public sense of good health, as the measure of all municipal prosperity and the happiness of the citizens."[47]

If there were indications of progress, there were also greater obstacles. One such obstacle involved massively increased pollution from municipal sources resulting from the extension of the sewerage infrastructure, an expansion that did not generally include waste treatment facilities. As of 1916, Ontario had 95 sewerage systems, 60 of which discharged untreated sewage into surface waters.[48] Shortly after the World War I, only about one in three of Ontario's 284 organized cities, towns, and villages had sewerage facilities.[49]

By way of comparison, U.S. researchers report that in 1892 – roughly the time of Sedgwick's investigations into the transmission of typhoid – only 27 municipalities in that country employed any sewage treatment.[50] A couple of decades later, 88% of wastewater and sewage was disposed of without treatment. By 1930, when roughly two-thirds of the U.S. population drank filtered and/or chlorinated water, 60 million residents out of the total U.S. population of 122 million were connected to a sewer. However, fewer than one-third of the connected population were provided with sewage treatment.[51]

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[46] Bryce.
[47] Ontario, Public Board of Health, 1902, *Annual Report, 1901* (Toronto: PBH).
[48] Leo. G. Denis, 1916, *Water Works and Sewerage Systems of Canada* (Ottawa: Commission of Conservation), p. 176.
[49] F.A. Dallyn, 1919, letter to Dr. J.W.S. McCullough, (August 2), Archives of Ontario (AO), RG 62. See also Denis, pp. 158–67.
[50] J. Tarr, 1984, "Water and wastes: A retrospective assessment of wastewater technology in the United States, 1800–1932," *Technology and Culture*, vol. 25, no. 226, p. 329.
[51] Ibid.; J. Tarr, 1979, "The separate vs combined sewer problem: A case study in urban technology design choice," *Journal of Urban History*, vol. 308, p. 329.

2.3 Legal and Enforcement Matters

Innovations in sewage treatment may have reduced some conflicts, but environmental concerns and public health risks persisted. The new municipal sewage treatment operations received a good deal of attention from public health officials who had supervisory responsibilities; a number of these facilities eventually became the subject of litigation.

In 1919, Frederick A. Dallyn, sanitary engineer for the PBH, believed the time was right for the province to suggest to the municipalities means of handling sewage as well as for improving their water supply. Dallyn insisted that smaller municipalities were "keenly concerned" about the situation but, lacking local engineers, they were doing nothing to assess the practicality of remedial alternatives.[52] Assuming that some initiative was taken, Dallyn outlined further issues for consideration. Would the PBH be content to discuss generalities and ultimately to generate a little business for consulting engineers, or would it wish to furnish each municipality with a plan and a general cost estimate, either at no charge or on the basis of some formula for cost recovery? Given some provincial support, Dallyn argued that municipal engineering departments might (without waiting for civic initiatives) collaborate with local health officers to campaign for improved sewers, treatment facilities, the extension of water supply systems and purification processes – especially in the smaller municipalities.

As an example of the difficulties that had to be overcome, the provincial sanitary engineer outlined the situation at Kincardine on Lake Huron's eastern shore where the mayor was anxious to install sewerage facilities. As Dallyn explained, "Their desire is to sewer one little section of the town and drain the same into a septic tank, allowing the effluent to discharge directly into the river."[53] On a recent visit he had observed "very little flow of water in the river and in some places it was practically dry."[54] In such circumstances, almost no dilution occurred during the summer months. Accordingly, Dallyn cautioned against permitting the town to discharge untreated effluent, and against a partial or patchwork solution. As the provincial sanitary engineer explained, a previous attempt to implement a comprehensive scheme had foundered: "Unfortunately the by-law was defeated by the rate-payers

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[52] F.A. Dallyn, 1919, Letter to McCullough (August 2), AO.
[53] Ibid., 1919, Letter to McCullough (June 17), AO.
[54] Ibid.

principally owing to the fact that they had not consulted the provincial board of health."[55]

The provincial sanitary engineer sought permission to visit England to evaluate and possibly to order a recently patented centrifuge for demonstration purposes. The technology was intended to "change the present methods in de-watering sewage sludge so that the material [could] be handled without a nuisance."[56] Dallyn thought that such a machine (estimated to cost $3,900 for a large model or $2,000 for a smaller version of the same type) could also be applied to waste from canneries and wool-scouring plants where existing solutions were prohibitively expensive. He actively encouraged municipalities to take appropriate measures and offered advice, but from this era no examples have been located of the exercise of the board's formal authority to impose specific measures on unwilling local governments.

Litigation was not central to the official campaign for improvements in municipal sewage and water systems, but the evidence, opinions, and support of health authorities were often crucial to the efforts of other parties to defend water quality in court. In addition, the PBH had to defend its jurisdiction against attacks.[57]

2.3.1 The "Big Odor" Case: The Fieldhouse Claim

In 1908, after years of debate, Toronto approved construction of an interceptor sewer system to transport sewage for treatment in settling tanks at Ashbridges Bay. Construction of the sewer system and a treatment plant on Morley Avenue soon got underway. Completion of the undertaking in 1913 was generally hailed as a major advance, but, from the outset, east end residents subjected plans for the sewage treatment plant to severe criticism. Complaints from residents and deputations to city officials produced expressions of sympathy and triggered municipal investigations into the plant's operation, but they failed to bring about improvements. City residents who had been adversely affected by the construction and operation of the new facility embarked on legal action.

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[55] Ibid. 1919, Letter to McCullough (December 18).
[56] Ibid.
[57] See J. Benidickson, 1999, "Ontario water quality, public health and the law, 1880–1930," in J. Phillips and G.B. Baker, eds., *Essays in the History of Canadian Law: Essays in Honour of RCB Risk* (Toronto: Osgoode Society for Canadian Legal History), vol. 8, pp. 121–2.

Samuel E. Fieldhouse, a food, confectionery, and ice cream merchant, had the misfortune to carry on business from premises just opposite the lakeshore location of the Morley Avenue sewage disposal plant.[58] He was among those who had petitioned civic officials to remedy the situation. However, in November 1915, when minor modifications failed to produce satisfactory improvement, Fieldhouse took civil action against the city, alleging nuisance and negligence in the construction and operation of the plant. He specifically charged that the nuisance and water pollution were "dangerous to public health," had destroyed his business, and had rendered it "unbearable" to live on the premises.[59] Fieldhouse claimed special damages together with an abatement order against the city and an injunction to bring the nuisance to an end. The city denied the claim, arguing that care had been taken in the construction of the works, and that their operation represented a statutory duty that it was obligated to perform. Municipal officials also asserted, somewhat problematically as it later emerged, that plans had been approved by the PBH. Thus the Fieldhouse litigation provides an early example of a municipal attempt to avoid liability to disaffected residents with the argument that the offending activity had been authorized by statute.

Despite Toronto's formal denial of legal responsibility, the Fieldhouse claim was amply supported by municipal documentation. Certain municipal officials acknowledged the existence of the nuisance, and the municipal board of control went so far as to investigate possible claims against the experts from New York and Birmingham who had advised on the Morley Avenue plant. That specific inquiry produced a sobering response from Toronto's commissioner of works who concluded "that the advice of the experts, relative to sludge disposal was not followed, and the condition they foresaw if sludge were deposited contiguous to the premises, has eventuated."[60]

Compounding the awkwardness of Toronto's position was the fact that whatever approval provincial health officials might once have expressed for the city's plans had evaporated. A provincial health inspector unhesitatingly asserted that the complaints were "well founded, as the pollution of the atmosphere by this plant cannot help but be a nuisance and menace to the health of the nearby

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[58] *Fieldhouse* v. *Toronto* (1918), 44 DLR 392 at 396 (Ont. SC) [hereinafter *Fieldhouse*]. *Fieldhouse* litigation files are located in the Archives of Ontario and in the City of Toronto Legal Records Office.

[59] *Fieldhouse* file, "Statement of Claim," AO.

[60] Toronto Commissioner of Works, 1914, Letter to Mayor Hocken and the Toronto Board of Control (June 16).

residents who are compelled to breathe it." For good measure, he added, "Undoubtedly some different method of treating and disposing of the sludge is required and should be insisted upon without unnecessary delay."[61]

Civic inquiries about means to eliminate the problem identified a solution with estimated costs of $6 million. There was little enthusiasm to proceed with such costly remedial action, especially in wartime, and the city was of the opinion that there was actually no adverse impact on the drinking water supply. A universal 'do nothing' argument also emerged in the form of the proposition that even if the $6 million were to be spent, "new discoveries or experiments in treatment might soon render the whole plant out of date."[62] This was not the last time that such an argument would be advanced as an excuse to defer badly needed remedial measures still further.

Having at least engaged the city's attention, Mr. Fieldhouse moved elsewhere in Toronto, though he retained an interest in the proceedings, which continued to bear his name. Given Fieldhouse's move from the immediate vicinity, as well as some uncertainty concerning the entitlement of a private plaintiff to an injunction rather than mere damages, in the summer of 1916, Fieldhouse invited Ontario's attorney general (AG) to join the proceedings as co-plaintiff. After looking into the matter "pretty thoroughly," Deputy Attorney General Edward Bayly concluded that this was a "reasonably proper" situation for someone in his position to enter into.[63] He recommended that consent be given to add the AG if the applicants undertook to assume responsibilities for all costs incurred.

When the matter came before the Master in the form of Fieldhouse's application, accompanied by the AG's consent to add the attorney general as a party plaintiff, the Master "seemed indisposed" to follow a precedent along these lines and almost dismissed the motion.[64] Eventually, two individuals working or living near the city's sewage disposal system were joined as plaintiffs, but by the time the matter came before Chief Justice Mulock for trial in December 1917, they too had been forced to move away.

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[61] R.M. Bell, 1915, Letter from Provincial Inspector of Health to PBH, "Report re Nuisance Main Sewage Works, Toronto" (May 14).
[62] Toronto Commissioner of Works and Medical Officer of Health, 1916, Letter to Mayor Church and Toronto Board of Control (July 21).
[63] Edward Bayly, Deputy Attorney General, 1916, "Memorandum for the Honourable the Attorney General" (December 5).
[64] Edward Bayly, Deputy Attorney General, 1914, Letter to the Attorney General (January 6) and accompanying correspondence, AO, RG 4-32 (1914), no. 69.

The "Big Odor" case, as *The Toronto Daily Star* labelled the proceedings, was a *cause célèbre*. One hundred and fifty witnesses were assembled while "blueprints without end festooned the judicial desk."[65] Justice Mulock took an active part in the trial, reportedly, at one point, offering the city his services as a sanitary engineer on the principle that anyone could do a better job. On another occasion he rebuked counsel for the city with the observation, "This can't be tolerated; you are emptying more faecal matter into the lake than you originally contemplated."[66]

Mulock identified two sources of offensive odours: concentrated sewage (sludge) that was allowed to settle on a 19-acre disposal site and effluent drained off through a defective and inadequate outfall pipe and a storm overflow line to Ashbridge's Bay. In response to the city's defence that the sewage treatment facility had been authorized, the chief justice explained: "They have statutory authority to establish a sewage plant, but no authority to create a nuisance by its operation; and inability to operate it without causing a nuisance does not, in my opinion, furnish an excuse for their creating a nuisance."[67] And, he continued, "While I am of the opinion that the operation of the plant causes a nuisance, and the absence of negligence would not furnish a defence, I think the facts show that the nuisance is traceable largely, if not entirely, to negligence."[68] The trial result was precisely what Fieldhouse had sought and what the city had feared: in addition to $2,000 damages for Fieldhouse, the plaintiffs secured an injunction prohibiting the city from operating the plant so as to cause a public nuisance, and an abatement order requiring remedial action by May 1, 1918.[69]

When the city appealed the negligence finding and reasserted statutory authority as a defence, the Ontario Court of Appeal confirmed the trial judgment. Toronto's longstanding failure to repair the deficient outfall pipe was clear evidence of negligence. In addition, members of the court carefully reviewed the requirements of the defence of statutory authority in the context of municipal construction of sewage facilities under the approval of the PBH and concluded that the defence was not available to the city. Toronto had neither passed a by-law to authorize the installation of the Morley Avenue sewage plant, nor had it obtained approval from the board for the facility it established.

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[65] *The Toronto Daily Star*, 1920 (December 14), p. 20.
[66] *The Toronto Daily Star*, 1917 (December 14), p. 17.
[67] *Fieldhouse*, p. 494.
[68] Ibid.
[69] Ibid.

There had been by-laws, of course, though nothing introduced in evidence indicated by-law approval for construction. Significantly, although some plans submitted to the PBH received acceptance in 1908, important modifications were made in the actual implementation of the sewage facility as completed in 1913. Accordingly, the sequence of steps and approvals contemplated by provincial legislation had not been followed.

As previously noted, the *Public Health Act* required municipalities contemplating the construction or extension of a sewage system to seek approval from the PBH. In turn, the PBH was charged with reporting whether the proposed work was "calculated to meet the sanitary requirements of the inhabitants of the municipality and as to whether such sewer or system of sewerage is likely to prove prejudicial to the health of the inhabitants of the municipality or of any other inhabitants liable to be affected thereby."[70] The PBH could require amendments, impose terms and conditions "in the public interest," and modify such conditions from time to time.

It is clear that Toronto municipal expenditures on sewage facilities and water treatment increased substantially in the early decades of the century, but it is somewhat more problematic to link specific remedial action with the Fieldhouse litigation.[71] In fact, while a decision on the appeal was pending, the city attempted to settle the action, unsuccessfully, and an official attributed the difficulty to "the uncompromising attitude of the plaintiff."[72] We should not overlook the city's own difficulties with compromise, for as late as April 30, 1921, a Master reviewing Fieldhouse's entitlement to damages from the date of the trial to the date of abatement fixed the amount at $3,820, noting that the long-awaited day had not yet arrived.

Not only was the city reluctant to comply with the original finding of the court, Toronto council – before the unfavourable appeal decision – had determined to petition the provincial government for legislation that would retroactively authorize the operation of the sewage treatment facilities. A few months later, civic officials experienced second thoughts, and the application was reconsidered.[73] This was hardly the last time that some municipality or

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[70] RSO 1914, c. 218, s. 94.
[71] See P. Anisman, 1972, "Water pollution control in Ontario," *Ottawa Law Review*, vol. 5, p. 344, note 18.
[72] City of Toronto, 1918, *Fieldhouse* File, Letter from William Johnston, city solicitor, to Mayor Church and the Board of Control (July 18).
[73] Toronto City Council, 1919, Minutes, vol. 1 (January 27 and February 24).

other would pursue the legislative route to salvation in the face of adverse judicial results in litigation over water quality.

2.3.2 Kingsville, Ont., and "Gross Pollution"

The resistance of Ottawa and Toronto to sanitary expenditures was certainly not unique. When a 1917 investigation of water quality at Kingsville on Lake Erie some 32 kilometres of the Detroit River produced evidence of "gross pollution" traceable to town sewage and industrial contamination, provincial public health officials recommended remedial measures.[74] The chief officer of health advised the town clerk that chlorination and filtration were needed on the intake side, as well as sanitary sewers and some basic sewage treatment measures. To avoid misunderstanding, he explained that the order was made pursuant to the *Public Health Act.* Provincial officials continued to follow up with Kingsville representatives, including the local health officer who had actually endeavoured to have the order rescinded. This produced a concession to the effect that the chlorination requirement might be waived if the town proceeded with filtration. After further inspections, and following additional pressure from the provincial level, Kingsville installed filtration facilities and secured PBH approval for its water supply system in 1922. At the same time, however, the board's sanitary engineering division continued to urge chlorination "in case of any mishap in filtration."[75]

The Kingsville story is known because a few years later such a mishap did occur. When the intake pipe deteriorated and town officials introduced an unauthorized drainage ditch, typhoid struck Kingsville. Among nearly 50 victims of the disease at least one elderly resident died; her husband successfully sued the town.[76] By the time of trial, indeed very soon after the first reported cases, provincial public health officials had implemented chlorination, and a permanent facility was in place shortly thereafter. Kingsville, regrettably, was not the only Ontario community to experience typhoid and consequent litigation in this era.[77]

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[74] *Campbell* v. *Kingsville*, [1929] 4 DLR 772 at 773 (Ont. SC).
[75] Ibid., p. 776.
[76] Ibid., p. 772.
[77] *Costanza* v. *Dominion Canners, Ltd.* (1921), 67 DLR 413 (Ont. SC) and *McQueen* v. *Owen Sound* (1927), 32 OWN 383 (Ont. SC); Benidickson, 1999, p. 133.

2.4 Federal Initiatives

The federal government, pursuant to its responsibilities for fisheries and navigable waters, had demonstrated concern over water quality intermittently since Confederation. Although generally this interest related to ambient or surface water quality, Canada came close to a national initiative intended to safeguard sources of drinking water as early as 1908. In that year, legislation regarding the pollution of navigable waters was introduced in the Senate by Napoleon Belcourt. The proposal was directed to the newly created Commission of Conservation, which submitted a revised version. Passed by the Senate, the measure was not considered in the Commons because of the unexpected dissolution of Parliament.[78] In 1911, perhaps with renewed determination in light of a major typhoid outbreak in Ottawa, Senator Belcourt reintroduced legislative measures. The Belcourt proposal was essentially a prohibition against contaminating navigable water in Canada, subject to authorized exemptions. This protective measure, intended to safeguard the quality of surface water generally, was wider in scope than most provincial efforts to safeguard sources of water supply.

> Every person is guilty of an offence against this Act, and liable on summary conviction to the penalties hereinafter provided, who puts, or causes or permits to be put, or to fall, flow, or to be carried into any navigable water, or into any other water any part of which is navigable or flows into any navigable waters –
>
> (a) Any solid or liquid sewage matter; or
>
> (b) Any other solid matter which, not being sewage is poisonous, noxious, putrid, decomposing, refuse or waste; or
>
> (c) Any liquid matter which, not being sewage, is poisonous, noxious, putrid, decomposing, refuse or waste; unless such matter, whether solid or liquid, is disposed of in accordance with regulations made or permits granted under the authority of this Act.[79]

This time the bill was referred to the Committee on Public Health and, once again, failed to complete its parliamentary passage.

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[78] T.A. Murray, 1912, *The Prevention of the Pollution of Canadian Surface Waters* (Ottawa: Commission of Conservation), p. 3.
[79] Ibid., p. 4.

In a series of articles that appeared in *The Toronto Globe*, T. Aird Murray, joined a number of fellow Canadians in calling attention to the extent of the crisis. Statistically, the challenge was evident enough in comparative typhoid mortality rates. These showed that the performance of Canada and the United States at 35.5 and 46.0 deaths from typhoid per 100,000 population respectively was in sharp contrast with results for Scotland (6.2), Germany (7.6), England and Wales (11.2), Belgium (16.8) and Austria (19.9). Even the worst European experiences, in Hungary (28.3) and in Italy (35.2), better than the North American record. In a number of Canadian cities, based on statistics for 1909, still more alarming rates were found: Edmonton, 76; Montreal, 53.8; Saskatoon, 66.6; Ottawa, 31.2; Niagara Falls, 24.3; and Toronto, 25.7. Even more extreme occurrences had been recorded, notably an epidemic in Fort William in 1906 when a damaged intake pipe resulted in 96 deaths in a population under 10,000 or 946.9 per 100,000. Sarnia, also with a population of about 10,000, reported 93 cases in 1912.[80] Chlorination seemed an increasingly attractive measure in the aftermath, and would shortly become common throughout Ontario in the prevention of water-borne disease.

2.5 International Considerations

Taking advantage of the International Joint Commission (IJC), created in 1909, to put the matter of water pollution on the international agenda, the United States and Canadian governments specifically asked the IJC to investigate the location, extent, and causes of boundary water pollution between the United States and Canada that was injurious to public health and rendered the waters affected unfit for domestic or other uses. Remedies were also requested, whether involving the construction and operation of suitable drainage canals or treatment plants.

A preparatory conference in Buffalo, December 17, 1912, brought together officials from Canada and the United States, as well as Ontario and Quebec along with several of the states most directly affected. Canadian delegates included John Thompson, KC, for Dominion of Canada; Dr. Frederick Montizambert, director general of public health; and Dr. Charles A. Hodgetts, then medical adviser to the Commission of Conservation. Ontario was represented by Dr. John A. Amyot, director of laboratories, PBH, and his colleagues Dr. J.W.S. McCullough, chief officer of health; and Frederick A.

[80] Ibid., pp. 11–13.

Dallyn, provincial sanitary engineer. Theodore J. Lafrenière attended in his capacity as sanitary engineer for the Board of Health of the province of Quebec. Dr. Allan J. McLaughlin of the U.S. Public Health Service headed up the U.S. contingent. He was accompanied by Mr. A.H. Seymour, secretary of the New York State Board of Health in Albany, and his associate Dr. Edward Clark, the medical officer with the State Board of Health in Buffalo. The U.S. delegation also included Dr. H.A. Whittaker, assistant director, Lab Division, Minnesota State Board of Health, St. Paul, and his counterparts from Ohio and Illinois. Mr. W.W. Mills also attended in his capacity as president of the Niagara Frontier Pure-water Conference, North Tonawanda, New York. Follow-up hearings in Buffalo on June 9 and 10, 1913, attracted municipal representatives as well as persons associated with business ventures and other parties.

The Buffalo gathering identified a research agenda, which McLaughlin, as chief sanitary expert and director of fieldwork, would oversee. From the list of Canadian participants, McCullough and Amyot were named as consultants to the undertaking. By September 1913, the scope of the investigation had been determined, and arrangements formulated to examine the Niagara River; the Detroit River and connecting waterways from Lake Huron to Lake Erie; St. Mary's River; the St. Lawrence River, from Lake Ontario to a point where it departs from the boundary; and a portion of the St. John River.

The research program involved analysis of about 18,000 samples taken from 1,500 locations around the Great Lakes, reviews of the historical incidence of certain diseases, and a good deal of investigation through interviews and correspondence. Following what they described as the most extensive investigation and bacteriological examination ever made in the world, the commissioners offered some preliminary findings in 1914. In the absence of comprehensive information establishing historical baselines, the report's authors provided a number of comparative references to conditions in other jurisdictions. However, the use of these horizontal benchmarks, perhaps the best or most persuasive indicators possible, did have the effect of establishing and accepting baseline standards already far removed from pre-industrial conditions on the lakes. Great Lakes' pollution was already being defined against a norm that appeared to take for granted a significant level of contamination from human activity.

In terms of pollution's effect on public health, the commissioners indicated that – apart from public water supplies – the sanitary and climatic conditions of cities and towns around the Great Lakes were much better than national averages, and infinitely better than those in the filthy, overcrowded, and often

impoverished cities of Europe. Yet despite such advantages, excessive rates of typhoid fever had been documented for years in Great Lakes' communities, and the occasional explosive epidemics were said to be without parallel in the European context. With death rates from typhoid fever averaging fewer than five per 100,000 in the large cities of Northern Europe where water supplies had been secured, the Great Lakes inquiry revealed a disturbingly high incidence of the disease in many communities. During at least one of the three years preceding the reference (1910–1912), a rate (per 100,000) of over 300 was registered in Ashland, Wisconsin; 109 in Marquette, Michigan; 196 in Port Huron, Michigan; 194 in Niagara Falls, New York; 190 in Erie, Pennsylvania; and above 50 in the Michigan communities of Alpena, Bay City, and Sault Ste. Marie, as well as in Duluth, Minnesota, and Sandusky, Ohio. Ontario produced equally alarming numbers: 330 in Sault Ste. Marie, 179 in Port Arthur, 134 in Sarnia, 86 in Niagara Falls, 63 in Brockville, 55 in Windsor and 57 in Walkerville. Even comparatively fortunate Great Lakes cities such as Detroit – where the rate had never fallen below 15, and in 1913 rose above 30 – were operating with levels of typhoid that would not be tolerated in Europe.

The IJC's advisers provided a simple enough explanation: "The greatest single factor in this avoidable and remediable pollution is the sewage discharged without restriction or treatment of any kind by the municipalities situated on the boundary waters."[81] There was no particular reason, apart from size, to single out individual municipalities for critical comment, since the investigators had quite categorically concluded from their preliminary investigations that "every municipality, without exception, in the area investigated of the Great Lakes and their connecting rivers, avails itself of the opportunity to discharge its sewage untreated into these international waterways. This is the largest factor in their pollution."[82]

Two broad alternatives might well have been imagined by way of response. One alternative was the preventive thrust of sewage treatment oriented at restoring water quality throughout the Great Lakes. The other involved protective measures designed to safeguard public health by focusing exclusively on water supply. Sewage treatment had a few advocates, as state officials from New York, Pennsylvania, and Minnesota urged that untreated sewage should not be permitted to enter streams that served as sources of water supply. Their

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[81] International Joint Commission, 1914, "Progress report of the IJC on the referency by the United States and Canada," in *The Pollution of Boundary Waters* (Ottawa and Washington, D.C.: IJC), p. 12.
[82] Ibid., p. 21.

objective, as the twentieth century opened, was to combat routes of infection in order to prevent disease, with typhoid the principal target of such measures. A 1908 report on stream pollution presented at a conference of state and provincial boards of health consolidated criticism of the practice of using streams for sewage removal, even adding recreational losses to public health concerns as a reason for protecting surface water quality. Condemning the widespread use of streams for sewage disposal, the report called for double safeguarding – sewage treatment combined with filtration of the water supply.[83]

The water treatment alternative prevailed overwhelmingly, however, as public health officials, who had once been so instrumental in promoting waste removal by means of municipal sewerage, now emphasized that bacteriological insights dictated the purification of water supplies. They were strongly supported by conventional engineering wisdom that found overwhelming support amongst municipal officials with an eye on expenditure levels and the burden of local debt. What more or less sealed the fate of the sewage treatment option in this era was the further thought that the primary beneficiaries of municipal sewage treatment would be downstream residents outside the jurisdiction that was undertaking the remedial measures. Whether or not surface waters served as water supply sources, the convenience of using them for waste disposal almost universally overrode the dimly perceived benefits of preserving the integrity of natural waterways.

The level of government best suited to respond effectively to the distinctive and growing challenges of water pollution was already becoming an issue on both sides of the border. Of the existing options – local, national, or the intermediate-level jurisdictions of state or provincial governments – each had plausible claims, and in fairly short order proposals for more comprehensive international institutions would be made. In Canada, as described above, the campaign for national action had as its champion the distinguished Franco-Ontarian, Senator Napoleon Belcourt, an Ottawa resident whose familiarity with typhoid outbreaks in the capital city had stimulated his interest in legislative action well in advance of the IJC's Great Lakes investigation.

Outside Parliament, Aird Murray was among those who anticipated federal government action along the lines of the Belcourt initiative. He discerned a

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[83] J. Tarr, J. McCurley, and T.F. Yosie, 1980, "The development and impact of urban wastewater technology," in M.V. Melosi, ed., *Pollution and Reform in American Cities, 1870–1930* (Austin and London: University of Texas Press), p. 59.

similar general consensus within the ranks of provincial health authorities at the October 12–13, 1910 conference in Ottawa of the Public Health Committee of the Commission of Conservation. The rationale combined limitations in the effectiveness of provincial measures with certain advantages anticipated from national action. In terms of provincial deficiencies, Murray expressed his belief as follows:

> It is quite obvious that under the present conditions of isolated Provincial action only very localized phases of the subject can be dealt with from local points of view. For example the province of 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 the province of Quebec relative to the pollution of the Ottawa river whose banks are interprovincial.[84]

On the other hand, in Murray's eyes, Dominion action offered these attractions:

> (a) The establishment of a central authority at Ottawa having Dominion supervision and direction in questions affecting surface water pollution, the collection of data, the direction of experimental work, and the diffusion of standardized information throughout the various Provinces
>
> (b) The establishment of a central authority having Dominion powers relative to interprovincial questions affecting the pollution of waterways which do not at present come under control of Provincial authorities
>
> (c) The establishment of a central authority having Dominion powers relative to international negotiations as between the Dominion and the United States in all questions affecting the purity of the Great lakes and their tributaries.[85]

Arguments for federal involvement in water quality protection would vary over the years, but they would certainly continue to be made.

Notwithstanding Belcourt's determination, national legislation on water quality was doomed by senatorial opposition in the public health era. Some senators,

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[84] Murray, p. 7.
[85] Ibid., p. 6.

notably the Montreal contingent, thought that the prevention of sewage contamination upstream from that port city might be a good thing, but the principle could not be made workable in the city itself. Supporting them, in opposition to strong federal legislation, was a former prime minister, Sir Mackenzie Bowell. He advanced the opinion that the amendment as drafted was too wide in its implications to be carried out. By way of example he explained:

> The city in which I live is on the river Moira. The river runs through the centre of the city, and discharges into the Bay of Quinte. But that river extends some hundreds of miles north of us, and along its course there are twenty or more villages of various sizes emptying their sewage into the main stream. Then there are creeks and branches, on which there are villages, which empty their sewage into the stream, and all that sewage is carried down the Moira into the Bay of Quinte, which is navigable water. This Bill provides that if a dead horse is thrown into the river a hundred miles north of its outlet, or sewage from any of the towns or villages upstream is deposited in the waters running into the Bay of Quinte, then the operation of this law could be invoked, because the River Moira empties into the Bay of Quinte.[86]

The former prime minister's line of thought is somewhat difficult to discern. Ultimately, he appears to be defending the right to throw dead horses into the river: "There are scientific treatises written on the subject, in which scientific men point out very clearly that once sewage is emptied into a running stream, after it has travelled a certain distance it purifies itself."[87] Almost half a century after research by the English chemist Edward Frankland called in question the self-purification theory, the comfortably misconceived generalization that had taken thousands of lives received a forceful echo.

In September 1918, the product of over half a decade of scientific and engineering research, public consultations, and vigorous deliberations emerged from the IJC.[88] In relatively short order, that is, by March 1919, the two national governments had reached agreement to call upon the IJC to formulate a convention or to draft concurrent legislation to confer such authority as necessary to remedy existing

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[86] Canada, Parliament, 1911, *Senate Debates* (3 March), p. 370 (Sir M. Bowell).
[87] Ibid.
[88] International Joint Commission, 1918, *Final Report of the International Joint Commission on the Pollution of Boundary Waters Reference* (Ottawa and Washington, D.C.: Government Printing Bureau).

pollution problems as identified in the final report. With this supplementary assignment completed, the commissioners lamented the absence of preventive mechanisms that would allow them to "maintain boundary waters in as healthful a condition as practicable" rather than having to wait for pollution contravening the treaty before taking action.[89] The PBH, however, seeing some signs of interest in preventive action on the part of communities bordering international waters, went so far as to hope that if these municipalities initiated sewage treatment (at least in the form of sedimentation) the impulse to do so might reach inland where even worse conditions prevailed.[90]

Following revisions to the draft convention emerging from the IJC's deliberations, the Canadian government approved the text, and was now sufficiently aware of the risks involved that federal standards were formulated in 1923. However, these applied only to the bacterial quality of water used for drinking and for culinary purposes on ships travelling Canadian inland waters.[91] Intermittent negotiations throughout the 1920s finally lapsed completely in 1929, to some degree in consequence of other preoccupations triggered by the economic depression. Jennifer Read, reflecting on the fate of the IJC pollution reference, offers other considerations. "(I)t is apparent," she writes, "that just as unacceptably high typhoid mortality levels had initially spurred the provincial and federal governments to action, the decline in general and epidemic outbreaks of the disease greatly reduced the demand for a legislative or diplomatic solution."[92] By 1920, she continues,

> chlorine was the great panacea providing protection for the health of increasing numbers of Ontarians ... By reducing the incidence of typhoid fever, the use of chlorine deflected pressure for pollution abatement legislation or a further binational agreement in the Great Lakes basin. Sadly, as the health of the people of Ontario gradually improved, just as gradually the health of its rivers and lakes declined.[93]

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[89] Ontario, Dept. of Health, 1929, *Report of the Department of Health*, No. 11 (Toronto: Department of Health), p. 49.
[90] Ibid.
[91] B. Grover and D. Zussman, 1985, *Safeguarding Canadian Drinking Water* (Ottawa). Inquiry on Federal Water Policy Research Paper No. 4.
[92] J. Read, 1999, "'A sort of destiny': The multijurisdictional response to Great Lakes pollution, 1900–1930," *Scientia Canadensis*, vol. 55, no. 3, p. 122.
[93] Ibid., p. 123.

3 Depression and Wartime: 1930–1945

3.1 Legislative and Institutional Developments

The health portfolio, following a brief period of administrative association with the Ontario Department of Labour, had acquired full departmental status in the mid-1920s. Within the new departmental structure, various more specialized services were performed by a growing number of branches or divisions, including sanitary engineering. The combination of the depression, the partisan tendencies of the incoming Hepburn government, and the renewal of wartime exigencies resulted in a sanitary engineering organization that – for a 15-year period – was essentially in a holding pattern under the direction of Dr. A.E. Berry who had transferred to the new department from the PBH.

The period did witness, however, one significant institutional innovation in relation to water management along the Grand River, a waterway whose condition and flow had already been a source of concern for several decades. A 1932 report on Grand River drainage identified possible engineering arrangements for a variety of purposes – municipal water supply, sewage disposal, flood control, power development, and forestry. Following the report, legislation in 1934 authorized any five of the communities affected to form a Grand River Conservation Commission to pursue these engineering goals. In its initial configuration, under the 1934 statute, the commission explored cost-sharing procedures with the federal and provincial governments.[94] Upon the resolution of negotiations in 1938, a new *Grand River Conservation Commission Act* facilitated implementation of a reservoir scheme for "conserving the waters of the Grand River Valley to afford a sufficient supply of water for the municipal, domestic, and manufacturing purposes of the participating municipalities during periods of water shortage and of controlling such waters in times of flood."[95] The willingness of a number of local communities and the provincial and federal levels of government to reach agreement was increased, at least in part, by alarming minimum flows of 20 cubic feet per second (cfs) in 1936, the previous low being 29 cfs in 1934.[96] In its reconstituted form, the Grand River Conservation Commission included participation from Brantford, Elora, Fergus, Galt, Kitchener, Paris, Preston, and Waterloo.[97]

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[94] B. Mitchell and D. Shrubsole, 1992, *Ontario Conservation Authorities: Myth and Reality* (Waterloo: Department of Geography, University of Waterloo).
[95] SO 1938, c. 15, s. 2(j).
[96] Ontario, Dept. of Health, 1936, *Report of the Department of Health*, No. 14 (Toronto: DOH), p. 78.
[97] Mitchell, pp. 40–6.

The Grand River initiative was one of Ontario's early ventures into the realm of watershed management. Though falling well short of an ecosystem-based approach to water resources, the Grand River experiment can possibly be viewed as a forerunner of the more comprehensive framework that would emerge later in the century.

3.2 Water and Sewage Infrastructure

A.E. Berry's annual reports as director of the Sanitary Engineering Branch of the provincial Department of Health offer a clear and concise picture of developments relating to Ontario waterworks and sewage systems. Construction of both new works and extensions reached something of a peak in 1929 when 425 certificates representing a combined expenditure of $8,961,080.81 were approved.[98] Alongside many projects slated for smaller communities, Berry noted a considerable number of filtration schemes going forward. These were often major undertakings, and it was Berry's opinion that no previous year had witnessed progress on so many large works as were planned for 1930.[99] The projected investment might have been attributable to overall prosperity, although it is equally possible that the tragic lesson of Kingsville had had some impact on local spending priorities. Berry himself reflected that the Kingsville experience might constitute a suitable warning to municipal officials "that even from a monetary standpoint it is bad business to take chances with the water supply."[100] A chronological list of the installation of municipal sewage treatment facilities is set out in Appendix 2.

Whatever the basis for optimism in 1929, it was checked by the depression, and so, to some degree, 1929 represents an appropriate baseline from which to measure the subsequent period of evolution of the Ontario system. By 1929, 308 municipal waterworks systems served roughly two million people, or 65% of the population of the province.[101] Only 16 centres with populations above a thousand were without public waterworks.[102] From the perspective of supply, 60 systems used wells, 37 obtained water from springs, 81 drew water from lakes, and the remaining 130 obtained water from rivers and streams. Chlorination programs were in place for 191 supply sources at 152 plants

[98] Ontario, Dept. of Health, 1929, *Report*, p. 43.
[99] Ibid., p. 47.
[100] Ibid., p. 46.
[101] Ibid., p. 44.
[102] Ibid.

delivering 350 million gallons per day (mgd); over 80% of water in use for domestic purposes was so treated. Thirty-five per cent of the water was filtered. In terms of sewage works there were 95 public systems, including 46 sewage disposal plants (with six under construction) serving 1.8 million people.[103]

The general effect of the depression, apart from some early stimulus in the form of grants to municipalities to alleviate unemployment, was to curtail the expansion and development of municipal water and sewage works during the 1930s. The general pattern of sewerage programs' lagging behind the installation of waterworks continued, for "when financial conditions are unfavourable there is a tendency to put off expenditures for sewers and sewage disposal."[104] Construction had begun to pick up again by 1938 and 1939, only to be further deferred by the outbreak of hostilities in Europe. Waterworks and sewerage expenditures for the 1929–1945 period are set out in table 3-1.

After experiencing some initial discouragement over the decrease in expenditures plus reductions in his own departmental staff, Dr. Berry did note certain gradual improvements. The number of chlorination plants rose from 156 in 1930 to 179 in 1935, and reached 198 two years later. A few communities, Toronto in particular, established back-up chlorination arrangements, or duplicate water filtration plants. On the other hand, there were no training facilities or licensing system for staff, so municipalities were urged to "use extreme care in the selection of their plant operators."[105]

Sewage treatment facilities, even though not as common as waterworks, were also more numerous at the end of the 1930s, notably as a result of the addition of disposal plants to existing systems. In fact, Dr. Berry observed (as Dr. Bryce had reflected in an earlier era), that "a decidedly increasing interest had been manifest in the operation of sewage disposal works."[106] By 1936, Ontario had 134 sewage systems, including 72 with some form of treatment. Specifically, there were 28 activated sludge disposal plants, 9 trickling filter plants, 33 sedimentation tanks, and 2 fine-screening plants.[107] Sludge disposal from the treatment plants continued to present challenges with a variety of methods in use throughout the province. These approaches included sludge disposal by digestion, open sand bed drying, covered drying beds, vacuum filtration, and

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[103] Ibid., p. 48.
[104] Ontario, Dept. of Health, 1936, *Report*, p. 78.
[105] Ontario, Dept. of Health, 1929, *Report,* p. 41.
[106] Ontario, Dept. of Health, 1936, *Report,* p. 78.
[107] Ibid.

disposal on the land, in some cases in liquid form for fertilization. On an experimental basis, a centrifuge had been installed in the North Toronto plant. Berry observed that although many of these arrangements were satisfactory, this was not universally true.[108]

Communities with sewers but lacking treatment facilities continued to discharge into waterways, employing what continued to be known as the dilution method. Ontario communities that discharged untreated sewage into boundary waters included Fort Frances, Sault Ste. Marie, Sarnia, Windsor, Amherstburg, Niagara, Niagara Falls, Kingston, Gananoque, Brockville, Iroquois, Prescott, and

Table 3-1 Ontario Waterworks and Sewerage Expenditures, 1929–1945

Year	Waterworks Expenditures Approved $	Seweage Expenditures Approved $	Total Spending Approved $
1929	2,986,634	5,974,445	8,961,080
1930	6,245,237	9,710,773	15,956,010
1931	5,856,781	4,924,151	10,780,932
1932	1,627,173	4,698,959	6,326,133
1933	1,041,937	2,605,960	3,647,898
1934	817,838	1,616,808	2,434,646
1935	790,800	1,104,291	1,895,092
1936	683,600	875,868	1,559,468
1937	285,341	769,026	1,074,367
1938	583,220	1,083,331	1,666,551
1939	1,466,181	6,754,558*	8,220,739
1940	833,903	1,316,381	2,150,284
1941	982,564	797,621	1,780,186
1942	804,654	1,522,571	2,327,226
1943	393,491	852,122	1,245,613
1944	1,921,679	1,187,828	3,109,508

* Includes $5,600,000 for a new sewage treatment plant in Toronto.
Source: Ontario, Department of Health, Annual Reports 1930–1945.

[108] Ibid.

Cornwall, even though progress on the treatment front was now apparent in several major United States centres. Detroit, Niagara Falls, and Buffalo in particular, had recently taken steps to address a longstanding disregard of the impact of their sewage discharges on Great Lakes waters.[109] The condition of the Great Lakes would become of increasing concern immediately following the war. Yet as the end of conflict approached, it was at least possible to argue that Ontario, where 30% of the population of municipalities with sewerage still discharged raw sewage, actually compared favourably with other provinces of Canada, and with the United States overall where the corresponding figure was 50%. "An analysis of the figures for Ontario shows that sewage treatment facilities have been built in 53% of the municipalities which are now provided with public sewers, and that 70% of the total population of these sewers centres is supplied with treatment."[110]

The overall situation was simultaneously a source of satisfaction and concern. From the perspective of accomplishments, there was great pride in the record of controlling disease, typhoid in particular. From a typhoid death rate of 11.2 per 100,000 in 1915 (already significantly below turn-of-the-century rates), there had been a continuing decline to 7 per 100,000 in 1920, 3.5 per 100,000 in 1925, and 2.2 per 100,000 in 1930.[111] The 1934 rate was down to 1.2 per 100,000 – the lowest yet recorded.[112] It was not uncommon by this era to find statements like: "No water borne outbreaks, attributable to public supplies, have been experienced in Ontario during the year or for several years."[113] Or that "no illness or epidemics of any kind could be attributed to any public waterworks system in the Province."[114] Progress continued through World War II with the typhoid death rate for 1946 – a year reporting 84 cases and five deaths in Ontario – falling to point 1 per 100,000.[115]

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[109] Ontario, Dept. of Health, 1937, *Report of the Department of Health* (Toronto: Department of Health), p. 132.
[110] Ontario, Dept. of Health, 1944, *Report of the Department of Health* (Toronto: Department of Health), p. 97.
[111] Ontario, Dept. of Health, 1930, *Report of the Department of Health* (Toronto: Department of Health), p. 51.
[112] Ontario, Dept. of Health, 1934, *Report of the Department of Health* (Toronto: Department of Health), p. 64.
[113] Ontario, Dept. of Health, 1933, *Report of the Department of Health*, No. 14 (Toronto: Department of Health) at 54.
[114] Ontario, Dept. of Health, 1930, *Report,* pp. 76–7.
[115] Ontario, Dept. of Health, 1946, *Report of the Department of Health* (Toronto: Department of Health), p. 94.

In the later 1930s, attention had begun to shift from security to palatability, for "the water consumer now desires a palatable water more than was the case in the past."[116] In a related development, municipal water softening plants made their appearance in the province, first in Etobicoke Township, then in the Town of Simcoe (1936), followed by Woodstock in 1938. With attention now shifting towards the aesthetics of water, Berry himself, writing in 1937, went so far as to remark that "supplies are now protected to the extent where, with proper operation, safe results may be expected continuously."[117] Here, of course, alongside a very strong suggestion that the risk of infection had been eliminated, was the question of personnel and operational standards, an ongoing source of concern as recurring observations over the years demonstrate:

- It has been found difficult to secure properly trained men for this work [supervision of sewage treatment plants].[118]

- Most of the plants, especially the smaller ones, do not have technically trained personnel. This makes the operation more critical, and during the summer months it is quite often difficult to protect the stream and avoid creating offence, which would give rise to a public health menace.[119]

- There has been a tendency in the past to not give these plants [sewage disposal] the same attention that has been directed to waterworks plants. This has resulted in inadequate treatment and contamination of the water supply into which the effluent was discharged. Inspections have been made by engineers of the Department from time to time with the aim of interesting the operators and having the municipalities operate their plants efficiently, and to such a degree as to preclude undue contamination in the streams. The need for periodic supervision of these plants is quite apparent, and it does seem futile for municipalities to invest money in plants and then neglect to operate them efficiently.[120]

- The question of qualification of operators is one which is pressing for consideration. It is apparent that no plant, irrespective of the manner in which it is designed can be expected to function properly unless the

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[116] Ontario, Dept. of Health, 1937, *Report,* p. 131.
[117] Ibid.
[118] Ontario, Dept. of Health, 1930, *Report,* p. 50.
[119] Ontario, Dept. of Health, 1934, *Report,* p. 64.
[120] Ontario, Dept. of Health, 1935, *Report of the Department of Health* (Toronto: Department of Health), p. 48.

operator in charge understands the principles involved, and is conscientious in his efforts to protect the water consumer. While no special training schools have been in operation as yet in this province, there has been an effort made to supervise the activities of plant operators and to get them interested as much as possible in the technical procedures of their work. The operators of these plants have an opportunity at conventions, and through contact with the officials of the Department, and those of other municipalities to acquire valuable knowledge for their work. It is sometimes difficult to have municipal officers fully realize the necessity for well-trained operators.[121]

- At present, no qualifications have been set up for the operators of these treatment plants, and no particular standing is required. This is a difficulty under present conditions, in view of the fact that a number of the operators are changing and it is necessary to bring on new men without previous training.[122]

- No attempt has been made as yet to give training to the operators other than that which takes place from field inspections.[123]

One further development of note during the period was the onset of drought conditions in some parts of the province. This was a particular concern in 1936, given the combined effect of low rainfall and unusually high temperatures. Dundas actually ran out of water and had to be supplied with drinking water by tank cars from neighbouring municipalities.[124] Wartime conditions, notably specialized forms of industrial activity and the creation of various military training facilities around the province, led to increasing demand for water in a number of centres, including some not previously served by waterworks. Wartime activity simultaneously increased sewage discharges and introduced these to previously uncontaminated stretches of Ontario waterways.[125]

A summary of Ontario waterworks systems in place in 1945 provides detail on the various forms of water treatment and their combinations (see table 3-2).

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[121] Ontario, Dept. of Health, 1937, *Report,* p.131.
[122] Ontario, Dept. of Health, 1943, *Report of the Department of Health* (Toronto: Department of Health), p. 173.
[123] Ontario, Dept. of Health, 1946, *Report,* p. 84.
[124] Ontario, Dept. of Health, 1936, *Report,* p. 77.
[125] Ontario, Dept. of Health, 1941, *Report of the Department of Health* (Toronto: Department of Health), p. 152.

Apart from a handful of municipalities where some softening and iron removal efforts were employed, filtration and chlorination were the only treatment methods in use. One hundred and twenty-two municipalities continued to rely on untreated supplies.

In anticipation of a postwar backlog in public works, a 1943 amendment to the *Municipal Act* authorized the creation of reserve funds.[126]

3.3 Federal Initiatives and International Dimensions

Federal government concerns with water during the 1930s were heavily oriented towards navigational questions, water power, and irrigation matters. A number of border irritants involving anticipated seaway development, Great Lakes water diversions, and the regulation of power exports to the United States commanded attention as did western Canadian concerns arising from dry conditions and from the transfer of natural resource responsibilities to the Prairie provinces. In this context, issues relating to municipal supply and water quality were not actively pursued at the federal level with the exception, perhaps, of a flurry of

Table 3-2 Ontario Water Treatment Facilities, 1945

Total Number of Waterworks Systems	**317**
Supplies treated by filtration and chlorination	64
Supplies treated by chlorination only	82
Supplies treated by softening and iron removal	2
Supplies treated by softening, iron removal and chlorination	1
Supplies with no treatment	122
Total	**271**
Municipalities supplied by other centres with filtered and chlorinated water	35
Municipalities supplied by other centres with chlorinated water only	10
Municipalities supplied by other centres with untreated water	1
Total	**46**
Grand Total	**317**

Source: Ontario Department of Health, Annual Report 1945.

[126] *Municipal Act*, RSO 1938, c. 266, as am. by *Municipal Institutions Act*, SO 1943, c. 16, s. 6.

interest in industrial water requirements as Canadian businesses became more attuned to the distinctive water quality needs of particular industries.[127]

3.4 Legal and Enforcement Matters

During the 1930s, staff reductions in the province's sanitary engineering division forced an essentially skeleton crew in the branch to limit its activities to what Berry considered routine matters. Archival records of investigations and prosecutions during this period have not yet been located. There was, however, a notable judicial decision from the United Kingdom dealing with municipal liability for a contaminated water supply.

In the United Kingdom, drinking water quality standards had not advanced much beyond the pure and wholesome requirement, despite some initiatives in the United States from public health officials during the 1920s to address bacteriological standards building on earlier federal quality requirements for inter-state carriers. But the absence of precise technical standards rarely impedes a court from conducting a form of inquiry quite satisfactory to general liability principles when some form of injury has occurred. Where the failure to meet an acceptable standard is not in dispute and the only essential controversy facing the court concerns possible bases of liability for some evident shortcoming, a still more streamlined form of judicial proceeding can be imagined. Such a situation arose in 1937 in England when, many years after means were readily available to prevent the transmission of typhoid through municipal water supplies, some 350 residents of the community of Croydon developed the infection and 43 died.[128]

Patricia Rosemary Read was not among those who died from the epidemic. Her experience, however, became the basis of a test case launched by her father to determine the applicable legal principles. Croydon conceded that Patricia's illness was the result of drinking water supplied from the community's Addington reservoir. For this acknowledgement and for the promptness and thoroughness of its own investigation of the typhoid outbreak, Justice Stable, the presiding judge, commended the municipality.

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[127] Canada, Department of Mines and Resources, 1942, *Industrial Waters of Canada: Report on Investigations, 1934 to 1940,* by H.A. Leverin (Ottawa: Mines and Geology Branch), p. 7.
[128] *Read* v. *Croydon Corporation,* [1938] 4 All. ER 631 at 636.

In considerable detail he then surveyed the process whereby rainfall in the region made its way to the household taps of residents such as Patricia and her family. Rainfall ran down from two impervious ridges to be absorbed in the soil of the chalk valleys of a gathering ground some 2,400 acres in extent. It then travelled along fissures and underground channels in the chalk until caught by the adits ("a term used to describe the horizontal openings or tunnels cut out from the side of the well so as to trap and collect for the well the flow of subterranean water") of Croydon's Addington well.[129] After collecting in the well, the water was pumped, passed through a high-pressure filtering system to remove solid matter, and then forwarded for chlorination before returning to the filtered water tank for delivery to an underground supply reservoir. From the reservoir, the mains carried water to its ultimate points of distribution and consumption.

Over the years Croydon's efforts to safeguard the water supply had conformed generally to evolving expectations and practices. To safeguard the gathering ground, some surface sources of pollution – a pig farm and a mental hospital – had been eliminated or the problems addressed. A significant area in the immediate vicinity of the well was, in Justice Stable's words "now dedicated to the game of golf."[130] Ozone treatment had been introduced about 1908 and chlorination about 20 years later.

In the aftermath of an epidemic, concerns were naturally raised about the suitability of the arrangements. Stable recognized some limitations, but was equally realistic about the prospects of attaining the ideal:

> This gathering ground ... is not, from the point of view of the expert whose only consideration is the supply of perfectly pure water to the public, an altogether ideal area. In this imperfect world in which we live, the ideal area which would emerge wholly unscathed from the criticism of the experts is, and will remain, non-existent.[131]

Still the admitted presence of the typhoid bacillus in Croydon's water supply required an explanation. Stable was ultimately persuaded that it had "almost certainly" been introduced to the supply by a municipal employee, a victim of typhoid during World War I who had become a carrier of the disease. He had been part of a repair crew working underground on the adits at the well site in

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[129] Ibid., pp. 637–38.
[130] Ibid., p. 638.
[131] Ibid., p. 637.

October 1937, shortly before Croydon's typhoid outbreak. The evidence also revealed that the chlorination process was subject to occasional interruptions, that it was not under regular surveillance, and, most disquietingly, "on Sept. 17, 1937 – that is to say, a week before the work in the adits and the well was begun – the practice of filtering and chlorinating the water was wholly abandoned during the whole of the period when the workmen were working down the well."[132] With the chlorination off, and a typhoid carrier at work underground on the well-site, a junior official gave instructions to pump water directly to the supply reservoir en route to the mains and its final destinations throughout the community.

Stable had a victim, a source of infection, and a very likely cause, but did Patricia Rosemary have a claim against the municipality in which she lived? Her counsel argued everything but the kitchen sink, perhaps because the kitchen sink was already the central issue. The first suggestion was that the municipality was in breach of contract for the sale of goods under s. 14 of the *Sale of Goods Act*. Secondly, it was argued that the municipality had failed to make good on a similar warranty on a contract for services. Option three proposed that Croydon was liable for breach of a duty under the statute that authorized its operations. The final claim was that Croydon was liable in negligence under common law.

Given the status of Patricia Rosemary's case as a test of the legal principles that underlay as many as several hundred other claims, Stable proceeded systematically to review each of the grounds of potential liability. There was no contract, he concluded, certainly not between Patricia Rosemary and Croydon, and not even with her father who pursued the litigation on her behalf and in his own name. Legislation established that Croydon would supply water to its inhabitants who in turn paid water rates "on the rateable value of the house to which the supply was brought" in order to receive water for domestic purposes. "The rate was payable irrespective of the amount of water consumed, and, indeed, irrespective of whether or not any water was consumed."[133]

Summing up Mr. Read's relationship to the municipality, Stable stated:

> [S]uch a relationship, although rights and obligations may be created thereunder similar to, or identical with, rights which may be created by contract, is not a contractual relationship, but a relationship between

[132] Ibid., p. 643.
[133] Ibid., pp. 647–48.

> two persons under which one is bound to supply water, and the other, provided he has paid the equivalent rent, is entitled to receive it, these obligations and rights being throughout the creation of statute.[134]

The point of origin for the relationship Stable described could be traced back to s. 35 of the *Waterworks Clauses Act, 1847*:

> The undertaker shall provide and keep in the pipes to be laid down by them a supply of pure and wholesome water sufficient for the domestic use of all the inhabitants of the town or district within the limits of the special Act, who, as hereinafter provided, shall be entitled to demand a supply, and shall be willing to pay a water rate for the same.[135]

What remedial comfort might be available for the municipality's failure to fulfill the statutory duty that the section established was vigorously contested. Croydon, for its part, argued that the duty was owed to the community, not to individuals within it so that the latter – as individuals – had no basis of recourse. It can safely be said that this proposition was demolished:

> [I]t is difficult to think of a duty which more particularly concerns the individual, and each individual as such, than does the supply of domestic water. That the water should be pure and wholesome is a matter that affects each householder concerned, not incidentally or accidentally, but invariably and necessarily every day of the year, and almost each hour of every day.[136]

Another vigorously contested element of potential liability was the curious question of the content or standard of the duty. Was Croydon, as might appear at first glance, liable simply because the water provided to its inhabitants clearly fell outside the pure and wholesome category (as it unquestionably did), or, could the municipality avoid liability on the basis of a decent effort to safeguard its water supply? In describing these alternatives, the tendency was to refer to the former as absolute liability, while the latter has become associated with the concept of reasonable care, referred to in some contexts as due diligence. Under this second possible standard, Croydon's duty, despite the actual language of

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[134] Ibid., p. 648.
[135] Ibid., p. 649.
[136] Ibid., p. 653.

the statute, was to take all reasonable care and diligence to maintain its water supply in a pure and wholesome condition.

The dividing line between absolute liability and the reasonable care standard was not entirely clear, and Stable clearly struggled. He emphasized that "the standard of care and skill required of an authority engaged in a matter so vital to public health is a high one."[137] Nevertheless, he did not think that Croydon could be held liable if the water reaching consumers contained an impurity "which no care or skill could have prevented."[138] He imagined circumstances along these lines:

> A number of statutory obligations imposed by the *Waterworks Clauses Act* are obligations which, in certain circumstances, such as a prolonged period of drought, or some disturbance of the gathering ground, or grave interference with the machinery and plant by which the water is collected, purified, and distributed, might render it wholly impossible for the corporation to perform its duties if those duties are construed to be absolute.[139]

All was not yet lost for Croydon, however, as the existence of a statutory duty might often be accompanied by a statutory remedy, possibly a limited and exclusive one eliminating all other opportunities available to eligible plaintiffs. Once again, though, Patricia Rosemary Read's claim avoided defeat, for Stable incisively ruled: "The fact that a statute imposes a duty does not absolve the person on whom the duty is cast from his obligation in the performance of the duty to observe the common law rights of third persons, unless the statute expressly so provides."[140] And he went on to observe that she might actually have advanced an entirely sufficient common law negligence claim without reference to the statute. On that ground, and for its failure to maintain a suitable system of supervision over its operational functions, Croydon was found legally responsible.

Although nothing on the scale of the Croydon tragedy occurred in Ontario during the depression and wartime period, the incident served as a reminder that loss of life might still occur even after the introduction of means of preventive treatment and despite the great advances that had been made in lowering mortality rates during the early decades of the century.

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[137] Ibid., p. 651.
[138] Ibid.
[139] Ibid.
[140] Ibid., p. 654.

4 Postwar Reconstruction: 1945–1956

4.1 Legislative and Institutional Developments

4.1.1 Health, and Lands and Forests

After World War II, the Division of Sanitary Engineering within the Ontario Department of Health continued to oversee municipal applications for waterworks and sewage system construction or extension. At Lands and Forests, where an occasional concern with water pollution had been demonstrated over the years in connection with the department's responsibilities for fisheries, a chemical engineer with special training in sanitation, public health, and pollution was hired on a seasonal basis in 1946. In 1949, a chemical engineer joined the permanent staff.

4.1.2 Conservation Authorities Act, 1946

Encouraged by various naturalist and resource-use organizations, the Ontario government acted in the context of postwar reconstruction to provide for conservation authorities in 1946. These agencies were based in part on the earlier Grand River Conservation Commission and to some degree on comparable U.S. initiatives in watershed management. Conservation authorities were given powers to develop and implement schemes for the conservation, restoration, and development of natural resources, (not including gas, oil, coal, and minerals.) In addition, under the *Conservation Authorities Act, 1946*, conservation authorities were empowered to engage in water control activity in order to prevent floods and pollution.[141] Evidence of flood control work abounds, and the importance of this activity was even heightened by the experience of Hurricane Hazel in October 1954. But to other governmental observers it appeared that conservation authorities showed little inclination to act in relation to pollution perhaps because "present legislation relating to pollution has been stated in such general and such severe terms."[142] Insofar as this observation relates to prosecutorial measures on the pollution front, it may well be correct. However, to suggest that conservation authorities might not be concerned about pollution is somewhat misleading: to the extent that

[141] SO 1946, c. 11. Authority in relation to pollution prevention was to be found in s. 13 (a).
[142] Ontario, Pollution Control Board of Ontario, 1952, "A programme for pollution control in Ontario" [unpublished], January 31, Toronto.

they were able to limit construction and development within the flood plains of Ontario waterways, conservation authorities could reduce the risk of contamination from holding tanks, septic systems, and so on.

Under the 1946 act, conservation authorities, administratively and operationally linked to the Departments of Public Works, Lands and Forests, and Planning and Development, embodied several fundamental principles. Watersheds were identified as the relevant management unit; local initiative, grassroots, or bottom-up, activity was central; municipalities and the province would enter into cost-sharing arrangements; the authorities would endeavour to act in a comprehensive manner by taking account of the interactions between different resources; collaboration with departments and agencies of government, municipal councils, and other organizations was to be encouraged.[143]

4.1.3 Select Committee of the Ontario Legislature on Conservation, 1950

When a select committee of the Ontario legislature reported the results of its deliberations in 1950, it was engaged in an exercise broadly similar to reflections and inquiries launched quite frequently in other jurisdictions during the postwar era.[144] With the war and depression over, civilian attention turned to the water supply infrastructure. In Ontario in 1949, a combination of flooding and droughts accentuated the need for systematic inquiry.

From a supply perspective, it was already apparent that shortages were imminent in some parts of the province. "Pure fresh water is looked upon by most men as an inalienable right," the committee remarked, while noting simultaneously that it was time that "definite plans ... be made to sustain an increased population."[145] Given the situation in southern Ontario, the committee urged that "all information concerning water resources should be brought together and evaluated."[146]

At the time of the legislative investigation, 354 Ontario municipalities had a public waterworks system of some form or other. The adequacy of these facilities was in doubt, however, as the assessment referred to a number of communities

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[143] Mitchell and Shrubsole, 1992.
[144] Ontario, Legislative Assembly, Select Committee on Conservation, 1950, *Report* (Toronto: Queen's Printer).
[145] Ibid., p. 95.
[146] Ibid.

as "cities whose sole limiting factor now for industrial and population expansion is water supply."[147] The continued industrial expansion of the province was vulnerable in the sense that groundwater supplies appeared to be threatened in western and southwestern Ontario: "If rain and snow water continue to race away at top speed into the rivers and lakes, rather than percolate into the ground, the day is coming when Ontario's inland cities will be forced to build vast and costly works, piping water from the Great Lakes, or construct costly dams to contain enormous reservoirs."[148] Half a century after Dr. Bryce of the PBH had noted the disheartening impact of deforestation on surface water systems in Ontario, the legislative committee anticipated that groundwater was now also vulnerable to depletion. By way of solution, at least to the extent that the idea was worth further consideration, the committee speculated about piping water through a grid structure from Lake Huron or Lake Erie to the growing industrial cities of southwestern Ontario. The scheme might operate along the lines of the Hydro-Electric Power Commission, which "now transmits and wholesales energy to many municipalities."[149]

Although the committee's underlying goal was to facilitate economic expansion, the report contained early indications that the location of such growth might benefit from a measure of planning and deliberation. There was, for example, some acknowledgement that certain of the original flood plains "should never have been used for building purposes" and a willingness to imagine that "marginal or sub-marginal lands which were never made suitable for cultivation, should be returned to forest or to their natural conditions so that they may again serve as storage places for water."[150] Committee members even mused about the virtues of decentralization as an attractive alternative to "undue concentration of several million more people in huge and overcrowded lakeshore cities."[151]

The committee's concerns on the water pollution front were directed heavily towards the problems of municipal sewage. Even efficient sewage plants, it was noted, continued to discharge liquid sewage. But a more striking observation was the widespread lack of treatment facilities. While 197 Ontario municipalities with 2,750,000 people had public sewerage systems, 83 of them had not yet installed sewage treatment facilities. There was clearly some doubt about the degree of commitment to the challenge: "There is a widespread lack of appreciation

[147] Ibid.
[148] Ibid., pp. 97–98.
[149] Ibid., p. 88.
[150] Ibid.
[151] Ibid., p. 99.

by many people of their responsibility in providing adequate and safe disposal of all sewage and wastes."[152] Although news to the legislative committee in the 1950s, these statistical observations (based no doubt on annual updates provided by the Department of Health) were hardly groundbreaking revelations.

The committee also identified financing as a factor affecting the development of treatment facilities and noted the lack of public support for the necessary expenditures as a limiting factor: "With or without powerful laws, abatement proceeds only insofar as the public is willing to pay the cost."[153]

4.1.4 The Ontario Water Resources and Supply Committee

At a meeting called by the Waterloo Chamber of Commerce, February 19, 1954, 50 municipal representatives gathered to propose the formation of the Water Resources Committee of South Western Ontario, a body that presented a brief to the provincial government April 20, 1955, calling for

- legislation to ensure adequate control of water resources
- appointment of a provincial body to exercise control over water resources
- an engineering survey to identify sources of future supply, transmission arrangements and financing alternatives.

The South Western Ontario initiative coincided with an interdepartmental investigation covering very similar ground. The joint investigation was carried out by Dr. A.E. Berry of the Department of Health, A.E.K. Bunnell of the Department of Planning and Development, and A.K. Watt of the Department of Mines. The Department of Health specifically called for "the formation of some provincial body with jurisdiction over all water resources."[154]

In May 1955, Premier Frost appointed the Ontario Water Resources and Supply Committee to pursue further inquiries. In addition to W.A. Snider who served as chair, the committee included W. D. Conklin of Kingsville, B.L. Bedford of Chatham, Dr. C. H. Reason of London, and J. A. Vance of Woodstock. The committee's terms of reference are set out in Appendix 3.

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[152] Ibid., p. 103.
[153] Ibid.
[154] D. Shrubsole, 1990, "The evolution of public water management agencies in Ontario, 1946–1988," *Canadian Water Resources Journal*, vol. 15, p. 54.

4.1.5 The Pollution Control Board of Ontario

In the early 1950s, about the same time that the legislative committee was at work, representatives of the Lands and Forests department were meeting with their counterparts in Health, Mines, Agriculture, and Planning and Development to develop an inventory of existing anti-pollution initiatives and to formulate a "co-ordinated and united effort" for pollution control in the province.[155] Despite evidence of some postwar progress, the interdepartmental discussions identified a "rather loose co-ordination of the government administration related to air and water pollution" as a source of concern.[156] A number of departments were responsible in some way for pollution control, each with "a limited authority."[157] Municipalities, particularly in view of increasing interest rates, had experienced difficulties in financing water and sewage works, and "in securing the consent of the ratepayers."[158] It seemed to officials participating in the interdepartmental talks that a coordinating body was desirable to advise on legislative, regulatory, and research dimensions of air and water pollution.

The control of pollution, officials explained in a submission to Cabinet, "is both a research and administrative problem."[159] From a research perspective, adequate laboratory facilities and trained personnel would be required to apply the knowledge gained locally as well as that derived from the extensive amount of related work underway in the United States and elsewhere. In administrative terms, the problem would be "co-ordinating efforts on the part of all departments of government and industry in which pollution is a concern."[160] In reviewing the current situation, these officials noted the deterioration of pollution control efforts during the depression, the war, and the immediate postwar era when both labour and materials had been in short supply.

Having consolidated their views in early 1952, the officials recommended the creation of an interdepartmental coordinating body, the Pollution Control Board of Ontario (PCBO) to pursue legislative reform along the lines of recent measures in the United States and the UK.[161] The PCBO consisted of representatives of the departments of Agriculture, Health, Lands and Forests,

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[155] Ontario, Pollution Control Board of Ontario, 1952.
[156] Ibid.
[157] Ibid.
[158] Ibid.
[159] Ibid.
[160] *The Globe and Mail*, 1952 (July 15).
[161] U.S. *Water Pollution Control Act*, 1948; UK *Rivers (Prevention of Pollution) Act*, 1951.

Mines, Municipal Affairs, Planning and Development, and the Ontario Research Council. A.E. Berry of the Division of Sanitary Engineering in the Department of Health served as chair.

In the summer of 1952, newspapers welcomed the formation of the PCBO as "an innovation of great potential value."[162] At the same time they sharply criticized the conditions the new body would have to address. The *Globe and Mail* noted longstanding prohibitions for which the penalties in its view were "ridiculously small." Toronto, the paper charged, had essentially disregarded the provisions and had never been prosecuted. "The new sewage disposal plant which has been under construction for many years is not working properly, and the lake is today more heavily polluted than for some years." Suburban municipalities routinely dumped sewage into the Don and Humber rivers with impunity while York Township had never been pressed to upgrade a treatment facility designed for about half the population using it. Instances of such disregard for the requirements "could be multiplied." "Only where aroused citizens have taken action to enforce the pollution laws has there been a determined effort to stop this practice. It has been such action in one or two places, which has brought the Government to realize the need for the Pollution Board."[163]

In London, *The London Free Press* lamented the deterioration that had precipitated the formation of the new agency:

> That pollution is present and is already a menace to life and health is apparent in many places. Here in London the River Thames, which 40 years ago was a crystal stream on which it was a pleasure to boat and in which swimming was a health-giving pleasure, is now so polluted that in the summertime the medical officer of health orders children not to swim in it. The Thames in downtown London today is hardly more than a series of connected puddles of dirty, warm, stagnant water with debris and ugly waste floating on its scummy surface. It could be a thing of beauty. It is an affront and a liability, and in hot weather a repulsive stench.[164]

A long-term observer might well take issue with *The London Free Press*, not on the grounds of an inaccurate portrayal of the mid-century condition of the river, but for the crystalline editorial fantasy about the state of the Thames on

[162] Ibid.
[163] Ibid.
[164] *The London Free Press* (July 14, 1952).

the eve of World War I. The noticeable degradation was the consequence of longstanding disregard and mistreatment. The situation was neither caused nor would it be fixed in the short term.

The Thames joined the Grand River, certain boundary waters, the Toronto area, the St. Lawrence River, and inland municipalities discharging to small watercourses on a short list of areas that the PCBO identified soon after its formation as posing major water quality problems.[165] Almost lost in the inventory of major challenges was the matter of industrial pollution. Within a couple of weeks, industrial wastes not connected to municipal sewers had been added to the list of pressing concerns now formulated as a submission to Cabinet.

There were some delays in getting the submission to Cabinet and by April 1, 1953, PCBO minutes record: "It was felt that something should be done on the pollution of the Grand River. Criticism may be expected if action does not take place."[166] Minutes for June 3, 1953, indicate that after six months those responsible for Cabinet's agenda had not seen fit to put the water issue on the table.[167]

4.2 Water and Sewage Infrastructure

The water and sewage story of the immediate postwar era was not simply the resumption of expenditures – although these did increase – it was the extent of the infrastructure deficit, especially on the sewage side, following a 15-year disruption accompanied by substantial population increase and industrial growth. Toronto, despite its distinctive circumstances, illustrates the general situation.

As of 1953, the 13 municipalities that were to form the new metropolitan area operated 18 sewage treatment plants, many of them already over-burdened and poorly suited to manage in a period of rapid population increase. The new metropolitan government abandoned many of these facilities, choosing instead to concentrate on much larger plants. In terms of water supply as well, the reorganized government abandoned some of the local systems that had been developed during the twenties, thirties, and forties, occasionally relying on underground sources. Henceforth Lake Ontario would become the sole source of supply for the entire metro region.

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[165] Ontario, Pollution Control Board of Ontario, 1952, Submission to Cabinet (December 2).
[166] Ontario, Pollution Control Board of Ontario, 1953, Minutes (April 1).
[167] Ibid. (June 3, 1953).

Upon hearing from Mr. DeLaporte of the Department of Health that "conditions on the river this year were the worst ever," the PCBO journeyed to inspect the Grand in September 1952. Describing the situation along the Grand River as the "most acute" of the major problems to be confronted, the PCBO in 1952 made the area an immediate priority. Approximately $6 million was needed for sewage treatment. "The amounts involved for these various municipalities are such that they hesitate to take action until compelled to do so."[168] The PCBO met in Guelph with the Pollution Advisory Committee of the Grand Valley Authority where two methods of attacking on the problem of the Grand River were identified. The first was to convince the councils of the need for sewage treatment, and the second was to convince the public.

The continuing saga of the Grand River demonstrated a profound disinclination on the part of municipalities sharing the waterway to wean themselves off the habit of flushing raw or partially treated sewage in the absence of external encouragement to change their ways. On February 9, 1954, it was reported that "the municipalities along the Grand River have passed a resolution requesting that the Department of Health ask for adequate treatment of all sewage discharged into it."[169] On June 8, 1954, mayors and engineers from the Grand River municipalities met with the minister of health. As Dr. Berry reported to the PCBO, June 29, 1954: "They were given a maximum of three years to prepare detailed plans for sewage disposal suitable for calling tenders. Letters of confirmation of this are to go out shortly, and this is the policy to be followed throughout the whole province."[170] Though each community might have acted independently, provincial direction offered the comfort of knowing that a collective effort was underway to safeguard both the waterway and the ability to deflect any possible criticism from ratepayers to remote provincial bureaucrats.

Having observed that provincial subsidies had been forthcoming for many other activities, municipalities wondered whether they could expect financial assistance for pollution abatement and were therefore reluctant to proceed on their own.[171] The situation, if the PCBO had described it appropriately, effectively amounted to a declaration that the province's major postwar response to the challenge – the 1950 creation of the Ontario Municipal Improvement

[168] Ontario, PCBO, 1952, Submission.
[169] Ontario, PCBO, 1954, Minutes (February 9).
[170] Ontario, PCBO, 1954, Minutes (June 29).
[171] Ontario, PCBO, 1952, Submission.

Corporation to acquire municipal debentures to finance waterworks, sewage, garbage, and drainage initiatives – had failed to do the job.[172]

Yet between 1945 and 1955, 80 new municipal sewage treatment plants were built in Ontario to serve 68 communities. An additional 20 plants were enlarged or altered, and 11 institutional plants and 12 military plants were also built. There was little argument with the proposition that "in this period the greatest activity in sewage treatment has occurred of any time in the history of the Province."[173] The task ahead nevertheless remained formidable for in 1955, there were 69 municipalities with sewers but without treatment facilities: 15 cities, 38 towns, and 16 villages and townships. In addition, a number of treatment works needed enlarging, including 18 over-loaded plants scattered throughout the 13 municipalities that were consolidated into Metropolitan Toronto in 1954; other centres still lacked even sewers.[174]

Berry, as director, Sanitary Engineering Division, of the Ontario Department of Health, provided an overview in 1955. The problem with water pollution, he suggested, was difficult to measure as it involved many factors, some of them changing rapidly. Efforts to measure the extent of the problem typically focused on the number of treatment works needed and their estimated cost. In Berry's view this was an inadequate approach, for it recognized only the present population and existing conditions. He argued that it should include "the expansion during the period required for this program to be completed as well as the continuing problem of urban growth and industrial expansion."[175]

United States estimates of its water pollution problem indicated that some 4,200 new municipal sewage treatment works were needed in that country, along with replacement or enlargement work on a further 2,300 facilities. Nearly 2,800 industrial waste treatment plants and nearly 700 replacements or enlargements were also needed. The capital costs were high. Berry had been unable to locate comparable figures for all Canadian provinces, but he put forward figures for Ontario:

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[172] *Ontario Municipal Improvement Corporation Act*, SO 1950, c. 50.
[173] Ontario, Pollution Control Board of Ontario, 1955, "The present status of stream pollution in Ontario" (Toronto) September.
[174] Ibid.
[175] A.E. Berry, 1955, "Water pollution: A problem of growth and industrial expansion" [unpublished] (Toronto: Engineering Institute of Canada), May 12.

> It is estimated that new sewage treatment works and trunk sewers will cost $61 million, while alterations to existing plants will cost $34 million. If to this is added an estimated cost of $18 million for treatment works in those municipalities likely to install sewers shortly it brings the total for trunk lines and treatment to $113 million. This is exclusive of the cost of separate industrial waste treatment works.[176]

The program was evidently a large one, heavily concentrated in the densely populated areas where both population and industrial activity were expected to grow.

In summing up, Berry, similar to a number of his predecessors, regretted the limited level of public support for necessary expenditures:

> The major factor that works against pollution control both in the early days and still continuing has been the lack of public support for the expenditures necessary to install and operate sewage works. If sewers are available to carry the sewage from the premises the householder is little concerned about pollution of a stream with which he has little contact. The ratepayer is asked to finance many municipal projects which are more tangible to him in their effects on his mode of life. Thus he is inclined to put off and to delay financing these outfall sewers and sewage treatment plants. That is the major obstacle. The science of sewage treatment has advanced to a high point. Industrial waste treatment strives to keep up with the many changes in these wastes although the problem there is a more difficult one. Technical progress has been very gratifying.[177]

4.3 Federal Initiatives and International Considerations

Federal government programs and initiatives in the period following World War II, generally, were directed towards economic development with the St. Lawrence Seaway project as perhaps the most conspicuous. Various new institutions came into existence including the Maritime Marshlands Rehabilitation Commission (1948), the Prairie Provinces Water Board (1948), and the Eastern Rockies Forest

[176] Ibid.
[177] Ibid.

Conservation Board (1947). Federal financial assistance was specifically directed at flood control work following a series of severe floods across Canada: the B.C. Lower Mainland (1948), the Red River in Manitoba (1950), and in the Toronto area following Hurricane Hazel (1954).[178]

In 1946 and 1948, the governments of Canada and the United States submitted references to the IJC requesting an inquiry into pollution of the Great Lakes boundary waters, in particular the channels connecting Lakes Ontario, Erie, Huron, and Superior. The investigation ultimately covered the Niagara River, the St. Clair River and Lake St. Clair, the Detroit River, and the St. Mary's River and resulted in a report on pollution of boundary waters presented in 1950. Included in the recommendations were the "Objectives for Boundary Waters Quality Control," which the commission urged the governments to adopt.[179]

This initiative led the PCBO to adopt the "Objectives for Water Quality Control in Ontario" in May 1953. This statement, set out in Appendix 4, provided guidance to the commission in considering projects with implications for water quality. Revised versions of water quality objectives, though not directly enforceable, continued to play a similar role for some time thereafter.

By 1951, the two national governments had authorized the IJC to undertake the task of supervising remedial measures directed at pollution of the Great Lakes boundary waters. The necessary measures were readily identified, but the implementation process was more prolonged, notably in Ontario where the sluggish effort to address municipal sewage in border communities provoked the state of Michigan on more than one occasion to take the matter to the IJC and to threaten legal action against Canadian authorities. Prime Minister Louis St. Laurent eventually felt compelled to take the matter up with Premier Frost who insisted that the question of pollution abatement properly belonged on the federal-provincial fiscal agenda. Several years of discussions followed, accompanied by the work of the Advisory Committee on Water Uses Policy appointed by St. Laurent in 1955. In addition, the Royal Commission on Canada's Economic Prospects examined water and sewerage requirements in the context of forecasting expenditures on social capital. This exercise suggested that in excess of $5 billion (in 1955 dollars) would be required for new investment in water and sewerage during the 1956 to 1980 period. This estimate

[178] P.H. Pearse and F. Quinn, 1996, "Recent developments in federal water policy: One step forward and two steps back," *Canadian Water Resources Journal*, vol. 21, no. 4, pp. 331–32.
[179] L.M. Bloomfield and G.F. Fitzgerald, 1958, *Boundary Water Problems of Canada and the United States* (Toronto: Carswell), p. 36.

took no account of operating salaries, maintenance, or interest charges.[180] Federal financing was ultimately made available to assist municipalities across Canada with expenditures relating to sewage infrastructure.[181]

4.4 Legal and Enforcement Matters

To the extent that public attitudes towards water quality – as much as professional opinion and expertise – affect policy and expenditure decisions, it is worthwhile to recall that this period experienced the peak of the ongoing fluoridation controversy. As municipal councils moved to introduce fluoridation processes, opponents queried whether this action was consistent with the municipalities' continuing obligation to provide pure and wholesome water. Justice Rand, writing for a majority of the Supreme Court of Canada, thought not. He expressed the view that fluoridation was not proposed "to promote the ordinary use of water as a physical requisite for the body."[182] Rather, he insisted, fluoridation has a "distinct and different purpose; it is not a means to an end of wholesome water for water's function but to an end of a special health purpose for which a water supply is made use of as a means."[183] Further legislative authority was subsequently required to permit the new treatment; as viewers of the Mel Gibson movie *Conspiracy Theory* will recognize, suspicion about the dire consequences of fluoridation lingers in certain remote corners of the North American psyche.

Although supporting legal and archival records have not been located, the PCBO reported that between 1946 and 1952 investigations had been carried out into over 180 cases of pollution or alleged pollution. In addition to municipal sewage complaints, the industrial subjects of investigation included 40 canneries, 21 pulp and paper plants, 9 chemical and dye works, as well as mines and other activities. Persuasion, warnings and other abatement-oriented initiatives generally resulted in corrective action, although the PCBO indicated that "charges were preferred in 18 instances, in 14 of which there were convictions

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[180] Canada, Royal Commission on Canada's Economic Prospects, 1957, *Final Report* (Ottawa: Queen's Printer).
[181] J. Read, 2000, "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 E-A Montigny, eds. *Ontario Since Confederation: A Reader* (Toronto: University of Toronto Press), p. 354.
[182] *The Municipality of Metropolitan Toronto* v. *The Corporation of the Village of Forest Hill,* [1957] SCR 569 at 574.
[183] Ibid.

and fines levied."[184] The difficult balance between conciliation and coercion in environmental enforcement has been universal.[185]

The PCBO's other efforts to check pollution included a series of public hearings in municipalities around the province. These served as mechanisms to disseminate information to the public while they simultaneously increased the board's understanding of current municipal and industrial practices and requirements.

The experiences recounted by participants at public meetings around the province took a variety of forms. Some firms were simply engaged in a relentless daily grind; these 'everyman' figures had struggled hard to keep abreast of their responsibilities before being overwhelmed in the maelstrom. Other operations appeared as moderately remorseful victims of circumstances they considered beyond their power to control; despite basic precautions, they had experienced spills now and again as a result of isolated actions of employees. At other plants, managers had assumed everything was fine until health officials demonstrated otherwise.

4.4.1 Trenton: Why Did These People Need Persuading?

The PCBO timed its 1953 visit to Trenton to coincide with a local vote on sewer development. The industrial experiences recounted at the open meeting were quite typical of things the board heard elsewhere in mid-twentieth century Ontario.

One of the industries in Trenton, the Dominion Tar and Chemical Company had spent nearly $40,000 on pollution control measures and clean-up at Trenton between 1946 and 1953. A new oil separator, yard drainage system, and settling pond accounted for much of the cost, but the company assured the board that there were no process wastes, only drainage containing oil and phenols. Even spills, perhaps a loss of 2,000–3,000 gallons, would not be toxic with the dilution effects of the Trent River. Mr. Millest of the engineering staff explained to the board that a break of that size would not disperse evenly in the water. It would tend to hug the shore, undispersed, and quite undiluted.

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[184] Ontario, PCBO, 1952, "A programme."
[185] See K. Hawkins, 1984, *Environment and Enforcement: Regulation and the Social Definition of Pollution* (Oxford: Clarendon Press).

The Hinde and Dauche paper mill, also at Trenton, discharged over 17,000 pounds of solids daily into the river, but, like many of its industrial peers, had no plans to treat the waste. The PCBO urged Hinde and Dauche to contact a discussion group formed among phenol-producing industries.

A plating firm, Benedict Proctor, also indicated it had no plans to address waste treatment. Since all plant waste was directed to the town sewer, the manager had been unaware that the plant's discharge might be polluting the river. "The rinse from the alkali cleaning process goes to the sewer. Every two weeks the vat containing 200 gallons of cleaner is dumped. There is no overflow from the plating solution (silver plating). Only a very small amount of cyanide is carried over to the rinse." [186] The lack of understanding of the real and potential environmental menace of all these 'business as usual' stories was disheartening, to say the least.

4.4.2 Chatham: What Race Is This Tortoise In?

In April 1954, a few months after the visit to Trenton, PCBO members witnessed firsthand the lamentable state of affairs along the Thames River in Chatham. Here, several companies looked to the municipality for services, making the city's account of its own sewage arrangements of great interest. Chatham's brief to the PCBO, April 6, 1954, requires little commentary:

> For many years the problem of the Pollution of the River Thames and McGregor's Creek has given City Council considerable concern.
>
> There is a plan in the City Offices dated March 1, 1915, which shows that Frank Adams the then City Engineer made a comprehensive study of the possible interception of Chatham sewers as a forerunner to a sewage disposal plant.
>
> In 1929 when the so called south of the City was expanding, the sewage system was constructed in that area to tie in as far as possible with an ultimate sewage disposal plant at some location to the west.
>
> While through the years the future sewage disposal plant for Chatham was always kept in mind and the design of all sewage

[186] Ontario, PCBO, 1953, Minutes (December 1) [for visit to] Trenton (December 1).

> works contemplated this end, the scheme of things in tangible form came to a head during the years 1946 and 1947.
>
> In the year 1946 the Council of this City foreseeing the necessity of improving our sewage system with the ultimate aim of a sewage disposal plant instructed the City Engineer to bring in a report on this scheme of things on a projected yearly basis.
>
> Early in 1947 this report was considered by the Council and adopted with few minor changes.[187]

Chatham's unhurried approach was entirely typical of a pattern of municipal response to sewage treatment in the interests of the downstream, non-resident, and thoroughly disenfranchised residents of other riverside communities. In fact a rationale for dilatoriness was occasionally still articulated as it had been by Toronto officials following the *Fieldhouse* "Big Odor" case: If you sat out a few rounds of innovation, the technology might actually improve, and you would certainly have saved local taxpayers money, during your term of office, at least.

4.4.3 Rampant Riparianism

When the Kalamazoo Vegetable Parchment Company (KVP) in 1946 reopened a kraft paper mill operation using the sulphate process, the condition of the Spanish River deteriorated rapidly. The decline occurred despite an agreement between Ontario and KVP involving the latter's undertaking not to deposit more refuse than necessary in the river. KVP was soon discharging at least three and a half tons of chemical-laden fibrous materials each day.[188]

The situation produced a "celebrated and contentious" court battle[189] also regarded by one prominent student of environmental affairs as an episode that demonstrated "the almost complete ineffectiveness of the law."[190] With D.R.

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[187] Ontario, PCBO, 1954, Chatham's brief (April 6).
[188] P. Boyer, 1994, *A Passion for Justice: the Legacy of James Chalmers McRuer* (Toronto: Osgoode Society for Canadian Legal History), pp. 228–35.
[189] Ibid., p. 228.
[190] D.P. Emond, 1985, "Environmental law and policy: A retrospective examination of the Canadian experience," in I. Bernier and A. Lajoie, eds., *Consumer Protection, Environmental Law and Corporate Power* (Toronto: University of Toronto Press), p. 129.

Walkinshaw as counsel, the plaintiffs – Earl and Ted McKie, Jack Gifford, Russell and James Vance, and Dr. G. Downe – launched five actions in the spring of 1947. These were eventually heard together in Sudbury by Chief Justice McRuer of the Ontario High Court.

The plaintiffs – fishermen, and camp owners along the lower Spanish River – complained of foul odours emanating from the water and of their inability to use ice from the river for domestic purposes. Even after boiling, the water was unfit to drink. Nor would the cattle drink river water, at least not in sufficient quantities to maintain their normal milk supply. The plaintiffs judged the water unfit to bathe in; they observed that fish were either killed or driven elsewhere; and they lamented the destruction of wild rice beds that had formerly attracted wild ducks. McRuer's findings on the evidence were in substantial agreement with the plaintiffs' allegations.

McRuer not only awarded damages in compensation for the plaintiffs' demonstrated losses, but also accepted their claim for an injunction to prevent KVP from further interfering with their rights. In so doing he specifically rejected the suggestion that KVP's economic significance was somehow relevant to the determination of the dispute: "[I]f I were to consider and give effect to an argument based on the defendant's economic position in the community, or its financial interests, I would in effect be giving to it a veritable power of expropriation of the common law rights of the riparian owners, without compensation."[191]

For thus rejecting "the all too common argument that the social benefits of an activity can justify pollution,"[192] McRuer has been praised by some; while the decision has also been cited for illustrating the most serious drawback of the judicial process, its "focus on the rights and obligations of the parties before the court."[193] The cost of emphasizing the rights of the parties is "the cost of not examining the implications of this case on other interests."[194] From this perspective, judicial action is poorly suited to pollution control, for it is "reactive, potentially discriminatory, and examines a relatively narrow set of issues."[195]

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[191] E. Brubaker, 1995, *Property Rights in the Defence of Nature* (London: Earthscan Publications), pp. 73–74.
[192] *McKie* v. *K.V.P. Co. Ltd.,* [1948] 3 DLR 201 at 214.
[193] Emond, p. 131.
[194] Ibid.
[195] Ibid., p. 32.

To permit KVP an opportunity to make alternative arrangements for the disposal of its effluent, McRuer suspended the operation of the injunction for a six-month period. In fact, the McRuer decision was appealed to the Ontario Court of Appeal, which handed down its decision dismissing the appeal on November 22, 1948,[196] with a further appeal to the Supreme Court of Canada launched shortly after. This was heard June 13 and 14, 1949, leading to a decision on October 4, 1949.[197]

Meanwhile legislative action had been initiated in the form of changes to the *Lakes and Rivers Improvements Act*, an amendment sharply denounced by one critic as a measure designed to "crush the property rights of those living downstream from pulp and paper mills."[198] As amended, the legislation authorized the court, when hearing an injunction claim against a mill in a water pollution case, to

> refuse to grant an injunction if it is found that having regard to all the circumstances and taking into consideration the importance of the operation of the mill to the locality in which it operates and the benefit and advantage, direct and consequential, which the operation of the mill confers on the locality and the inhabitants of the locality, and within the same against the private injury, damage or interference complained of, it is on the whole proper and expedient not to grant the injunction.[199]

The legislature's invitation to the judiciary to intervene by modifying the rigour of the common law by weighing general industrial benefits against private injury could hardly have been more clear. Indeed, the measure was not without precedent in the annals of Ontario's pollution record.[200] But the amendment came into force April 1, 1949, too late to be of any significance in the Court of Appeal's deliberations and judgment handed down on November 22, 1948. When the matter reached the top of the Canadian judicial pyramid in mid-June, the Supreme Court of Canada graciously but firmly declined to be influenced by parliamentary afterthought.

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[196] *The K.V.P. Co. Ltd.* v. *Earl McKie,* [1949] 1 DLR 38 (Ont. CA).
[197] *The K.V.P. Co. Ltd.* v. *Earl McKie*, [1949] SCR 698 [hereinafter *K.V.P.* v. *McKie* (SCC)].
[198] Brubaker, p. 74.
[199] SO 1949, c. 48, s. 6, amending RSO 1937, c. 45, s. 30.
[200] See J. Benidickson, 1983, "Private rights and public purposes in the lakes, rivers and streams of Ontario, 1870–1930," in D.H. Flaherty, ed., *Essays in the History of Canadian Law*, vol. 2 (Toronto: Osgoode Society for Canadian Legal History), p. 365; see also McLaren, 1984.

Justice Kerwin, writing for the Supreme Court of Canada, determined that the legislative effort had been in vain, for no provincial legislature could extend the Supreme Court's jurisdiction. And Kerwin found no other basis on which to exercise discretion to confine the plaintiffs' remedy to damages alone. As if the matter might have escaped the notice of KVP, he remarked almost in passing that "the rights of riparian owners have always been zealously guarded by the Courts."[201]

At what looked like the end of the line, KVP avoided the judicial consequences. The company announced closure of the plant on April 4, 1950, unless the injunction threat was removed. Intense community pressure quickly mounted to safeguard the employment base. The successful plaintiffs assured their anxious neighbours that no attempt would be made to have the injunction judicially enforced, but petitions and municipal delegations to Queen's Park sought more certain guarantees.

Premier Frost, a former minister of mines and a man whose own constituency contained a number of resource-based communities, rose in the legislature February 24, 1950 to state solemnly: "We do not regard lightly the matter of pollution of our streams. Indeed, we think it is a very serious matter ... We do not hold lightly the rights of individuals to protect their interests in the courts of this land. That is, in itself, a very important matter." The premier equally emphasized, "We also regard as a matter of high importance the employment of our people and we do recognize that in these days of industrialization and the expansion of industry and the increase of population in areas of the province that we are bound to get a certain amount of pollution in our lakes and streams. At the same time, we are determined to hold that to the least possible limit." This was balance-beam work of Olympic calibre. What it might mean was anybody's guess, and observers might be forgiven for failing to appreciate how the premier proposed to resolve an apparent impasse between the water quality rights of riparians and the tendency of industry and population growth to produce "a certain amount of pollution."[202]

Premier Frost proposed to involve the Ontario Research Council in the controversy, calling upon this scientific and technical agency to examine the situation with a view to ensuring "that every reasonable step, scientific and otherwise, is now taken, and will be taken in the future by the company so that pollution will be reduced consistent with reasonable practice."[203] The premier offered his assurance that the

[201] *K.V.P.* v. *McKie* (SCC), p. 701.
[202] Ontario, Legislative Assembly, 1950, *Debates* (February 24), p. A-10 (Premier Frost).
[203] Ibid.

Ontario Research Council would enjoy unlimited powers to investigate the Spanish River problem and to consult authorities in other countries about the general problems of pulp mill waste. Returning to the balance-beam with a more pronounced list towards economic considerations, Frost reiterated: "I can assure you of this, that we have no intention of putting people of that community out of employment, we intend to keep employment going. At the same time, we intend to protect to the fullest extent that we are able all the interests of the people of the province of Ontario."[204] Within a month, an extraordinary bill appeared on the legislative agenda, and was soon passed into law. This statute, *The KVP Company Limited Act, 1950*, is reproduced in Appendix 5.

Although the courts' handling of the KVP case through all stages of the litigation has been seen as a landmark common law defence of riparian rights and the aquatic environment, the episode emerges from the broader public record as a legislative triumph for resource use and employment over water quality. The legislation, although specific in its application, in combination with the *Lakes and Rivers Improvements Act* amendment that preceded it, must have indicated clearly to thoughtful observers that ambient water quality had been severely compromised in Ontario.

Nevertheless, seeds of change had been planted during the winter of 1949–50. On January 13, 1950, Frank MacDougall, deputy minister of Natural Resources, sent Premier Frost his personal reflections on the unfolding KVP drama. MacDougall argued that the problem that had originated in the pulp mill sector had become 'acute.' Given its implications for tourism and mining, the pollution question should also be regarded as an interprovincial and federal problem. Unimpressed by judicial treatment of such matters, MacDougall dismissed the legislative amendment as a solution for it would only send the matter back to the courts once again. By way of alternative, MacDougall urged the premier to consider creating a pollution board to address problems of this kind. If a situation similar to KVP arose in the future, such an agency could "deal with it in all aspects, including employment and the public interest."[205] Herein, perhaps, lay the specific origins of the PCBO or of the government's willingness to accept this new body.

Conflicts pertaining to watercourses were by no means confined to industrial pollution in rural Ontario. Urban expansion in the postwar era also sharply

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[204] Ibid.

[205] "Pollution, Espanola 1950," MacDougall Papers MU 1790, AO, Toronto.

accentuated the potential for conflict between municipal residents and their rural and agrarian neighbours. Some of those clashes led to severe restraints on long-established rural activities that posed risks or gave offence to urban dwellers. Tanneries, canneries, and dairies whose wastes registered readily on the sensibilities of provincial residents tended to be primary targets. But in other cases, it was the impact of municipal operations on the aquatic environment that raised concerns. A century after prominent British controversies in Birmingham, England, over the impact of untreated sewage on watercourses produced a landmark legal judgment against municipal polluters. Woodstock and Richmond Hill, using the Thames River and a branch of the Don River, respectively, to disperse wastes from municipal treatment plants ran afoul of downstream neighbours who were determined to protect interests of their own.

Returning to Canada from overseas service, a Mr. Burgess took advantage of arrangements under the *Veterans Lands Act* in 1946 to acquire 147 acres along the Thames River. Here, he hoped to pursue a career in dairy farming with 46 Ayrshire cattle, a herd he had previously developed on his father's nearby farm. Within a year or so, however, the deteriorating condition of the river flowing for almost a mile through his new lands became a source of apprehension. Some of the cattle sickened, others aborted; prospects for the farm declined. Burgess eventually took the matter to court. His problems – slime, beds of sludge at bends in the river, and solid matter drifting downstream – originated at the outlet for Woodstock's sewage disposal plant, just upstream from the farm. By the late 1940s, this facility was handling the wastes of 16,000 people, almost twice the population for which it had been designed in 1922.[206]

About three decades after Woodstock's increasingly overburdened waste treatment plant began operations, the Village of Richmond Hill completed a new sewage disposal facility along a branch of the Don River; but relative modernity did not prove to be a more reliable guarantee of effectiveness. Sewage effluent and storm water transformed a clear and sparkling stream, in which children swam, cattle drank, and fish and watercress abounded, into something much less agreeable:

> The stream has increased its flow and is dirty, the banks are overgrown with weeds hitherto unknown, that and dark matter in suspension is found in the water at all times, whereas previously only the spring

[206] *Burgess* v. *City of Woodstock,* [1955] 4 DLR 615 at 618 (Ont. HC).

> freshet muddied its otherwise sparkling waters. They say the water and the surrounding area smell of sewage, that toilet-paper and condoms are to be found caught on the vegetation at the side of the stream; that no fish, frogs or water-bugs are now present, as opposed to their former frequent occurrence; that the algae, in the water are now grey or yellow instead of their former green state; that the rocks are now slimy whereas before they were bright and sparkling; and that now little, if any watercress appears.[207]

This deterioration came to public attention when Annie Stephens, a downstream resident on the Don, like Mr. Burgess on the Thames, invoked the judicial process in search of damages and an injunction to prevent the continued operation of the offending facility.[208] Annie Stephens had applied to subdivide her rural property to accommodate suburban housing, but the Ontario Municipal Board, the body responsible for overseeing such matters, refused her application, partly on the ground that a creek running through the property carried open effluent from the Richmond Hill disposal works.

In 1955, Ontario courts ruled in favour of both plaintiffs, awarding damages to compensate for injury or loss, and imposing injunctions – whose effective date was in each case deferred – against the municipal sewage operations. Richmond Hill and Woodstock had been ably defended, in the latter case by the distinguished counsel J.J. Robinette. One of the municipal arguments was that the courts had no jurisdiction to hear such complaints on the grounds that the *Public Health Act* had ousted their jurisdiction in favour of the Ontario Municipal Board. The judges felt that more explicit legislation would be required to have this effect. Justice Stewart in *Stephens* went further still, suggesting that for constitutional reasons no attempt to confer judicial powers on an administrative agency would survive scrutiny.

In a second argument, echoing similar claims by the City of Toronto in the earlier *Fieldhouse* litigation, counsel for Woodstock and Richmond Hill suggested that the municipal operations were essentially immune from liability on the basis of the statutory authority under which they had been established. Neither trial court had the slightest sympathy for such an assertion on the grounds that immunity could only extend to interference that was an inevitable consequence of the statutorily authorized undertaking. Since neither municipality conducted

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[207] *Stephens* v. *Richmond Hill,* [1955] 4 DLR 572 at 575 (Ont. HC) [hereinafter *Stephens*].
[208] Ibid., pp. 574–5.

its sewage disposal operations with a facility adequate to the task nor in a fully satisfactory manner, the resulting pollution was inevitable. Other measures, larger plants or sewage farms, for example, might have been employed. The cost of flushing had just gone up. Moreover, the trial courts made clear that such costs were not their concern:

> [I]t is not for the judiciary to permit the doctrine of utilitarianism to be used as a make-weight in the scales of justice. In civil matters, the function of the Court is to determine rights between parties. It investigates facts by hearing 'evidence' (as tested by long-settled rules) and it investigates the law by consulting precedents. Rights or liabilities as ascertained cannot, in theory, be refused recognition and enforcement, and no judicial tribunal claims the power of refusal.
>
> It is the duty of the state (and of statesmen) to seek the greatest good for the greatest number. To this end, all civilized nations have entrusted much individual independence to their Governments. But be it ever remembered that no one is above the law. Neither those who govern our affairs, their appointed advisers, nor those retained to build great works for society's benefit, may act so as to abrogate the slightest right of the individual, save within the law. It is for Government to protect the general (interest) by wise and benevolent enactment. It is for me, or so I think, to interpret the law, determine the rights of the individual and to invoke the remedy required for their enforcement.[209]

When Richmond Hill officials chose to pursue the statutory authority defence on appeal, the village suffered a further rebuke.[210] Moreover, the judgment severely constrained the authority of the Department of Health to approve similar facilities elsewhere in the province. Justice Laidlaw noted that Richmond Hill had commenced construction without lawful authorization on the narrow and technical grounds that certain procedural requirements in the *Public Health Act* (notably notice to Richmond Hill's downstream neighbour Markham Township) had been disregarded. But, hypothesizing that the correct procedures might have been followed, Justice Laidlaw went further to reflect upon the relationship between the Department of Health's sewage facility approval power and the broad, historical prohibition against contaminating the waterways:

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[209] Ibid., pp. 578–9.

[210] *Stephens* v. *The Village of Richmond Hill,* [1956] OR 88 (CA).

> 103(1) No garbage, excreta, manure, vegetable or animal matter or filth shall be discharged into or be deposited in any of the lakes, rivers, streams or other waters in Ontario or on the shores or banks thereof, and no industrial or other wastes dangerous or liable to become dangerous to health or to become a nuisance or to impair the safety, palatability or potability of the water supply or any municipality or riparian owner, shall be discharged into or be deposited in any of the lakes, rivers, streams or other waters of Ontario, or on the shores or banks thereof.[211]

Half a century after it came into effect, this particular legislative time bomb exploded around the agency responsible for its enforcement. As Laidlaw stated:

> It is plain that the Department of Health cannot in any case disregard the express prohibition contained in that section. It has no express authority to authorize the doing of something in direct violation of that section. It cannot be argued successfully that in the absence of power, expressed in the plainest possible terms, either the Department of Health or the Municipal Board could make lawful what the Legislature declared in express terms to be unlawful.[212]

Laidlaw's entirely appropriate insistence that the rule of law applied despite the apparent importance of some public interest, allegedly served by disregarding legal requirements, would later become still more controversial when operational authority relating to water and sewage services became institutionally connected to regulatory and enforcement responsibilities in the Ontario Water Resources Commission.

In the immediate aftermath of the Court of Appeal decision, Richmond Hill sought relief from the legislature. But the injunctions obtained by Annie Stephens and Burgess, and the fact that as many as 60 municipalities were vulnerable to similar constraints, had already served to direct general attention to the overall statutory framework regulating Ontario water quality. In legislation providing specifically for the dissolution of the injunctions against Richmond Hill and Woodstock, the province infused new life into the series of municipal defences that the courts had swept aside. Amendments to section 106 of the *Public Health Act* established that sewerage projects carried out in accordance

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[211] Ibid., p. 105.
[212] Ibid.

with terms and conditions imposed under the act, "shall be deemed to be under construction, constructed, maintained or operated by statutory authority."[213] The right to seek compensation or damages was preserved, but jurisdiction over such claims was clearly conferred upon the Ontario Municipal Board.[214] Furthermore, sewerage projects operating in conformity with their approvals and applicable orders were exempted from the broadly crafted prohibition in section 103 that Justice Laidlaw had invoked.

If municipal authorities were relieved, not all observers welcomed the changes. On April 2, 1956, *The Globe and Mail* lamented the elimination of the injunction remedy in such situations, a result it foresaw "unless some private person assumes the onus which is now placed upon him to petition the courts for a declaration that such a law violates the Common Law rights of British subjects."[215] The newspaper's indictment continued with an attack on the legislation as an "arbitrary" measure that gave municipalities that apparent right to continue injuring, by stream pollution, the properties of citizens outside their borders, instead of requiring such municipalities to have as much care for public health beyond their borders as they are required to exercise on behalf of their own residents. In *The Globe and Mail*'s view the statutory response to the court decisions demonstrated that it was "a positive policy of the Ontario government to permit the pollution of streams contrary to the public interest."[216] The paper went on to insist that "the real gist of the whole matter is that existing sewage disposal legislation is inadequate, and that no denial of Common Law remedies can be considered as a remedy for laws which can be either evaded or ignored."[217]

Actually, while the litigation was still underway, the Conservation Council of Ontario had attempted to channel the attention of legislators towards water pollution questions. On May 27, 1955, F.H. Kortright, president, wrote candidates in the provincial election to ascertain their willingness to address pollution abatement and control as a "concern of extreme urgency."[218] Kortright noted that "... there is today hardly a river or lake in the more settled parts of

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[213] *Public Health Amendment Act*, SO 1956, c. 71, s. 6(1), amending *The Public Health Act*, RSO 1950, c. 306, s. 106(22) [hereinafter *Public Health Amendment Act*, 1956].
[214] Ibid. ss. 106(13)(d), (19)–(22).
[215] *The Globe and Mail,* 1956 (April 2).
[216] Ibid.
[217] Ibid.
[218] F.H. Kortright, 1955, Letter to Conservation Council of Canada (May 27), Archives of Ontario, Toronto.

Ontario that is not in some degree being fouled by untreated domestic sewage, poisonous industrial wastes, or the silt from eroded farm lands." The situation, he continued, "is fast getting out of hand, endangering health, destroying fish and wildlife, ruining property values, and making a mockery of our right to clean water for recreation and enjoyment."[219] While commending the then government for its encouragement of urban and industrial growth, he argued that "it has virtually ignored the greatly aggravated problem of waste disposal occasioned by this development."[220] The 1955 campaign effort by the Conservation Council to direct political attention to the water pollution problem was a notable forerunner of the kind of public interest group initiative that would later become much more common in this province, and, indeed, elsewhere.

That problem of lack of municipal sewage treatment, along with the view that postwar economic expansion would suffer in the absence of supportive measures on the water supply side, compelled Ontario, along with a good many other North American jurisdictions, to address water management on a more comprehensive basis in the mid-1950s.

5 The Ontario Water Resources Commission: 1956–1972

From 1956 until shortly after the creation of a provincial government department for the environment in 1971, extensive authority relating to water quality and supply in Ontario was in the hands of a specialized agency, explicitly created for this purpose. The *Ontario Water Resources Commission Act* eventually covered waterworks and sewage systems, wells, and water pollution issues.[221] The extent of the costs anticipated in connection with requirements for infrastructure, and international considerations associated with the deterioration of the Great Lakes resulted in a renewal of federal government involvement in water-related matters during this period.

5.1 Legislative and Institutional Developments

The Richmond Hill and Woodstock cases certainly accelerated legislative developments. However, the Ontario Water Resources Commission (OWRC)

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[219] Ibid.
[220] Ibid.
[221] *Ontario Water Resources Commission Act*, RSO 1970, c. 332.

was the outcome of extended, if intermittent, deliberations dating back at least to the 1950 report of the Select Committee on Conservation involving the importance of water supply for postwar economic development as much as, if not more than, pollution issues.

Premier Frost, upon introducing legislation to establish the OWRC in 1956, declared its purpose to be "ending the possibility of the water shortage in south-western Ontario" and eliminating the province's pollution problem, an issue he somewhat curiously suggested was not even apparent one year earlier when a committee was established to examine water resources and supply.[222] With the necessary expenditures estimated at $2.5 billion over a 20-year period, Frost emphasized the very considerable extent to which the credit of the province would be involved in financing the program. He took some pleasure in anticipating the participation of Mr. M.A. Snider of Waterloo as chairman, noting that this businessman and industrialist was the grandson of an early promoter of what became Ontario Hydro and that there were significant similarities between the hydro legislation and the proposed water commission.

In recounting the development of the current bill, the premier identified several participating government departments. Mines had examined water tables. Public Works oversaw the work of the investigative committee on water supply. Health had authority to order municipalities to install sewage disposal facilities. The relationship of water supply to pollution was clearly noted by the premier, although the origins of the general concern with water issues in industrial demand was evident: "The availability of water, and its freedom and protection from pollution which run hand in hand. They are inseparable."[223] Not only was pollution a matter of domestic concern, it was also "causing increasing embarrassment in our relationships with neighbouring provinces and states."[224] Despite these inter-jurisdictional considerations, it was the firm view of the premier that "[t]he distribution of water and the elimination of pollution is essentially a municipal problem. Both are very clearly duties and responsibilities of municipal government."[225]

Summing up the objectives of the original OWRC bill, the premier stated: "The conception is water and sewage disposal at cost, the provision of water

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[222] Ontario, Legislative Assembly, 1956, *Debates* (February 23), p. 447 (Premier Frost).
[223] Ibid., (February 28, 1956), p. 557 (Premier Frost).
[224] Ibid.
[225] Ibid.

on a wholesale area basis, and the provision of sewage disposal plants which might serve more than one municipality."[226]

Those members who spoke on second reading were overwhelmingly in favour of an initiative to address water and sewage requirements, often expressing the view that action in this regard was overdue. Donald Macdonald "welcomed the OWRC initiative in glowing terms: "I think this is a great occasion because here we have another of these occasions when we the people of this province – a free people – face a great need which nobody is willing or apparently able to meet, and we are now going to take the situation in hand and meet it ourselves. That, as far as I am concerned ... is an extension of the very basic democratic principle in the economic sphere."[227] Mr. G.T. Gordon, member for Brantford, was particularly outspoken on the continuing need to address pollution on the Grand River, a waterway he described as "nothing more or less than a common sewer."[228] Mr. A. Cowling (High Park) remarked in a manner that seemed more resigned to water pollution than his legislative colleague: "Unfortunately, the matter of polluted water seems to move with progress; and wherever we have progress in industry, we have to contend with polluted water."[229]

The Ontario Water Resources Commission, a body corporate without share capital, consisting of between three and five persons appointed by the Lieutenant-Governor-in-Council, was given functions and powers as follows in 1956:

> (a) to develop and make available supplies of water;
>
> (b) to construct and operate systems for the supply, purification and distribution of water and for the disposal of sewage;
>
> (c) to enter into agreements with respect to the supply of water and the disposal of sewage;
>
> (d) to conduct research programs and to prepare statistics for this purpose;

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[226] Ibid., p. 559 (Premier Frost).
[227] Ibid., p. 567 (Mr. D. Macdonald).
[228] Ibid., p. 578 (Mr. G.T. Gordon).
[229] Ibid., p. 574 (Mr. A. Cowling).

> (e) to perform such other functions or discharge such other duties as may be assigned to it from time to time by the Lieutenant-Governor-in-Council.[230]

Commentators such as J.B. Milner of the Faculty of Law at the University of Toronto, echoed the premier in linking water and sewage issues.

> When water is brought on to land it must also be taken off, and the disposal of waste water with its impurities is an even more pressing problem in some municipalities, particularly if they have been living in the fool's paradise of private septic tank sewage disposal. Private sewage systems lull the municipality into a false sense of security from which they are rudely awakened when industry's demands have to be heeded.[231]

Professor Milner joined the chorus of those who thought that the new agency might launch a large project such as delivering Lake Huron water throughout south-central and western Ontario. This was a vision not unlike that of Snider who had been looking at the Great Lakes for some time as a source of water "in almost limitless quantities and practically free from pollution."[232] He had suggested an integrated pipeline system through southwestern Ontario "so that water from one lake could be pumped from areas that would permit its discharge back into the same lake or into another lake, and as long as the eventual discharge were above Niagara Falls there would be no interference with lake levels, navigation or power."[233]

During the lead-up to the creation of the OWRC, the government directed considerable attention to the matter of finance. Various opinions had been solicited in order to ensure that the options were fully understood. For example, in a letter to Premier Frost, August 5, 1955, Shields and Company of New York outlined an approach to water supply in Ontario based on U.S. experience with water authorities:

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[230] *The Ontario Water Resources Commission Act*, RSO 1956, c. 62, s. 10.
[231] J.B. Milner, 1957, "The *Ontario Water Resources Commission Act, 1956*," *University of Toronto Law Journal*, vol. 12, p. 100.
[232] A.M. Snider, 1955, "The water resources problem of South Western Ontario," presented to the First Ontario Water Resources Conference, p. 3 [unpublished].
[233] Ibid.

> In financing such projects, it has been the general determination that the equitable method of paying for the cost of water is on a use basis. The proposition that the user should pay directly for what he consumes is the foundation of revenue bond financing. The success of that policy has been almost universal as applied to water projects. Its strength rests upon the stable demand for the commodity from individuals, and, increasingly in recent years, from the ever expanding demands of industry and agriculture.[234]

In assuring the premier that such a form of financing was not alien to Canadian experience, Shields and Co. referred to water-related precedents in Winnipeg and Vancouver and to the Halifax Dartmouth Bridge Authority. The company recommended the formation of a southwestern water district as a legal authority with various powers and financing responsibilities. The Shields proposal would not have involved the province in any guarantees for a variety of reasons:

> (1) Only a considerable minority of the citizens and property of the Province will benefit from the project. In this respect, the water project differs completely from the Hydro Electric Commission.
>
> (2) A self-sustaining project is paid for by the users of the services. The preceding outline is designed to minimize, if not entirely to prevent, recourse to the general taxing power.
>
> (3) The self-sustaining nature of the enterprise would tend to provide adequate but moderate rates and charges for the services rendered. It would discourage diversion of profits to other governmental uses and, at the same time, bar out deficits upon the governmental bodies.
>
> (4) Every safeguard would be provided to ensure economy of operation.
>
> (5) It would provide local and decentralized control of the project and of the distribution of water.[235]

In January 1956, D.R. Annett of Gardiner, Annett – a Toronto investment adviser – reported further in favour of the self-financing arrangements for the

[234] Shields and Company of New York, 1955, Letter to Premier Frost (August 5), Toronto, Archives of Ontario.
[235] Ibid., OWRC Records.

southwestern Ontario water project. Given the localized needs for water, provincial financing, he cautioned, might attract opposition from those outside the area that would benefit. In addition, Annett mentioned the probability of "a disturbing increase in the Province's debt figures" if water financing was added to the other upcoming expenditures for hydro and roads."[236]

The ultimate arrangements permitted the OWRC to borrow on its own credit and to enjoy the guarantee of the province. J.B. Milner explained a contemporary understanding of pricing, including ways in which some encouragement might be offered to municipalities concerning their involvement with the OWRC in public works ventures. The 'unit price' paid by those municipalities that obtained water or sewage services from the commission included an amount representing 'the municipality's proportion' of the interest actually paid by the commission on the capital account in constructing or purchasing water or sewage works used to carry out the contract with each municipality. The 'unit price' also included the proportion of a sum sufficient to amortize the cost of the works over a period of years fixed by the Lieutenant-Governor-in-Council, as well as the proportion of the commission's operation, maintenance, and administrative costs. "In short," as Milner put it, "the new legislation envisages the supply of water and disposal of sewage as self-supporting services in the long run, and the consumer is expected to carry his share of the burden."[237] Nevertheless, since the commission was not required to collect the statutory charges in the unit price from the beginning of the service, there was some expectation that payments might be postponed for a four-year period. The delay was expected to enable municipalities to attract consumers, both residential and industrial, "whose assessment will be available to pay the unit price when the demand is made under the contract by the Commission."[238]

Little more than a year later, the *Ontario Water Resources Commission Act, 1957* was introduced in order, it was said, to expand and clarify the powers of the commission in relation to financial matters, and, additionally, to transfer to the commission powers over sewage and sewage works then exercised by the Department of Health as well as powers over well drillers exercised by the Department of Mines.[239] The latter authority was significant, for despite the general extension of public water systems to the residents of organized municipalities and other communities throughout Ontario, thousands of citizens

[236] Ibid.
[237] Milner, 1957, p. 101.
[238] Ibid.
[239] Ontario, Legislative Assembly, 1957, *Debates* (March 28), p. 1778 (Mr. Porter).

relied on private well arrangements for water. The transfer of formal powers from Health regarding approvals for water and sewage systems was accompanied by the transfer of Dr. Berry and his entire staff from the Division of Sanitary Engineering to the OWRC. The commission's staff as of 1957 totalled 82.[240]

The commission formally established a bacteriological branch in 1958. Previously, although fieldwork and sampling were reported, this activity was at a modest level; 105 chlorination inspections, combined with 212 bacterial and 90 chemical samples, constituted the reportable effort for 1957. Testing and sampling programs expanded dramatically with the creation of the Bacteriological Branch. Although annual reports do not initially distinguish drinking water sampling, this is clearly a separate focus from at least the mid-60s when commission staff became engaged in ongoing work to refine sampling and testing techniques. In 1967, 20,258 drinking water samples were received at the laboratory and in the following year the 24,764 drinking water samples represented the largest part of the workload of the Bacteriological Branch. From the perspective of results, the commission reported in 1968 that at least 90% of samples from distribution systems in most municipalities were negative for coliform bacteria. Some less than satisfactory results tended to come from smaller communities. Evidently the earlier disparity in capacity between larger urban centres and their smaller and rural counterparts had not been overcome.[241]

When the 1957 legislative reforms to the OWRC were reviewed a decade later for the landmark Inquiry into Civil Rights headed by Chief Justice McRuer, they elicited this comment: "Very extensive administrative and judicial powers were added to those formerly conferred on it. It was made the recipient of a conglomerate of powers of such a nature that the question arises as to whether such powers should be exercised by a body corporate that is engaged in the business of providing water supply and sewage disposal."[242] The Inquiry into Civil Rights also identified a potential conflict of interest in the commission's simultaneous exercise of administrative, or operational, and judicial powers. The view was expressed that administrative powers exercised by the OWRC were insufficiently subject to political control.[243] In addition to numerous recommendations intended to introduce procedural safeguards, the McRuer report presented two more substantive proposals regarding water:

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[240] Read, 1999, p. 348.
[241] See OWRC, Annual Reports.
[242] Ontario, Royal Commission Inquiry into Civil Rights, 1971, *Report,* Report No. 3, volume 5 (Toronto: Queen's Printer), p. 2106.
[243] Ibid., pp. 2106–7.

> A thorough review of all provincial legislation respecting the use of water should be conducted with a view to (a) determining a coherent policy on this subject and, (b) removing conflicting statutory provisions relating thereto.
>
> Sections 30 and 31 should be amended to particularize in greater detail the standards which should be applicable to approvals by the Commission of water works and sewage works and should provide for an appeal from decisions of the Commissioner thereunder to the Minister.[244]

To return more closely to the chronology, by March 1957, the OWRC had issued mandatory orders to both Sarnia and Trenton to install sewage works. The premier, having met with municipal representatives on this subject, told the legislature that he shared their "dismay over the fact that the situation is really being forced upon us by directions from Ottawa, coming from a high diplomatic level."[245] It is not entirely clear for whose benefit the premier expressed these regrets in light of the perception left over from the PCBO era that many municipalities were willing enough to proceed with remedial works if pressed to do so by some external authority.

> Many members of Councils have stated they will do nothing until they are compelled to act. They are not averse to these programmes, but they feel someone else should assume responsibility especially since they claim the work is chiefly for the benefit of those living downstream. It is felt that a rigid policy requiring action would be productive of much progress.[246]

Sarnia, in particular, had been among the more recalcitrant communities and the city, after years of delaying, was infuriated to learn that more generous financial assistance was made available to other municipalities after it had finally been compelled by the OWRC to get on with the job.[247]

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[244] Ibid., pp. 2124–25.
[245] Ontario, Legislative Assembly, 1957, *Debates* (March 28), p. 1778 (Premier Frost).
[246] Ontario, PCBO, 1955, "The present status of stream pollution in Ontario" (Toronto: the board), September.
[247] J. Read, 2000, "Managing water quality in the Great Lakes basin: Ontario border municipalities, Queen's Park, and Ottawa confront sewage pollution control, 1951-60," in Lori Chambers and Edgar-André Montigny, eds., *Ontario Since Confederation: A Reader* (Toronto: University of Toronto Press), p. 343.

5.1.1 The OWRC – Decision Making on Waterworks and Sewage Systems

From the creation of the OWRC to the early 1970s, the governing legislation was amended almost annually. It may be appropriate therefore to describe the commission's role in decision making with respect to waterworks and sewage systems as it had evolved to the 1970 version of the Revised Statutes. Two basic programs existed: one was essentially municipal in nature although subject to scrutiny by the commission; the other involved the construction of works and provision of services by the OWRC to municipalities.

Municipal projects, whether for waterworks or sewage works required the prior approval of the commission,[248] and remained subject to oversight by the commission in the sense that terms and conditions might be attached to approvals.[249] Moreover, municipal waterworks and sewage works were to be kept in repair, maintained, and operated according to the directions of the OWRC.[250] In addition to its authority with respect to the approval of municipal works, the OWRC explicitly had power to "control and regulate the collection, production, treatment, storage, transmission, distribution and use of water for public purposes and to make orders with respect thereto."[251] The utility of this provision with respect to orders was explained by the commission's solicitor, Henry Landis:

> In some instances orders dealing with such matters can improve the quality of water. For example, an order requiring the collection of water at a particular location can improve its quality. An order relating to the production of water, that is, requiring a decrease in the rate of well pumping, may improve the quality of water by allowing it to be abstracted from a smaller area than usual. An order specifying a method of storage, such as covering an open reservoir, may protect the quality of treated water from deterioration. An order for artificial storage at the source of water supply, such as an order requiring a dam to be constructed in a river, may result in reduced water turbidity by natural sedimentation and thereby produce water of better quality. An order prohibiting the use of cast iron mains in certain water distribution systems may prevent water quality problems which might arise from

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[248] *Ontario Water Resources Commission Act*, RSO 1970, c. 332, ss. 41 & 42.
[249] Ibid., ss. 41(4) & 42(4).
[250] Ibid., ss. 41(7) & 50.
[251] Ibid., s. 17(1)(a).

> the reaction between aggressive water and the cast iron mains. An order limiting the use of water in a municipality to bring the demand for water treated at the water works into line with the treatment capacity of the works may prevent the deterioration of the quality of water produced by the works which would result from the operation of the works beyond their treatment capacity.[252]

The frequency with which orders of the nature described here may have been issued is not immediately apparent from the public record. The extent of detail and variety provided by Landis's account suggests that OWRC intervention was not uncommon. The authority to make regulations relating to such matters as licensing and qualifications of sewage works operators and standards of quality for potable and other water supplies provided the commission with further capacity to influence municipal systems if it had chosen to do so.[253]

Under the *Public Utilities Act*, municipal authority for the construction and operation of waterworks, including service obligations and rates, was preserved in a manner closely resembling the general municipal waterworks legislation of the 1880s. In 1970, as in earlier periods, the intent of this range of powers was "to secure to the inhabitants of the municipality a continued and abundant supply of pure and wholesome water."[254]

As an alternative to municipally owned and operated facilities, the legislation permitted any one or more municipalities to request the commission to provide and to operate waterworks and sewage works for the municipalities in question.[255] The financial implications of such arrangements were comprehensively addressed in the statute.

One of the few commentaries on these decision-making arrangements expressed reservations about their implications, notably the consolidation of public utility and regulatory functions within one body. The same commentary also regretted, as had the McRuer inquiry, the absence of statutory guidelines specifying the factors to be taken into account when granting approvals. Indeed the observation was made that there was no contemporary equivalent to the 1884 requirement that the PBH report its opinion on the adequacy of the system from the

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[252] H. Landis, 1961, "Legal control of water quality in Ontario," *Chitty's Law Journal*, vol. 10, p. 264.
[253] *Public Utilities Act*, RSO 1970, c. 390, s. 62.
[254] Ibid., ss. 2–16.
[255] Ibid., s. 52.

perspective of sanitary requirements. In the absence of a similar duty, "the public does not know whether a sewage system is adequate for either today's or tomorrow's needs."[256]

Quite apart from ongoing revisions to its own operational legislation, the OWRC's relationship to other institutions, including other institutions with water-related responsibilities, was somewhat fluid during the 1960s when significant changes were being contemplated to the overall administrative framework for the planning and implementation of public services in the province. To address the need for enhanced coordination between the work of the OWRC and the growing number of conservation authorities around the province (apart from some coordination of water supply and pollution efforts through an Interdepartmental Committee on Farm Ponds and Reservoir Construction), both were placed within the Department of Energy and Resources Management as established in 1964. In addition to this department, water management functions of one type or another were being carried out by the Hydro-Electric Power Commission and the Departments of Lands and Forests, Agriculture and Food, Public Works, and Health. Health, in particular, through its Environmental Sanitation Branch, continued to exercise functions overlapping with or closely related to responsibilities of the OWRC, including review of water and sewage arrangements for schools, subdivision proposals, and cottage development plans. The branch, at the request of medical officers of health, would also undertake sanitary surveys to inquire into rural water supplies and sewage disposal practices.[257] Interdepartmental committees at various levels were used to address shared concerns relating to water supply, pollution, reservoirs, and so on.[258]

5.2 Water and Sewage Infrastructure

In 1957, Richmond Hill, through its consulting engineers Proctor and Redfern, requested the OWRC to provide sewage and water works estimated to cost $842,000. Given the existing gross debt/assessment ratio of 31%, a further commitment of this size would raise the financial obligation of Richmond Hill well above a level that the OMB would ordinarily regard as reasonable. However,

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[256] A.W. Bryant, 1975, "An analysis of the *Ontario Water Resources Act,*" in P.S. Elder, ed., *Environmental Management and Public Participation* (Toronto: Canadian Environmental Law Research Foundation), pp. 167–68.
[257] Ontario, Department of Health, 1964, *Annual Report* (Toronto: Department of Health), p. 17.
[258] Shrubsole, 1990, p. 57.

following informal discussions with the chairman of the OMB, at which the urgency of the extensions to the sewage treatment plant was emphasized, the Richmond Hill sewage works obtained the necessary approval.[259]

The Throne Speech of November 22, 1960, reviewed progress to date and forecast additional initiatives in the provision of sewage and water supply systems. In the four years from its inception in 1956, the OWRC had concluded agreements with municipalities across the province for 130 waterworks and sewage disposal projects at an estimated total cost of $52 million. Progress in the construction of these projects and in the commission's industrial water treatment work had been encouraging, with major sewage plants already open in Kitchener, Waterloo, Brantford, North Bay, Streetsville, Trenton, and Port Arthur among other centres. Negotiations concerning other projects were ongoing. On the basis of this record, the lieutenant-governor informed the legislature,

> You will be asked to vote funds to continue this program of abating water pollution and increasing the effective use of Ontario's fresh water supplies. Immediate steps will be taken to facilitate the participation of municipalities in the Federal Government's plan to combat pollution which has become a by-product of our growing industrialization and urbanization and is in many ways a national problem.[260]

A summary of waterworks expenditure estimates for the years 1950 to 1972 is set out in Table 5-1.

5.3 Federal Government Initiatives

5.3.1 National Housing Act Amendments

In the context of mounting U.S. pressure for Ontario to implement remedial measures following recommendations from the IJC, federal-provincial negotiations between Prime Minister St. Laurent and Premier Frost continued for some time, culminating in 1960 in federal legislation authorizing financial support for a national sewage treatment initiative. The rationale for this federal initiative, in an area often described as one of local responsibility, was expressed this way:

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[259] OWRC, 1957, Minutes (September 26 and November 27/28).
[260] Ontario, 1960, *Journals of the Legislative Assembly* (November 22).

Table 5-1 Ontario Waterworks Expenditure Approvals, 1950–1972

Year	Estimated Expenditure Approved, $
1950	13,316,700
1951	18,049,853
1952	17,633,253
1953	24,491,458
1954	38,100,236
1955	44,181,192
1956	33,345,430
1957	25,969,290
1958	24,614,953
1959	35,813,274
1960	20,804,807
1961	23,264,916
1963	27,746,749
1964	35,649,202
1965	34,304,337
1966	(information not available)
1967	34,631,586
1968	45,182,214
1969	45,130,885
1970	53,646,578
1971	59,057,563
1972 (1st quarter)	18,747,463

Source: OWRC Annual Reports 1956–1972.

> a) The threat to national survival from indiscriminate and uncontrolled waste disposal is of national importance and is, therefore, of concern to the Federal Government.
>
> b) The Federal Government should provide leadership in solving the problems of urban environment, including financial help, if necessary.
>
> c) Without increased expenditure in the area of municipal sewage disposal, no significant environmental improvement is possible, and in order to bring about efficient investment of public funds, control and monitoring measures will have to be implemented.[261]

The federal government established a lending program intended to cover up to two-thirds of eligible expenses for sewage treatment and trunk collector sewers. Provision was also made to forgive a quarter of the loans that were expected to carry interest at rates slightly above federal borrowing rates. As described below, the program was later extended to waterworks and provided very extensive financial support until its termination in 1980.

5.3.2 Resources for Tomorrow

In collaboration with his provincial counterparts, the Honourable Walter Dinsdale, minister of Northern Affairs and National Resources, convened the Resources for Tomorrow Conference in Montreal in October 1961. The discussions were supported by extensive background documentation and provided a helpful overview of contemporary thinking. Alongside sessions on agriculture, forestry, fisheries, and so on, there were three workshops on issues relating to water: organizing for multiple-purpose development in river basins; benefit-cost analysis; achieving effective pollution control. At the conclusion of the pollution workshop, where very little reference was made to implications for drinking water supplies, recommendations were addressed to the federal, provincial, and territorial governments. The federal government was seen to have a research and coordination function, while the other jurisdictions were urged to ensure that each had in place a water pollution control authority of some kind to which all matters relating to water pollution control might be referred.[262]

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[261] Grover and Zussman, 1985.

[262] Canada, Department of Northern Affairs and National Resources, 1961, *Resources for Tomorrow*, 3 volumes (Ottawa: Queen's Printer).

5.3.3 Canada Water Act

Eternally troublesome intergovernmental conflicts in relation to water were among the issues addressed by the *Canada Water Act*, introduced to Parliament in late 1969 and proclaimed about a year later.[263] Let us cooperate, Part I seemed to suggest, by providing for federal-provincial committees to consult about, to advise upon, and to coordinate policies and programs for water resource management on a national, provincial, regional, or lake or river-basin scale. Express provision for federal financial contributions increased the attractiveness of the new statute to the provinces. Overwhelmingly, initiatives under the *Canada Water Act* – some 70 agreements during the next quarter century – fell within the scope of Part I.[264]

The second part of the legislation contemplated mechanisms for water quality management, that is, "any aspect of water resource management that relates to restoring, maintaining or improving the quality of water" in those parts of the country where water quality management – to invoke a constitutionally defensible basis for federal action – had become "a matter of urgent national concern."[265] The federal government, ordinarily in conjunction with a province or provinces[266] – but on a unilateral basis in the case of inter-jurisdictional waters where reasonable efforts failed to reach agreement[267] – might create agencies with responsibility to plan for the restoration, preservation, and enhancement of water quality levels. Recommendations would address water quality standards, waste discharges, and treatment procedures, waste treatment, sampling and effluent fees, and other aspects of a comprehensive plan for the area in question.[268] And, subject to appropriate ministerial approval, including provincial approval for jointly constituted bodies, the agencies might proceed to implement the water quality plan through the construction and operation of waste treatment facilities, the collection of fees, monitoring, inspection, and so on.[269]

No water quality management agency has ever come into being under the *Canada Water Act*.[270]

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[263] *Canada Water Act,* RSC 1970, c. 52.
[264] See L. Booth and F. Quinn, 1995, "Twenty-five years of the *Canada Water Act*," *Canadian Water Resources Journal*, vol. 20, p. 65.
[265] Ibid., p. 66.
[266] *Canada Water Act,* s. 9.
[267] s. 11.
[268] s. 13(1).
[269] s. 13(3).
[270] Booth and Quinn, 1995.

5.4 Legal and Enforcement Matters

Enforcement measures, including prosecutions, may provide important insights into the way in which government agencies envisage their role and relationship with regulated individuals, industries, and, in the case of Ontario water resources, municipalities. A commentary on the *Ontario Water Resources Act (OWRA)*[271] shortly after responsibility for its administration passed from the commission, remarked that there was "little known publicly about the utilization by the Ministry of the vast powers set out in the Act." The author concluded, as others also have been inclined to do, that "these powers are not utilized to any great extent."[272] That was certainly the view of Walter Pitman, MLA, who, after ascertaining in the legislature that the commission had initiated a total of 26 prosecutions in the three-year period 1967–1969, insisted that the people of the province were much more inclined to take firm action against polluters than was the government of the day.[273]

The customary explanation for what many regard as a low number of prosecutions is that the OWRC, certainly in its early years, devoted its resources overwhelmingly to the development of the badly neglected water and sewerage infrastructure. Yet the commission did address prosecutorial issues fairly early in its mandate. About a year after its inaugural meeting on May 17, 1956, the commission's attention turned to prosecution. Despite personal assurances to the chairman and commission officers in the summer of 1956 by the operator of a tannery at Acton that unsatisfactory waste management practices would be eliminated, the results of a spring 1957 investigation were disturbing. Adverse impacts on the Credit River were still being recorded. Thus, subject to the approval of its solicitor, D.M. Treadgold QC, the commission decided to prosecute.[274] This decision coincided with a more general formulation of abatement policy presented by the OWRC's general manager, A.E. Berry, who explained that regular inspection procedures were in place to identify corrections needed at industrial and sewage treatment discharge sites:

> If this work is to be effective it will be necessary that these reports be followed up by time limits for correction of pollution. If the work is not completed on the time set, and no reasonable explanation is given, the offender should be taken into court under Section 27

[271] RSO 1990, c. O.40.
[272] Bryant, p. 174.
[273] Ontario, Legislative Assembly, 1970, *Debates* (November 4), pp. 5990–91 (Mr. W. Pitman).
[274] OWRC, 1957, Minutes (May 22).

> of the Act. I would recommend that the Commission adopt a policy of this nature, and that action be taken through the courts wherever this is necessary to obtain the desired results.[275]

A few years later, remarks by C.S. McNaughton, MP and a commissioner of the OWRC, indicated that Berry's proposal for a formal enforcement policy had not been implemented. After noting the existence of enforcement powers, McNaughton stated publicly:

> I also would like to make it clear that the policy of the Commission has been, and I hope always will be, to accomplish its function through cooperative action. But the Commission does not intend to be weak or derelict in its responsibility where flagrant disregard of pollution controls are found.[276]

He did state, however, that "the day may not be far off when the Commission will have to employ more effective methods to enforce its regulations, in order to accomplish its task of restoring purity to our water resources."[277]

Statistics on the overall abatement and enforcement work of the OWRC are limited. A compliance analysis prepared in 1963 indicated that the wastewater treatment facilities at 18 of 48 Ontario canneries inspected were unsatisfactory. A similar evaluation of industrial wastewater treatment facilities at other plants – mostly dairies and creameries – revealed that 40 of the 59 operations provided treatment considered unsatisfactory by the OWRC.[278] The absence of a systematic review, or any comprehensive indication of how the OWRC proposed to address the deficiencies, and what results it may have attained makes conclusive judgments about the implementation of any strategy difficult to formulate. It is possible, however, to develop some understanding of operational dynamics through selected files. These generally demonstrate the difficulties and complications, because inspections of premises and operations found to be in order tend not to produce lengthy documentation. And it is impossible to determine the extent to which the mere anticipation of routine visits actually encouraged the satisfactory performances that were noted.

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[275] Ibid., A.E. Berry, "A brief to the commission on policy in respect [of] pollution abatement," Appendix C.
[276] OWRC, 1960, The Ontario Conference on Coordinated Water Pollution Control, Toronto, November 29–30, (Toronto: OWRC).
[277] Ibid.
[278] OWRC Records, Archives of Ontario.

5.4.1 Trailer Park Follies

The Knapman clan were already formidable adversaries of the sanitary enforcement infrastructure by the time they crossed paths with the OWRC in the late 1950s. Indeed, in 1954, George Knapman successfully resisted the Board of Health for Saltfleet Township when it attempted to condemn a number of unsanitary cottages or cabins forming part of a trailer camp near Hamilton. The Saltfleet Board, in a somewhat inept and officious approach to the exercise of its authority, denied Knapman any opportunity to respond to critical findings of the local sanitary inspector and medical officer of health. The high court justice who heard Knapman's subsequent challenge to the board's conclusion had a particularly low tolerance threshold for high-handed administrative decision making. In laying sympathetic groundwork for his eventual decision to quash, however, Justice Gale managed to persuade himself that prior to the actual date of the inspection on July 29, 1953, no one had even notified Mr. Knapman that there might be anything objectionable about the buildings in question or the site of the trailer camp.[279]

One is curious, therefore, as to what significance might be attached to a unanimous decision of the Ontario Court of Appeal dated April 7, 1953, the culmination of a series of proceedings concerning the unlawful operation of Knapman's trailer camp at Saltfleet. Knapman, ably represented by R.F. Reid, who would later achieve particular prominence within the administrative law branch of the province's legal community, took exception to a great many aspects of the legislation governing his establishment. Of particular note were his objections to provisions in Saltfleet's by-law specifying requirements for water closets and washbasins, and setting out conditions for the disposal of waste from showers, bathtubs, toilets, slops, sinks, and laundry (all of which were, in the court's opinion, entirely valid). Far from not having notice of possible objections to the nature of his operation, one imagines George Knapman – on the basis of his response to an earlier prosecution – as a fount of encyclopedic knowledge of the deficiencies in question.

With or without notice and the opportunity for whatever amount of process the courts of Ontario considered desirable, progress towards compliance at the Knapman premises moved at a modest pace. In May 1958, Knapman matters again came before the OWRC. The commission resolved to take action against

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[279] *Knapman* v. *Board of Health for Saltfleet Township*,[1954] 3 DLR 760 at 761 (Ont. HC), aff'd [1955] 3 DLR 248 (Ont. CA).

the 'Knapman Trailer Company' in connection with "a highly unsatisfactory pollution condition arising at Hamilton from their disregard of standards in this respect which have been requested of them."[280] Although the Knapman trailer camp was easy enough to find, there may or may not have been a Knapman Trailer Company. Proceedings against either entity might have been perilous, for only days before the OWRC started to face up to pollution on the premises, the City of Hamilton renewed Saltfleet's earlier attempt to deal with the fact that the trailer camp remained unlicensed.

The prosecution was directed against George Knapman, referred to in the information on which the charge was based, as executor and manager of the David Knapman estate. Duly convicted in his personal capacity – there being no doubt that the trailer camp was indeed operating without a licence – George Knapman seized upon the language of the information to argue the fundamental proposition that George Knapman, executor and manager of the David Knapman estate, was not the same legal person as George Knapman, himself. They nailed the wrong guy.

The appeal was successful; it was an error to charge Knapman in his capacity as executor and to convict in his personal capacity. But perhaps in getting his personal self out of the frying pan, George had put his executor self into the fire, for the appeal proceedings were essentially a trial *de novo* and the evidence available contained much to indicate that, in his representative capacity, George Knapman had operated an unlicensed trailer camp. This was precisely what George himself explained in answering questions posed by Hamilton's licence inspector with the building inspector standing by as witness to the conversation.

Alas for the prosecution, the county court judge presiding over the appeal found no indication in the transcript on which the appeal was based of any attempt to establish that the statements of George Knapman, an accused, were made voluntarily. They were, the judge accordingly concluded, inadmissible, with the consequence that both George and his executor alter ego once again avoided whatever penalty the meagre forces of the sanitary state might have imposed.

On October 29, 1958, that is after the conviction of George personally, but before the appeal result of January 28, 1959, a motion was carried at the OWRC to take action against Knapman if necessary. At its meeting of November 26/27, 1958, the commission discussed the trailer camp's failure to provide adequate

[280] OWRC, 1958, Records (May), Archives of Ontario.

sewage treatment facilities. The commission next resolved to send a letter to Mr. Knapman "requesting that action be initiated and proposing that the Commission would take further action if their request had not been met by the deadline of December 8."[281] How this saga ended, if indeed a point of climax was ever reached, the writer has not been able to determine.

5.4.2 The Cannery Caper

The OWRC's first pollution prosecution took place in 1959, although, as in the Knapman case, this was hardly a fresh file. At its December 17, 1952 meeting, only a few months after inauguration, the PCBO decided to invite the Niagara Food Products operation from Stoney Creek to discuss waste disposal problems. The owner of the Niagara Food plant, Mr. Cudney, appeared with his solicitor, Mr. Harris. Dr. Berry outlined the pollution caused by the Cudney operation, pointed out its severity and insisted that it had to stop. In response, Mr. Cudney described remedial measures he was taking to alleviate the situation. He emphasized that the canning factory was in place before the complainants who had built around it.[282] At the April 1953 meeting, Berry found it "most encouraging" that Cudney had shown a willingness to cooperate.[283]

On March 21, 1956, the PCBO met in special session to hear representations from Niagara Food Products of Stoney Creek. Mr. Barr, on behalf of the company, insisted that the lagooning technique for containing canning wastes was essentially sound, but had failed at Stoney Creek following implementation for two reasons. First, a weakness (since corrected) had developed in the earth wall between the lagoon and the Stoney Creek pond. Secondly, a valve at the south end of the lagoon, inadvertently left open, had allowed waste to drain into the pond. The company was now confident that further waste could be controlled.

Accepting the general suitability of the lagooning method, Dr. Berry and his associates nonetheless remained unpersuaded that the waste flow of the entire season could be contained without overflow. Perhaps the lagoon could be pumped down at the outset of the season. Another suggestion was to separate uncontaminated cooling water for discharge directly to the pond, thereby reducing the volume required in the lagoon. The comparative impact of cherries and peach waste on oxygen levels in the water was under consideration when

[281] Ibid., Minutes (November 26/27, 1958).
[282] Ontario, PCBO, 1953, Minutes (March 3).
[283] Ibid. (April 1953).

various representatives from Hamilton arrived, including members of the Ontario Federation of Anglers and Hunters, and the Wentworth Conservation Association. They expressed a strong competing interest in the well-being of the waters in question.

Perhaps inspired by this level of public interest, Dr. Berry indicated that if offensive conditions recurred that season, legal action would be necessary. He cited the Richmond Hill case to emphasize the severity of the matter.

Mr. Barr questioned whether the canning factory waste constituted a public health nuisance at all, and the consensus of the meeting was that odour and fish damage were the primary concerns. "The matter was left that Mr. Cudney would write the Board on any assistance in separation of cooling water or in calculating the volume of the lagoon."[284]

Two and a half years later, Berry, now general manager of the OWRC, reported a lack of cooperation from the Hamilton cannery. "Deliberate pollution had been observed by members of the Commission staff."[285] The following motion was then put to the meeting: "That legal counsel be obtained to initiate action against Cudney Canners Ltd. of Stoney Creek so that the gross pollution arising from this company's operations shall be attended to."[286]

A letter from Snider, the chair of the OWRC, to Berry, January 2, 1959 suggested that firmness was having an effect: "Cudney Case: Prosecution is now underway. Cudney wishes to discuss the matter with Dr. Berry and will see him accompanied by the Honourable Charles Daley."

Minutes soon indicated that the hearing, originally scheduled for January 20 had been adjourned to April 7 by mutual agreement.[287] As the prosecution was finally getting underway, the cannery constructed a retaining basin for its wastes and undertook to institute further pollution prevention measures as necessary, thereby leading to the withdrawal of the charges.[288]

Whether episodes of this nature constitute success or failure for a prosecutorial strategy to achieve water protection is a much-debated matter: since there was

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[284] Ibid. (March 21, 1956).
[285] OWRC, 1958, Minutes (October 29).
[286] Ibid.
[287] Ibid. (January 23, 1959).
[288] Ontario Water Resources Commission, 1959, *Annual Report* (Toronto: OWRC).

no conviction, there was no penalty, and perhaps, consequently, no general deterrence to others who might be in violation of the statute. Indeed, the combined delay of six or more years before firm action occurred may have emboldened others to disregard the commission's efforts to promote compliance. On the other hand, preventive measures were finally put in place, presumably to the immediate and general benefit of the local environment.

Before returning to the challenging problem of evaluation that such an outcome presents, it may be worth remarking on an entirely different category of prosecution in the OWRC record.

5.4.3 Small Fish

Shortly after its formation, the OWRC had assumed responsibility for wells from the Department of Mines. Many of the OWRC's initial prosecutions during the late 1950s and early 1960s concerned water well drilling either by unlicensed operators or by drillers who worked with used casings contrary to regulations. Much to the embarrassment of the commission, three of the earliest prosecutions that were in the hands of outside counsel had to be abandoned upon the expiration of the six-month limitation period under the *Summary Convictions Act*.[289] Equally significant, from the perspective of the environmental observer, is that these cases involved no actual pollution. This was true of a surprising number of other early prosecutions that somehow commanded the time and resources of the new water agency. Several years later, a limitation period under the *Criminal Code* produced similar difficulties for the commission's prosecutorial efforts, even as A.K. Watt, director of Water Resources Division, expressed the view: "It is believed that successive prosecutions will reduce the frequency of used-casing violations."[290]

Watt, of the Ground Water Branch, urged the prosecution of one S. Gilbert for drilling without a licence. Gilbert was said to be familiar with the regulations and had obviously ignored them. "Other drillers in the area are aware of the situation and are watching with interest to see what action will be taken by the OWRC."[291] By early 1961, Gilbert had been persuaded to conform fully with the regulations and Watt now recommended against prosecution: "Because of the delay in proceeding with this case, I believe that we would probably

[289] OWRC Records, Archives of Ontario,
[290] Ibid.
[291] Ibid.

jeopardize that good relationship which has finally been developed with the driller without accomplishing very much."[292]

On the other hand, Watt recommended charges against a plumber in 1961 for failing to install a pump seal as required by the regulations. The matter had originally been brought to the attention of the department on July 21 when a driller phoned to say that:

> [I]n spite of instructions from the well owner and J. Fraser (the driller) to be sure to put in the proper seal, Mr. Hailstone broke a large hole in the casing when installing the pump and patched it with concrete, a method in variance with the requirements of the Regulations as the concrete is soon shifted by frost action allowing soil and surface water to enter the well.[293]

When it was determined that the plumber Hailstone had failed to install a proper seal and that a large careless break had appeared in the casing, Constable M. Chapman of the OPP Madoc Detachment set out to inspect the well. Chapman's involvement in the proceedings occurred because the OWRC inspector W. Coe was on holidays when the offence was reported. When Coe eventually examined the well on July 28, he found that the plumber had come back and installed the proper seal. However, no vent had been placed in the well as required by Regulation 9, subsection (1).

> "Most of the plumbers," Watt explained, have been informed of our Regulations through their Association. Mr. Fraser stated that on several occasions he has advised Mr. Hailstone of the Regulations which a number of the plumbers are ignoring. In this case the owner as well as the driller had asked that the well be constructed properly. The seal was put on only after the policeman's visit to the well and the reporting of the infraction[294]

Watt concluded, "In view of the above and the fact that the well has still not been left in satisfactory condition, I believe information should be laid against Mr. Hailstone for violation of the Regulations."[295]

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[292] Ibid.
[293] Ibid.
[294] Ibid.
[295] Ibid.

But this little drama had certainly not run its course. Watt recounted much of the story in a December 1961 memo to A.E. Berry in which he reported that Coe, while investigating the complaints against Hailstone, found that a second plumber, E. Wannamaker of Stirling, had completed a pump installation in another local well contrary to regulations. Charges were recommended in both cases in August, and Coe, under instruction from OWRC headquarters and solicitor Landis's office, spent time during September and early October gathering additional information from the owners of the wells. On October 18, Landis wrote Mr. J.A. Pringle, the Crown attorney in Belleville, to explain that the commission had authorized charges against E. Wannamaker and E. Hailstone. Landis outlined the circumstances of the infractions and asked that Mr. Pringle lay the charges.

As Watt reported the subsequent course of events, Crown Attorney Pringle had little inclination to launch proceedings, as these were first offences. By the time Landis and other OWRC staff had managed to call and visit Pringle, six months had elapsed since Mr. Wannamaker had installed the pump in question, and Mr. Pringle advised Mr. Coe that no charges should be laid against him.

In the Hailstone matter there was still time to lay information. In due course Hailstone pleaded guilty to two charges and paid fines of $13.50 for each.

Pringle added a couple of additional items of information and opinion to the proceedings. In the Wannamaker case, Pringle concluded that someone else should actually be charged. In the Hailstone situation, he said: "[I]t is my considered opinion that although a technical breach of the Regulations was committed, according to Mr. Coe and the statement of Mrs. Welsh [the informant], deficiencies in installation in regard to venting and sealing were remedied almost immediately after Hailstone was appraised of these deficiencies."[296] Pringle took the position that prosecution of Hailstone for what he judged to be a technical breach of the regulations "would be more of a persecution."[297]

With the matter coming to a close, D.N. Jeffs, who had originally recommended the prosecution in a memo to Watt, wrote himself a note to file: "Hailstone wants to receive a current plumbers code, the last one he received was from the Department of Health in 1947, and a copy of our regulations." "Inform Bill

[296] Ibid.
[297] Ibid.

Coe of where plumber should get code."[298] A modest amount of well-placed information might offer remarkable benefits if, in fact, the non-compliance in this case was properly attributed to simple lack of familiarity with requirements.

The OWRC prosecuted well offences fairly regularly during the 1960s. Another prosecution arose from an improperly sealed well. At an adjournment of the proceedings before the magistrate, the accused offered to correct the deficiency. After inspection of the work, the charges were dropped by a local official who indicated that he and the Crown shared the view that "we were better with the well sealed than to have a conviction and the well still without seal."[299] Another prosecution of a well driller's operating without licence is noteworthy only for the fact that in the course of it the deputy attorney general wrote Landis to

> point out that it does not fall within the duties of a Crown Attorney to prosecute offences under Provincial Statutes. It is quite true that a number of our Crown Attorneys gratuitously take on these prosecutions when requested by a particular department of government, if at all possible. I do know that the Crown Attorney for Metropolitan Toronto and the County of York, and his assistants, are extremely busy with the large volume of work presently confronting them and consequently they are unable to take on these prosecutions under Provincial Statutes.[300]

In another case, one Holzeu, operating as Warren Water Wells, avoided conviction at trial before the magistrate on the basis of an element of doubt concerning one aspect of the Crown's case regarding used material in the casing. On appeal, Holzeu was convicted, fined $50, assessed costs of about the same amount and an equivalent sum for witness fees.

Unremarkable in themselves, apart from the technical complications that such files managed to reveal, these routine prosecutions for minor offences were leading the OWRC closer to legal issues of profound importance. The eventual resolution of these issues in a water pollution case involving the city of Sault Ste. Marie deeply affected Canadian regulatory enforcement in general. Legal counsel for the commission described this type of case to Watt:

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[298] Ibid.
[299] Ibid.
[300] Ibid.

> This type of prosecution is what is called a 'quasi-criminal' prosecution in which the onus of proof placed upon the Crown is considerably higher than in a civil action but not quite so high as in a criminal matter. It is the duty and onus of the Crown to prove the case beyond any reasonable doubt. The defence in such a matter is not required to prove anything, but is only required to raise a doubt as to the conclusiveness of the evidence in the mind of the Magistrate. Once an element of doubt creeps in the benefit of such a doubt must of necessity go to the accused.[301]

There would soon be further cause to reflect on who had to prove what in these types of offences, and, indeed, whether it was time in Canada to envisage an entirely new category of offence where matters affecting the public welfare were concerned.

5.4.4 Pigging Out on the Scotch

After a considerable period of indecision, proceedings were launched late in 1964 against a number of operations, including a milk processor who was polluting the Scotch River in the Township of Plantagenet South in Prescott County. Extensive pre-trial preparations laid the foundation for the prosecution's case against the cheese factory that took a day to present in L'Orignal on November 16, 1964. Following an adjournment, the accused abandoned plans to defend on the grounds that the milk waste was simply an element of sewage associated with the plant's sewage works for which it had obtained approval from the Department of Health, and entered a guilty plea. Perhaps the change of heart was linked to November's developments at the adjacent piggery – an operation under the same management as the cheese processing plant – that was now embroiled in a serious environmental controversy of its own after a local resident drew attention to the high level of liquid piggery waste in a dike adjacent to the river. By the time of an official on-site investigation the following day, about 75 thousand gallons of waste had escaped. The dike was deteriorating and its failure threatened to discharge up to a million gallons of piggery waste into the Scotch River whose daily flow was estimated at half a million gallons per day in the summer, and a good deal less during the fall and winter months. A phone call to the engineering firm, ostensibly in charge of proposing remedial plans, produced no evidence that the company had taken any steps to address

[301] Ibid.

the problem with the piggery dike. The engineer did establish, however, that a request for assistance with the cheese factory situation had been made.

Following the guilty plea on the cheese factory charges, a three-hour session was devoted to representations of counsel concerning fine, costs, and other penalties. The fine, $25, was nominal, although costs for witness fees were not insignificant at $536. The real burden was an expenditure of some $30,000 for corrections to the operations to prevent future contraventions.

The necessity for measures to address its unsatisfactory waste disposal procedures was certainly no surprise to the defendant. As early as January 1959, the plant's operator had acknowledged that a septic tank and an adequate method of industrial waste disposal were required. Although the septic tank was in place later that year, no industrial waste facilities had been installed. A series of inspections revealed that no progress had occurred by mid-1961 when Dr. Berry established a deadline of 25 July. This prompted the company to provide assurances about a spray irrigation system. The system was actually ordered and delivered that summer, but had not been installed by November when the OWRC authorized prosecution if proved necessary. About a year later, in June 1962, the spray irrigation system was still not operational, and annual reports in 1963 and 1964 revealed that the factory wastes were still being discharged into the watercourse. So, in light of the defendant's demonstrated lack of enthusiasm for remedial effort at the cheese factory, the imposition of remedial obligations must have occasioned some satisfaction. Meanwhile, advisers to the OWRC were urging "firm and definite action" to ensure that the piggery waste storage pond would be emptied promptly and not used again without authorization.[302]

The question of agricultural waste, particularly its potential impact on water, soon became the subject of more general inquiry for the commission. Efforts shifted away from a case-by-case remedial effort – such as the situation illustrated above – towards preventive measures that might reduce the burden of farm operations on provincial waterways. Analysis certainly indicated that such an approach was timely, if not overdue:

> In 1967, there were over 5.5 million livestock with a value of $700 million and a total poultry population of some 31 million at a value of over $47 million within the Province of Ontario. The wastes

[302] Ibid.

> produced by this number of animals has [*sic*] been estimated at being equivalent in strength to the sewage of some 30 million people or about 4 times the present population of Ontario.[303]

5.4.5 Actions against Municipalities

The question of the treatment of claims and complaints against municipal facilities would recur following the introduction of the *Ontario Water Resources Commission Act* in the aftermath of the Richmond Hill and Woodstock cases. What is now section 59 of the *OWRA* set out the scope of immunity:

> Sewage works that are being or have been constructed, maintained or operated in compliance with this Act, the *Environmental Protection Act* and the regulations under both Acts and with any order, direction or approval issued under the authority of the Act or any predecessor of any provision of this Act shall be deemed to be under construction, constructed, maintained or operated by statutory authority.[304]

Municipalities not in compliance, however, were subject to prosecution. At the OWRC meeting of April 28, 1961, the pollution problems of the villages of Norwich and Bridgeport were considered. It was duly moved and seconded that: "A further meeting would be arranged with each Village council to request that corrective measures be undertaken as outlined in the Oxford and Waterloo County Pollution reports, and that: Prosecution be considered against the Village and also against the offending individuals if the required corrective actions are not undertaken."[305]

When the City of Barrie, without the approval of the OWRC, chose the less costly of two interim procedures while upgrading its sewage facilities, sewage flowed for 31 hours into Kempenfelt Bay. The OWRC brought charges against the city and obtained a conviction accompanied by a $1,000 fine. Having reviewed the circumstances of the case, Justice Roebuck of the Provincial Court went on to deliver these quite remarkable observations:

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[303] S.A. Black, 1969, "Farm animal waste disposal in Ontario," *Sixteenth Ontario Industrial Waste Conference* (Toronto: OWRC), pp. 141–50.
[304] RSO 1970, c. 332, s. 59.
[305] OWRC, 1961, Minutes (April 28).

> I am not going to go into a philosophical discussion on pollution at this point and the place that this holds in our society at this time. We are living in a rather unusual society when it appears to me that the only goal in sight is the G.N.P. of the Nation; industry, municipalities, individuals, provinces; it is international now. All they are interested in is that G.N.P. result; drive towards a certain financial goal and that is it. Just let us forget about everything else including people, humanity, life; this seems to be secondary. I say this, that this is – this is, in my opinion, the fight against pollution not only in this country of ours but in the world. It is probably one of the graver issues of our time and the deterrent aspect must be taken into consideration to deter in this case a municipality from in any way endeavouring to commit this type of behaviour again, but to deter others who might think that they could do the same thing and get away with it.[306]

Justice Roebuck, for one, had concluded that the sacrifice of water quality for industrial purposes had gone too far, and he resolved to adjust the balance.

5.4.6 The Plating Industry

5.4.6.1 *Brass Craft, Riverside, Ont.*

Although metal plating facilities proliferated, environmental requirements remained uncertain in the minds of operators and their advisers. Thus, on the recommendation of the Metropolitan Windsor Health Unit, solicitors for Brass Craft, a company hoping to begin operations in Riverside in 1962, contacted the provincial Department of Health: "We might advise that the Town of Riverside presently has a separate sanitary and storm system which we are not interested in using at this time but, until such time as a proposed new trunk sanitary system is constructed, and, even in that event, we feel there may be further requirements from yourself."[307] Health forwarded the inquiry to the OWRC's Industrial Wastes Division, while Dr. Berry received a similar inquiry by way of the Department of Lands and Forests. Berry requested further information, pointedly suggesting that a meeting with "one of the representatives of the company who is familiar with the technical side of the process" might be worthwhile.[308] Other OWRC

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[306] *R.* v. *City of Barrie* (1971), 13 *Criminal Law Quarterly* 371 at 381-2 (Ont. SC).
[307] AO, RG 12-29 Files "Brass Craft Canada" and "British Chrome and Chemical."
[308] Ibid.

personnel contacted the Brass Craft lawyers to enclose "The Objectives for Water Quality in Ontario" and to list the limits for plating company effluents. The recommended pH (acidity or alkalinity) for discharges to either a sanitary sewer or a storm sewer or watercourse was between 5.5 and 9.5. No chromium, cyanide, or copper was to be discharged to a storm sewer or watercourse, but maximum levels of 3, 2, and 1 part per million were authorized for discharges to a sanitary sewer. In either case, zinc and iron discharges were permitted to a maximum of 15 and 17 parts per million respectively. The OWRC letter to Brass Craft, written in late April, recommended that the services of a consulting engineer might usefully be engaged, and further advised:

> It would not be wise to proceed with any other phases of the operation until it has been established that the wastes can be adequately treated or can be kept down to acceptable levels. This might seem to be a bit of a hardship, but it is much easier to plan waste handling in advance than try to correct a bad situation later.[309]

No evidence is on file of further dealings with the OWRC, but three years later Brass Craft wrote to Riverside's building inspector, enclosing some specimen wastewater and looking for advice on after-flow treatment. To the extent that this correspondence was in any way responsive to previous requests from the OWRC for technical specifications, the detail provided by the company is as follows:

> Our plating process will consist of nickel and chrome plate with the possibility of a copper strike prior to the nickel plate. Our contemplated method of electro-plating will be small brass parts on racks and copper tube up to 36 inches in length, also on racks.
>
> ...
>
> Our entire plant will have an area of approximately 20,000 square feet, of which the plating department will consist of about 3,500 square feet; with a total employment of between 40 and 50 people.[310]

The company estimated its monthly water consumption at between 12,000 and 15,000 gallons.

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[309] Ibid.
[310] Ibid.

This letter too was forwarded to the OWRC and, once again, a patient official responded to indicate the legislative basis of the OWRC's operations, the scope of the agency's authority, penalties for non-compliance, going on to repeat other items of information that ought to have been points of departure after earlier correspondence with the lawyers. Once again the services of a consultant were recommended.

5.4.6.2 *British Chrome and Chemical, Cornwall, Ont.*

Cornwall in the 1960s promoted industrial development under the slogan, "Do It Now." Not surprisingly, when British Chrome and Chemical Limited showed some interest in locating in the community, there was some potential for friction with the OWRC's environmental approvals process. British Chrome and Chemical, more forthcoming than Brass Craft, readily furnished technical information about the contents and composition of its effluent. However, the statistical data accompanied by such modifiers as "inert," "small quantity," or "minute traces" ran afoul of a sharp pencil in Dr. Berry's office.

Berry referred to the commission's objectives for industrial effluent, which he considered to be "not unduly restrictive to industry but at the same time, allow the continued use of the water," and compared these standards with British Chrome's operational projections.[311] Assuming that some three-quarters of the suspended solids projected by the company at 15,000 parts per million (ppm) or 30,000 lbs/day were iron, then iron in suspension at 10,250 ppm (20,500 lbs/day) would be produced ... in contrast to the commission's suspended solids' objective of 20 ppm and iron as Fe of 17 ppm. The commission's objective for hexavalent chromium was 1 ppm in contrast with British Chrome's projected 1,000 ppm. For sulphate as SO4, the commission had established an objective of 1000 ppm, or about a third of the company's target level.

The company's effluent, Berry went on to explain, "would have a very deleterious effect on the receiving water." He observed that the finely divided suspended solids would likely create a zone of excessive turbidity. Not only could this "spoil the beauty of the river and be harmful to water organisms," it could also "increase the cost of treating the water." Moreover, depending on the particle size of the iron, it would "produce colour, coat the stream bottom and slowly dissolve to provide a source of water with high iron content that would prove

[311] Ibid.

to be objectionable to users downstream." Hexavalent chromium, Berry pointed, out is toxic to humans and aquatic organisms. It must, accordingly, "be kept from domestic water sources." Sulphates were also problematic in that excessive amounts in water may result in "disagreeable tastes, a purging action in humans and ... an adverse effect on industrial boilers." Therefore some treatment would be required.[312]

Berry closed with the thought that restrictions such as he had described would be readily understood and assumed, "should the plant be located in Ontario," that the company would endeavour to keep pollution to a minimum.[313]

In the absence of regulated standards, files such as those of British Chrome and Chemicals might be problematic. With the company undecided about the exact location of its proposed facility and actually considering at least one other community, outside Ontario, as a possible site, the commission was pressured to accommodate the proposed development: Cornwall wanted the business in its precincts and the company wanted a clear understanding of its waste management obligations. The OWRC, however, was not in the habit of approving treatment facilities in the abstract. OWRC staff explained the complications to Berry:

> [T]he municipality wanted to be able to approach the industry with an understanding, at least, of what would be required in the way of waste treatment should the industry locate there. This required some prior approval by the Commission of a proposal for the use of pits (located near the new power dam) as sedimentation basins. We expressed the feeling that the Commission could not be committed without having a definite proposal from the company. The company, on the other hand, dealing both with people in Cornwall and in one of the St. Lawrence River communities in Quebec, apparently is waiting to see which municipality will give the best services.[314]

The proposed compromise involved an immediate OWRC inspection of the Cornwall site. If the company's proposal for waste treatment proved generally acceptable, the OWRC felt it could give the municipality some basis for proceeding in further negotiations. "Should the company then decide to locate

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[312] Ibid.
[313] Ibid.
[314] Ibid.

in Cornwall, it is understood that a detailed proposal for waste treatment will be submitted by the company before final approval of the Commission is obtained."[315]

Towards the end of the 1960s, the OWRC formulated guidelines and criteria for water quality management in Ontario, explaining that "the criteria are described for use in establishing Water Quality Standards for drainage basins which in turn will be used to determine Effluent Requirements for discharges of waste and land drainage."[316]

5.4.7 The Nature of the Regulatory Offence

5.4.7.1 *Engaging the Legal Liability Issues*

On the abatement and enforcement side, the early accomplishments of the OWRC – (whether recorded as convictions or in the form of remedial measures taken by the accused) had often conflicted with traditional targets of public concern – the dairies and canneries whose wastes were very visible in small waterways around the province, or easily detected by the nose. As prosecutorial attention shifted away from these long-established nuisances to newer sources of pollution, defendants' resistance stiffened considerably; in particular, the sophistication of the legal defence increased significantly.

It is worthwhile to recall the statutory language on which these prosecutions were based. Section 27 of the *Ontario Water Resources Commission Act* stated throughout the 1960s:

> Every municipality or person that discharges or deposits or causes or permits the discharge or deposit of any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or watercourse or on any shore or bank thereof or into or in any place that may impair the quality of the water of any well, lake, river, pond, spring, stream, reservoir or other water or watercourse is guilty of an offence and on summary conviction is liable to a fine of not more than $1,000 or to imprisonment for a term of not more than one year, or to both.[317]

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[315] Ibid.
[316] Ontario, Ministry of the Environment, 1971, *Guidelines and Criteria for Water Quality Management in Ontario* (Toronto: MOE), p. 3.
[317] RSO 1970, c. 332, s. 27.

This prohibition, as it had evolved over the decades from its forerunners in the public health era, was now under attack on two fronts from defendants, who were rarely, if ever, in a position to deny that their operations had actually fouled the waterways.

The first challenge raised the technical issue of duplication, that is, the possibility that a multiplicity of offences were charged when proceedings under section 27 were initiated. This claim was more or less resolved in 1965 when it was determined that an information adhering to the terms of the statute charged only one offence, notwithstanding that it might be committed in one of a variety of ways.[318]

The second line of attack, harking back to fundamental principles of criminal law, revolved around defence claims that the prosecution had to establish the wrongful intent, or guilty mind (i.e., *mens rea*), of the accused. This challenge to the central water pollution prohibition in Ontario, generally known as the *mens rea* issue, proved more troublesome and enduring before reaching its pre-Charter resolution in the Supreme Court of Canada in 1978.

5.4.7.2 *Elements of the Offence: The Guilty Mind?*

Mrs. Reimer, an Oakville resident, noticed an unusual milky quality in the waters of Morrison Creek as it flowed through her backyard. The sample she resourcefully collected proved to contain a mixture of naphthanic lubricating oil and fatty acids, not ordinarily expected in creeks and streams, and certainly harmful to marine life. Further investigation established the source of the pollutants as the site of Industrial Tankers Ltd. where an employee, George Douthwright, had accidentally spilled ten gallons of machine oil from a tanker while trying to determine whether it required cleaning. Charged under section 27, the company argued that *mens rea* was an essential ingredient of the offence.

Ontario County Court Judge Sprague was sensitive to the importance of environmental protection. Thus, among the considerations leading to his decision, he quite forthrightly outlined the difficulties of controlling pollution:

> It is common knowledge, perhaps within judicial knowledge, that industries in this industrial age have a great capacity to pollute the

[318] See *R.* v. *Matspeck Construction Co. Ltd*, [1965] 4 CCC 78. The Supreme Court of Canada confirmed this result in *Sault Ste. Marie,* the case discussed in section 5.4. 7.3, below.

> waters. The magnitude and impersonal nature of present day industrial operations are such that it is usually impossible to trace pollution to any individual. It often happens that the source of the pollution is simply a drain or culvert which comes from within the plant or factory. Industrial operations are usually such a complex combination of man, machinery, and equipment that it is impossible to contribute [*sic*] the pollution to an act of any single employee.
>
> Where it is possible to trace the pollution to the act of an individual employee, the corporation should not be able to hide behind the corporate mask, and rely on the fact that the instructions have been given to the employees not to do the forbidden act, particularly where the only way of proving the act is by calling the employee of the corporation as a witness for the prosecution.[319]

But this being a prosecution, Sprague was also required to consider certain central legal values. Accordingly, he carefully reviewed a good deal of law before concluding that of the two types of offences understood in the era – *mens rea* and absolute liability offences – section 27 of the *OWRCA* created one of the latter. That is,

> the Crown does not need to prove that the accused had knowledge, a guilty or criminal intent, or *mens rea*, whichever way one desires to express it. To succeed, the Crown must prove that the pollution was put in the water as a result of an act or omission by the accused or one of its employees which the accused had the power and authority to prevent, and could have prevented, but did not prevent.[320]

The Industrial Tankers' view of the *mens rea* requirement may have emboldened prosecutorial forces. It certainly found acceptance in other decisions relating to the act.[321]

By the mid-70s, Justice Ord of the Provincial Court, in a prosecution combining charges under the *OWRA* and the new *Environmental Protection Act,* cited the purpose of the latter – "to provide for the protection and conservation of the natural environment" – in support of his conclusions on the *mens rea* question:

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[319] *R.* v. *Industrial Tankers Ltd.,* [1968] 2 OR 142 at 148 (Ont. County Ct.).
[320] Ibid., p. 150.
[321] *R.* v. *Sheridan* (1972), 10 CCC 545; [1973] 2 OR 192 (Ont. D.Ct.).

> I have set out this section to emphasize the fact that this Act is clearly an Act to enhance the quality of life of the persons in the Province of Ontario. This fact is undoubtedly one of the reasons for a number of Judges taking the view that *mens rea* or strict liability need not be proved in relation to charges such as these. It appears to be the intention of the legislators that the purpose of the legislation should not be defeated by too narrow a construction being placed upon either of the two Acts involved.[322]

Notwithstanding the purposes of the legislature, a body whose will was often presumed to be sovereign in pre-Charter Canada, the concept of demonstrated fault as a precondition of conviction was so deeply ingrained that further consideration of environmental offences such as the *OWRA*'s section 27 was inevitable. In short order, the status of fault in prosecution for regulatory offences emerged as a critical issue.

5.4.7.3 *Moving the Fault Line at Sault Ste. Marie*

In an influential examination of the cases that were appearing, Keith Jobson of the University of British Columbia incisively assessed the situation and outlined a possible solution:

> As a general principle, strict liability in its wider sense of imposing liability upon mere proof of the *actus reus* and excluding any possible excuse or defence is unjust. Yet to require the Crown to prove absence of knowledge, absence of supervision, inspection, care or due diligence is unreasonable. Where the evidence showing lack of fault lies within the control, the knowledge of the accused himself, it is not unreasonable to expect him to bring it forward.[323]

Although this proposition had implications throughout the realm of public welfare offences, the decision that brought about an important reclassification of offences and offered clarification of the status of fault or responsibility in the prosecutorial process came from the water pollution context.

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[322] *R.* v. *Power Tank Lines Ltd.,* [1975] 23 CCC (2d) 464 at 467.
[323] K. Jobson, 1975–76, "Far from clear," *Criminal Law Quarterly*, vol. 18, p. 309.

In 1970, the northern Ontario city of Sault Ste. Marie arranged for the Cherokee Disposal and Construction Company to handle municipal refuse. Cherokee began operations on a site covered with freshwater springs bordering Cannon Creek and endeavoured to submerge these springs to prepare the location for the arrival of the city's waste, which, in due course, piled up close to the bank, polluting both Cannon Creek and the Root River. In March 1972, upon the complaint of Mark Caswell, the owner of some 80 acres of land bordering both Cannon Creek and the Root River, Cherokee was charged under the *OWRA*.

Cherokee Disposals vigorously defended itself, arguing that it was unaware of seepage from its facility and did not know that pollution was occurring. Thus forced to re-examine the elements of the offence, the presiding judge, Provincial Court Judge Greco, adopted the reasoning of his predecessors as to *mens rea*, but added that in certain circumstances – "where the accused had no power or authority to prevent the act" – the charge might be dismissed.[324] The court listed such circumstances as "acts of God, acts of malfeasors not in the employ of the accused, acts of employees of the accused done outside the scope of their employment."[325] Cherokee, however, was convicted in May 1973, for it had "both the power and authority to prevent the impairment by desisting from the activities which caused it."[326]

Meanwhile, continuing pollution of Cannon Creek and the Root River had given rise to another set of proceedings against the City of Sault Ste. Marie. These proceedings derived also from the *OWRA* and were based on an information dated September 11, 1972. Through trial, trial *de novo*, and a series of three appeals leading to the Supreme Court of Canada, the Crown pursued the city for its part in the Cannon Creek story. For the parties, this saga of litigation led to yet another re-trial of the original charge. For the wider community, the episode produced a reconceptualization of offences in three categories. Added to *mens rea* and absolute liability was a new category of regulatory offences, described as strict liability offences where a negligence standard of fault would prevail, although the evidentiary burden concerning negligence or due diligence shifted from the prosecution to the accused after the *actus reus* had been established:

> [I]t is not up to the prosecution to prove negligence. Instead, it is up to the defendant to prove that all due care has been taken. This

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[324] *R.* v. *Cherokee Disposals & Construction Ltd.,* [1973] 3 OR 599 at 599 (Ont. Ct. (Prov. Div.)).
[325] Ibid., p. 605.
[326] Ibid.

> burden falls upon the defendant as he is the only one who will generally have the means of proof. This would not seem unfair as the alternative is absolute liability which denies an accused any defence whatsoever.[327]

The prosecution was required to prove beyond a reasonable doubt that the defendant had committed the prohibited act. For their part, defendants in seeking to establish a defence of reasonable care would be held to the lesser standard of the balance of probabilities.

How did Justice Brian Dickson, the author of the Supreme Court's decision, reach these conclusions? The point of departure was a sharply drawn distinction between the true criminal offence and the public welfare offence, a nineteenth-century judicial creation intended to allow society to enforce public health and safety without offending a long-established reluctance to punish the morally innocent. Absolute liability, or liability without fault, was accepted in the realm of the public welfare offence, Dickson surmised, primarily because of a desire to promote high standards in relation to the protection of social interests, and secondly on the grounds of administrative efficiency. The first argument suggested that high standards of performance in the form of precautionary measures would be encouraged by the knowledge that ignorance and mistake would not excuse contraventions. But Dickson was deeply suspicious of the claim that absolute liability promoted higher standards of care:

> If a person is already taking every reasonable precautionary measure, is he likely to take additional measures, knowing that however much care he takes, it will not serve as a defence in the event of breach? If he has exercised care and skill, will conviction have a deterrent effect upon him or others?[328]

Dickson was equally critical of the administrative argument in favour of absolute liability, remarking that, if evidence of due diligence was admissible in relation to sentencing, it might just as well be heard in relation to the determination of guilt. In this way Dickson dismantled the underpinnings of the status quo.

The affirmative case for the innovative solution he was about to advance emerged from his positioning the public welfare offence closer to the protection of public

[327] *R.* v. *The Corporation of the City of Sault Ste. Marie*, [1978] 2 SCR 1299 at 1325 [hereinafter *Sault Ste. Marie]*.
[328] Ibid., p. 1311.

and societal rather than individual interests somewhere along a presumed spectrum, apparently clearer to Dickson than to others. The image, however, combined with a careful synthesis of case law from a number of jurisdictions, led Dickson to the halfway house whose contents were described above. In reply to those who would assert that the recognition of a due diligence defence might best be left to the legislatures, Dickson remarked that both absolute liability and the public welfare offence were themselves judicial creations.

The legal result was profoundly important in itself and naturally of general application in the broad realm of public welfare offences. For municipalities in a position similar to Sault Ste. Marie and for industries whose operations might lead to charges, a new incentive to invest in and undertake due diligence had been created in the form of relief from liability. For regulatory officials, on the other hand, decisions about prosecution became somewhat more complicated by the need to consider due diligence defences that might be available to an accused.

5.4.7.4 *Environmental Pollution: Routine Matters Pose New Problems*

In addition to the legal significance of the decision, some less doctrinally quotable observations concerning the court's assessment of the nature of the Cannon Creek pollution are of interest. The facts of the case, Justice Dickson remarked, "do not rise above the routine" and the particular offence itself, pollution, falls within the realm of "everyday matters" along with traffic infractions, sales of impure food, and liquor violations. "Although enforced as penal laws through the utilization of the machinery of the criminal law, the offences are in substance of a civil nature and might well be regarded as a branch of administrative law to which traditional principles of criminal law have but limited application."[329] The *OWRA* offence in question was not criminal in the true sense, not only because as a public health measure there would be no presumption of full *mens rea*, but also because in the Canadian context provinces "cannot possibly create an offence which is criminal in the true sense."[330]

It was certainly not Dickson's intent to belittle the significance of offences against water quality. In declaring them to be classic public welfare enactments, he had made them in some respects more easily prosecuted, at least in

[329] Ibid., pp. 1304 and 1302.
[330] Ibid.

comparison with a more circumscribed category of true crimes where the Crown's obligation to demonstrate *mens rea* would often preclude conviction. On the other hand, the inescapable distinction drawn between pollution and crime was not entirely in keeping with public sentiment.

Despite the judiciary's concern with generalized principles of liability for criminal law and regulatory offences, the public was engaged in an exercise of reconfiguring the status of environmental damage. If the Supreme Court's message was that crime and regulatory offences differed in kind, with the latter being less serious than the former, the seriousness of environmental injury was becoming clear to many. Minor penalties rapidly gave way to much more severe sanctions, even including the possibility of imprisonment. While the Law Reform Commission of Canada investigated the issue of environmental crimes, indications were growing that the environment was perceived as an issue with moral dimensions, not merely as an incidental by-product of inevitable and natural human behaviour.[331] Some of the clearest and most tragic situations emerged from mercury contamination in the English Wabigoon river system in northwestern Ontario. A compensation system for those injured as a result of eating fish from contaminated waters remains in place 30 years after the problems came to public attention.[332]

The Ontario Water Resources Commission's enforcement experience has been described here with reference to a number of specific files and some of the more noteworthy aspects of the prosecutorial record. This account is intended to illuminate actual practice if it can hardly hope to resolve continuing differences of view between advocates of a conciliatory enforcement style and those more inclined to promote coercive methods of safeguarding water quality or environmental quality more generally. The appropriate balance between these two styles has always been difficult to achieve.[333]

Different assessments of Ontario's overall accomplishments in this regard were produced by observers in the early 1970s as the Ontario Water Resources Commission was about to disappear. In assessing the state of water pollution protection in this era, Philip Anisman stated, "It would appear that judicial reluctance to face societal issues in the courts has had the beneficial effect of forcing the legislature to directly face the problem of pollution and develop

[331] Canada, Law Reform Commission of Canada, 1976, *Our Criminal Law* (Ottawa: the commission).
[332] M.D. Faieta et al., 1996, *Environmental Harm: Civil Actions and Compensation* (Toronto: Butterworths), p. 465.
[333] Hawkins, 1984.

means for its effective control beyond the powers of which the judiciary is capable."[334] On the other hand, writing at roughly the same time, A.W. Bryant felt the job was barely underway. As he explained, prior to 1956, water pollution legislation fell within the responsibilities of the minister of health and was concerned largely with nuisance, the potability of municipal water supplies, and the public health implications of municipal sewage disposal. The old style legislative framework of the public health model, he suggested, had not kept up with the emergence of broader environmental concerns:

> [T]he socio-economic problems associated with pollution cannot be solved with a nineteenth century legislative format. The Province of Ontario is a highly industrialized state with large urban centres and therefore more sophisticated legislation is needed to conserve and allocate the Province's water resources. Prohibitions and the approval of engineering designs do not permit the questioning of larger policy issues such as the environmental impact of a new industry, the quality of life in a community or the economic value of our natural resources.[335]

These, of course, were the views of two observers who had devoted considerable thought to the challenges they perceived. More recent dimensions of water quality management have begun to address the broader environmental questions of impact assessment and sustainability that Bryant hinted at. Indeed, Ontario established a department of environment in 1971. Before discussing these developments through the 1970s, 1980s, and early 1990s, perhaps a last word might go to J.W.T. Spinks, president of the University of Saskatchewan and chair of one of the water workshops at the Resources for Tomorrow Conference in 1960: "Because water is so much an intimate part of our daily lives, most of us give little thought to it."[336]

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[334] Anisman, 1972, p. 410.
[335] Bryant, 1975, p. 164.
[336] Canada, Department of Northern Affairs and National Resources, 1961, *Resources for Tomorrow*, p. 161.

6 Environment, Economy, and Efficiency: 1972–1990s

6.1 Legislative and Institutional Developments

6.1.1 Government Reorganization and Public Participation

In 1972, only a year after its creation, the Department of the Environment was transformed into the Ministry of the Environment (MOE) as part of a more comprehensive reconfiguration of provincial administration initiated through the work of the Committee on Government Productivity. The environment ministry formed part of the newly designated Resources Development Policy Field together with Labour, Natural Resources, Transport and Communications, Agriculture and Food, and Industry and Tourism.[337] The *Ontario Water Resources Commission Act* was replaced by the *Ontario Water Resources Act* (*OWRA*), which became a responsibility of the MOE. As the legislature so conclusively put the matter, the Ontario Water Resources Commission was "dissolved."[338] Its functions were assumed in the new organizational structure by the MOE's executive director of Water Resources.

The *OWRA* has continued to exist, despite having some shared ground with the *Environmental Protection Act (EPA)*. As the author of a guide to the *OWRA* observes: "There is some overlap between the two statutes and it is arguable that regulation and enforcement would be better served if the two were combined. The fact that they are not seems more due to their historical development than to clear planning."[339]

Two further governmental developments from the early 1970s are also of some importance and mark the half-decade or so around 1975 as a period of significant transition. On the one hand, by about 1975, a province-wide commitment to regionalization with both a planning and a local government reform component had resulted in the creation of a dozen regional government bodies – ten regional municipalities, one regional district, and one restructured county government. The regional institutions (by amendment to the *OWRA* in 1974) took over much of the waterworks authority then in the hands of the MOE as successor to the OWRC, and in each case assumed direct responsibility for water distribution

[337] J.D. Fleck, 1973, "Restructuring the Ontario government," *Canadian Public Administration*, vol. 16, no. 1, pp. 63–66.
[338] *An Act to provide for the Reorganization of the Government of Ontario*, SO 1972, c. 1, s. 70.
[339] D.H. Wood, 1995, *The 1996 Annotated Ontario* Water Resources Act (Toronto: Carswell), p. 5.

without the assistance of a special-purpose water supply agency.[340] A second significant development related to the introduction of more formal procedures and a number of new appeal bodies, including an environmental hearing board subsequently renamed the Environmental Appeal Board.[341] This overall initiative was in response to Chief Justice McRuer's criticism in the report of the Inquiry into Civil Rights that those dealing with a wide range of provincial agencies, the OWRC included, were insufficiently protected by procedural safeguards.

If there had ever been a period in Ontario when water might have provided a focal point for provincial policy and planning, or if such a prospect had ever been anticipated by those associated with the OWRC, that time had passed by the early seventies. But if the institutional responsibility for ambient and drinking water quality management now seemed less sharply defined from a government planning perspective, the interest of the public and emerging environmental organizations in water resources was simultaneously being heightened by a variety of concerns. New claims about public participation in environmental decision making and new mechanisms to facilitate such involvement appeared during the period. These were at least partly inspired by initiatives in the United States, including the *National Environmental Policy Act* of 1969 and, in the mid-1970s, by the striking national example of the Canadian federal government's Mackenzie Valley Pipeline Inquiry, chaired by Justice Thomas Berger.

Highlights of Ontario's overall response include the *Ontario Environmental Assessment Act*, the *Ontario Environmental Bill of Rights*, and legislation, since lapsed, to provide financial support for intervenor groups.[342] The environmental assessment legislation required the preparation of environmental impact statements for certain undertakings. These, following review and approval, were subject to public comment and possibly to hearings. Municipal water and sewage projects were among the undertakings potentially subject to the new environmental assessment regime unless exempted for some reason from the normal operation of the act.[343] The *Ontario Environmental Bill of Rights*, by establishing a public registry and notification requirements applicable to a range

[340] Shrubsole, 1990, p. 54; A. Sancton, 1991, "Policy-making for urban water supplies in Ontario: The role of local governments," presented to the annual meeting of the Canadian Political Science Association, Queen's University, Kingston, Ontario.

[341] The Pollution Control Appeal Board, following its transformation into the Environmental Appeal Board, was eventually consolidated with the Environmental Assessment Board and in 2000 the new body was renamed the Environmental Review Tribunal.

[342] *Intervenor Funding Project Act*, RSO 1990, c. I-13 was repealed in 1996.

[343] See H. Poch, 1989, *Corporate and Municipal Environmental Law* (Toronto: Carswell).

of decisions, created further opportunities for comment. Indeed, a new third-party appeal mechanism was established in the legislation, although it has proven quite restricted in practice.[344] All this activity corresponded with, and reflected, growing public and media awareness of environmental issues generally, accompanied occasionally by flurries of interest specifically directed at water quality issues.[345] The public health professionals and sanitary engineers who so powerfully shaped the water and sewage treatment infrastructure of Ontario during the previous century might well have been astonished by the number of other players and participants now involved.

6.1.2 Proliferating Ideas and Institutions

From the mid-eighties to the mid-nineties, Ontario saw a greater turnover in political leadership than the province had experienced for several decades. Successive new governments took office with their own particular inclinations relating to environmental matters and, to some degree, to water management. For the Liberals under David Peterson, a long-awaited opportunity to deploy additional public resources to strengthen environmental enforcement had arrived. The New Democrats under Bob Rae attempted to advance sustainability, as placed on the world agenda by the United Nation's 1987 Brundtland Commission Report, *Our Common Future*, achieving some success at least in forest management with the *Crown Forest Sustainability Act*.[346] The Progressive Conservative administration of Mike Harris placed significant emphasis on overall economic stewardship for the province, an objective conditioned by considerations of international competitiveness, heightened by new agreements respecting trade, and by a willingness to explore greater opportunities for private sector involvement in the provision of many services regarded in Ontario as public sector functions.

In the midst of this period of rapid governmental transition, the Ontario Clean Water Agency (OCWA) emerged in 1993. An idea introduced by the Liberals was adopted in legislation passed by the New Democratic Party government, and has evolved subsequently during the current Conservative administration.

A Crown corporation to oversee water and sewage services was proposed by the Peterson Liberals in their final budget. As envisaged in legislation introduced to the

[344] *Re Residents Against Company Pollution, Inc.* (1996), 20 CELR (NS) 97 (EAB).
[345] See M. Keating, 1986, *To the Last Drop: Canada and the World's Water Crisis* (Toronto: Macmillan).
[346] SO 1994, c. 25.

Ontario Legislature by the subsequent NDP administration, the Ontario Clean Water Agency was one of four Crown corporations intended to "change the face of capital investment in this province."[347] Indeed, the relationship between the OCWA initiative and the deteriorating financial position of the government inspired graphic commentary during the course of debate. Using such technical language as "jiggery-pokery" and "hocus-pocus," opposition members charged that the overall initiative of which OCWA was one part represented an attempt by the government to "move $600 million, $700 million or $800 million of debt off its books on to the books of these capital corporations."[348] It was also alleged that "[w]e're not content with having the federal government bankrupt. We're not content with having the provincial government bankrupt. We are now going to get into a situation ... where municipalities are going to be on the hook for this."[349]

Turning to the more substantive implications of OCWA's creation, it is worthwhile to reproduce from the 1993 *Capital Investment Plan Act* the statutory expression of the objectives the new organization was intended to pursue:

> (a) assisting municipalities to provide water and sewage works and services on a cost-recovery basis by financing, planning, developing, building and operating such works and services;
>
> (b) financing, building and operating water and sewage works and services on behalf of Ontario on a cost-recovery basis;
>
> (c) providing these works and services so as to protect human health and the environment, encourage conservation of water resources and support provincial policies for land use and settlement.[350]

In many respects OCWA continued functions carried out by its predecessors. However, from the perspective of those who had been concerned about a conflict of interest embedded in former structures, the reorganization notably separated enforcement and prosecutorial decision making from construction and operational functions.

OCWA was not expected to set policy, but rather to act as an agent for provincial policies relating to the environment, water conservation, and land-use planning.

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[347] Ontario, Legislative Assembly, 1993, *Debates* (June 16), p. 1513.
[348] Ibid.
[349] Ibid., p. 1526.
[350] SO 1993, c. 23, s. 49(1).

In so doing, it would be subject to such provincial legislation as the provincial *Environmental Protection Act* and *Environmental Assessment Act*. The agency's annual spending plans would require approval from the Ministry of Environment and Energy, and Treasury Board. Further subordination to or integration with other provincial government functions was provided through OCWA's board of directors, comprising four deputy ministers: Environment and Energy, Finance, Municipal Affairs, and Natural Resources.

Four alternative models were available to finance water and sewage infrastructure. OCWA could invest directly in projects whose costs – capital and operating – would be recovered over time through water and sewage charges. Secondly, in conjunction with the Ontario Financing Authority, OCWA could arrange for loans to municipalities at advantageous rates compared to rates available to municipalities' borrowing alone. A loan and grant program in the form of the Municipal Assistance Program (formerly the Provincial Water and Sewer Capital Grant Program) represented a third option. Finally, OCWA was authorized to explore cost-sharing arrangements involving private sector participants.[351]

Some indication of OCWA's perception its functions and of the environment in which it expected to operate is found in the new agency's first *Annual Report*: "Producing clean water is a business," the agency asserted, one that "is emerging as a competitive, growth industry in Ontario as it is worldwide."[352] Water was also said to be becoming a 'Green Industry' in the sense that water conservation methods were increasingly employed to meet demand for water more efficiently and in the sense that effective wastewater treatment was an environmental priority. In addressing the perspective of municipalities, its client base, the OCWA *Annual Report* added:

> In Ontario local municipalities are responsible for providing water and wastewater treatment, but established sources of funding are shrinking. Municipalities are looking for innovative, long-term solutions to meet their water needs.
>
> Municipal authorities have the option to operate treatment facilities themselves or hire someone else to do it for them. Several domestic

[351] Ontario, Ministry of Environment and Energy, 1993, *Introducing Ontario's Clean Water Agency* (Toronto: MOEE).
[352] OCWA, 1994, *Annual Report* (Toronto: OCWA).

> companies compete for these contracts and recently French, British and American firms have shown interest. Each competitor seeks a share of an industry estimated at $2.2 billion a year – representing more than 1% of Ontario's total domestic economy.[353]

6.1.2.1 *Water Management Involvement in Ontario*

Bearing in mind that OCWA is the subject of considerably more detailed examinations in other research for the Inquiry, the present discussion will offer a general overview of the quite striking inventory of officials and institutions responsible for different aspects of water management in Ontario.[354] Some indication of the interrelationships amongst decision makers within the MOE itself is provided by a statement on the delineation of functions in the *OWRA*:

> s.10 (1) Despite any other Act, it is the function of the Minister (of Environment and Energy) and he or she has power,
>
> (a) to conduct research programs and to prepare statistics for his or her purpose;
>
> (b) to disseminate information and advice with respect to the collection, production, transmission, treatment, storage, supply and distribution of water or sewage; and
>
> (c) to perform such functions or discharge such duties as may be assigned from time to time by the Lieutenant Governor in Council.
>
> (2) Despite any other Act, the (Ontario Clean Water) Agency may make agreements for the provision of water service or sewage service.
>
> (3) Despite any other Act, it is the function of a Director (as appointed under the *OWRA*) and he or she has power to control and regulate the collection, production, treatment, storage,

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[353] Ibid.

[354] Other papers commissioned by the Walkerton Inquiry that discuss OCWA are Jim Joe et al., 2002, *Governance and Methods of Service Delivery for Water and Sewage Systems* (Toronto: Ontario Ministry of the Attorney General), Walkerton Inquiry Commissioned Paper 17, Walkerton Inquiry CD-ROM, <www.walkertoninquiry.com>.

> transmission, distribution and use of water for public purposes and to make orders with respect thereto.

In addition to the functions allocated above within the MOE, other ministries exercise responsibilities with implications for water quality and supply. Conservation authorities, although subjected to a wide-ranging review during the late 1980s and then later to substantial financial constraints, continued to carry out water-related responsibilities specifically in connection with drainage and storm water management, water quality sampling, the operation of dams, and soil conservation, all with a continuing focus on the watershed as the unit of administration. At the same time, pursuant to the *Lakes and Rivers Improvement Act*, the minister of natural resources exercised responsibilities consistent with the purposes of that legislation:

> (a) the management, protection, preservation and use of the waters of the lakes and rivers of Ontario and the land under them;
>
> (b) the protection and equitable exercise of public rights in or over the waters of the lakes and rivers of Ontario;
>
> (c) the protection of interests of riparian owners;
>
> ...
>
> (e) the protection of the natural amenities of the lakes and river and their shores and banks.[355]

Both the *Conservation Authorities Act* and the *Lakes and Rivers Improvement Act*, as noted by other analysts of the water management regime in Ontario, created the basis for potential conflicts with the *Ontario Water Resources Act* and between different decision makers.[356]

In 1976, by means of the Ontario Agricultural Code of Practice in a section on the protection of water quality, the Ontario Ministry of Agriculture and Food articulated guidelines for acceptable practices for manure management and livestock watering. Subsequently, in the aftermath of work by the Ministry's

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[355] OCWA.

[356] See D.R. Percy, 1988, *The Framework of Water Rights Legislation in Canada* (Calgary: Canadian Institute of Resources Law), pp. 83–86.

Right to Farm Task Force, provincial legislation, the *Farm Practices Protection Act,*[357] insulated 'normal farming practices' against certain legal challenges. One commentator, referring to water quality impacts, expressed these reservations about the protection of normal farming practices:

> [C]overed concrete or metal tanks are available to store manure from livestock operations, but because of the cost, many farmers still dig a hole in the ground and dump manure into it. This results in foul odours and pollution of groundwater. When these pits overflow, the manure runs into creeks and streams, killing fish and destroying aquatic habitat. However, as long as the majority of farmers in an area dig manure pits instead of purchasing covered tanks, it remains to be seen whether this practice will be protected as 'normal' under the *Farm Practices Protection Act.*[358]

Above and beyond the significance of actions by the ministries of Natural Resources (MNR) and of Agriculture and Food on water quality and management, provincial government decision making in relation to regional development, planning, and municipal affairs has had an important influence on the location of commercial, residential, and industrial activity, its proximity to and impacts on surrounding water and waterways. One study of the Grand River noted plans by Environment Canada for heritage river status, conservation authority work on a watershed plan, strategic land-use guidelines from MNR, water supply and environmental assessment studies by MOE, as well as local government initiatives in relation to land use and zoning, and reports by government agencies and non-governmental organizations (NGO) on agricultural matters, wetlands, and aggregate resources. The authors remarked that "the plethora of documents indicate the increasing presence of conflicts, and the highly fragmented and complex nature of institutional arrangements for water and land management in Ontario."[359] Writing on the institutional pattern for water quality management in Ontario at the beginning of the 1990s, another reviewer expressed the opinion that "if the lead agency is defined as the agency which establishes the necessary policies and implementation procedures, develops provincial targets, sets provincial priorities, audits performance,

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[357] RSO 1990, c. F-6. The *Farm Practices Protection Act* was replaced by the *Farming and Food Protection Act, 1998* whose preamble states: "It is in the provincial interest that in agricultural areas, agricultural uses and normal farm practices be promoted and protected in a way that balances the needs of the agricultural community with provincial health, safety and environmental concerns."
[358] J. Swaigen, 1990, "The right to farm movement and environmental protection," *Canadian Environmental Law Reports*, vol. 4, no. 121, 124–25.
[359] Mitchell and Shrubsole, 1992.

and monitors results ... for all water quality management activities in Ontario – then ... there is no lead agency for water quality management in Ontario."[360]

Medical officers of health attached to each of Ontario's 43 boards of health represented a further level of supervision in relation to water quality and environmental matters. One such official, in a presentation to the 1988 session of the Ontario Waste Management Conference, described the role and authority of the medical officer of health (MOH) derived largely from the *Health Protection and Promotion Act,*[361] framework legislation enacted in 1983, as follows:

> An MOH is required under statute to make himself [*sic*] aware of hazards and potential hazards to public health. He [*sic*] is enabled under the *Health Protection and Promotion Act* of Ontario to ask for and receive information with respect to any thing, substance or condition that may pose a hazard to public health. The Ministry of the Environment and the Ministry of Labour must reply to such requests.
>
> An MOH is empowered to order closure, operational change and any action of abatement to reduce the hazard or potential hazard to public health.
>
> An MOH may also be a director and provincial offences officer under Part 7 of the Environmental Protection Act of Ontario. His position enables the MOH to administer the licensing of private sewage disposal systems.[362]

6.2 Water and Sewage Infrastructure

As of the mid-1980s, 430 Ontario municipalities had water distribution systems, with treatment provided in 386 of these communities. Of these, 364 communities had sewer services, including 361 treatment plants.[363] During

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[360] R.C. de Loe, 1991, "The institutional pattern for water quality management in Ontario," *Canadian Water Resources Journal*, vol. 16, p. 37.
[361] RSO 1990, c. H-7.
[362] J.D. Pudden, 1988, "Role of medical officer of health in environmental issues," in *Proceedings, 35th Ontario Waste Management Conference, 1988* (Ontario: Ministry of the Environment), p.18.
[363] Canada, Department of Supply and Services, 1987, *National Inventory of Municipal Waterworks and Wastewater Systems in Canada, 1986* (Ottawa: the department).

the decade preceding 1994, the number of Ontario residents provided with water and wastewater services rose 20%, a figure corresponding roughly to the level of population increase. Thus, the proportion of the urban population supplied with these services remained constant at about 92%. On a province-wide basis, the proportion was roughly 78%, modestly above the 75% figure for Canada as a whole.[364]

The level of wastewater treatment in Ontario also improved gradually during this era with the result that by 1994, 69% of municipal residents were served at a tertiary treatment level. The corresponding figure for 1983 was 60%. On a national basis, tertiary treatment levels increased from 28% to 39% over the same period.[365] Ontario's municipal population served by only primary wastewater treatment decreased from 13% to 6%. The relatively high level of wastewater treatment in the province is due at least in part to infrastructure financing made available under the *Great Lakes Water Quality Agreement* during the 1980s.[366] According to another researcher, however, approximately 57% of Canadians, in comparison with 74% of Americans, 86.5% of Germans, and 99% of Swedes, are served by some level of wastewater treatment.[367] Despite the extent of expansion, the costs of restoring provincial water and wastewater infrastructure – said in 1991 to average 55 years in age – were estimated at that time to fall in the range of $6–$12 billion over 10–15 years.[368]

6.2.1 Training and Qualifications

In operational terms, at least in relation to municipal water services, a note on the continuing issue of qualification and training is in order. In the early 1980s, Ontario took steps to follow the lead of British Columbia, Alberta, Saskatchewan, and Manitoba in developing a program of voluntary certification for the operators of waterworks and sewerage systems. By this point, either mandatory or voluntary certification programs had been established in all 50 U.S. states on the basis of criteria formulated under the auspices of the Association of Boards of Certification for Operating Personnel in Water and Wastewater Utilities (ABC), a U.S.-based body to which all Canadian provinces but Newfoundland belonged.[369] In 1993,

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[364] K.A. Schaefer and J.M. Hurst, 1997, "Municipal water use and pricing in Ontario, 1983–1994," *Canadian Water Resources Journal*, vol. 22, pp. 421–22.
[365] Ibid., p. 424.
[366] Ibid.
[367] S. Meakin, 1993, *Municipal Water Issues in Canada* (Ottawa: Library of Parliament).
[368] Schaefer and Hurst, 1997, p. 418.

regulations respecting the licensing and qualifications of operators for the various types and classifications of water and sewage facilities were adopted in Ontario along with applicable operating standards.[370] Derived from the regulations, tables 6-1 and 6-2 indicate the range of processes in use for water and wastewater treatment in Ontario and hence the need for operators to have training and qualification in the various treatment processes.

Table 6-1 Water Treatment Processes for Facility-Classification Purposes

• Facility uses aeration, other than packed tower aeration • Facility uses packed tower aeration • Facility uses pH adjustment • Facility uses stability or corrosion control • Facility uses taste and odour control • Facility uses colour control • Facility uses iron or manganese removal • Facility uses ion exchange softening • Facility uses chemical precipitation softening • Facility uses coagulant addition	• Facility uses flocculation • Facility uses sedimentation • Facility uses upflow clarification • Facility uses filtration • Facility uses fluoridation • Facility uses disinfection • Facility uses chlorine dioxide, chloramines, or ozonation for disinfection • Facility uses other special processes • Facility has internal treatment of plant sludge

Source: *Water Works and Sewage Works,* O. Reg. 435/93, Table 5.

Table 6-2 Wastewater Treatment Facilities Characteristics

Pre-treatment • Facility uses screening or comminution • Facility has grit removal • Facility uses plant pumping or main flow • Facility uses chemical precipitation or pH adjustment Primary Treatment • Facility uses primary clarifiers • Facility uses combined sedimentation and digestion • Facility uses chemical addition, other than for disinfection Secondary Treatment • Facility uses trickling filter with secondary clarifiers • Facility uses activated sludge with secondary clarifiers • Facility uses stabilization pond without aeration • Facility uses aerated lagoon	Advanced Treatment • Facility uses polishing pond • Facility uses advanced chemical or physical treatment without secondary treatment • Facility uses advanced chemical or physical treatment with secondary treatment • Facility uses advanced biological treatment • Facility uses ion exchange • Facility uses reverse osmosis or electrodialysis • Facility uses chemical recovery or carbon regeneration Solids Handling • Facility uses thickening • Facility uses anaerobic digestion • Facility uses aerobic digestion • Facility uses evaporative sludge drying • Facility uses incineration or wet oxidation

Source: *Water Works and Sewage Works*, O. Reg. 435/93, Table 3.

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[369] Grover and Zussman, 1985.

[370] *Water Works and Sewage Works*, O. Reg. 435/93, ss. 5-30 & Schedule 2.

Here, it may be appropriate to introduce an assessment from the mid-1980s, applicable to Canada as a whole, but pertinent to ongoing concern about discrepancies in the capacity of communities of different sizes to fulfill their responsibilities in relation to a range of municipal services:

> Water supply systems are generally planned and operated by local authorities. In the large metropolitan areas these authorities have fairly large numbers of staff, including professional and technical cadres who specialize in water supply. In medium and smaller sized communities, with smaller staffs, there is much less specialization and much less expertise. In the smallest communities ... the operating staff often consist of a few people with limited education, whose training consists mainly of unguided practical experience. Such operating staff may be responsible for several local services (for example, garbage collection and road maintenance as well as water supply).[371]

Viewing the situation at the time of David Crombie's Who Does What Panel in 1996, the forerunner of a process of administrative devolution in a number of fields, Ontario reported the existence of 500 water treatment plants and 437 sewage treatment plants.[372] Of all plants, 75% were already municipally owned with OCWA holding title to the remaining quarter, that is, roughly 230 water treatment and sewage treatment facilities. On the eve of the proposed transfer of water and sewage services to municipalities, OCWA accounted for 18% of the province's water treatment capacity and 29% of sewage treatment capacity.[373] The agency provided operating services on a contract basis to 243 municipalities, 70% of which had populations under 5,000.[374]

6.2.2 Consumption and Sources of Supply

In 1991, when approximately 11% of all surface and groundwater withdrawn in Canada was used for municipal purposes, the typical Canadian used

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[371] Grover and Zussman, 1985.

[372] Ontario, Ministry of Environment and Energy, 1997, "Water and Sewage Services Improvement Act"; "Ontario facts and figures" [online] (October 1), [cited June 5, 1998] <www.ene.gov.on.ca/envision/news/00197.htm>.

[373] *The Water and Sewage Services Improvement Act, 1997,* SO 1997, c. 6, enacted the *Municipal Water and Sewage Transfer Act, 1997* while amending related pieces of legislation.

[374] Ontario, Ministry of Environment and Energy, 1997.

340 litres (L) of water per day at home. That was a level of consumption about 7% higher than in 1983.[375] A 1991 estimate by Environment Canada suggested that only 1.5 L per day of the daily per capita average usage was actually consumed.[376]

The extent to which bottled water use figures in consumption has also become of interest. An OECD study reported in 1995 that sales of bottled water have increased sharply in recent years, reflecting a largely unfounded perception that drinking water is increasingly unsafe.[377] Canadians, by 1998, consumed an average of 16 L of bottled water per capita per year. This figure represents only a moderate increase (averaging 3.3% growth) over the previous four years. Ontario, with 37.7% of the national population, accounted for 38% of bottled water consumption in Canada. As a comparison, the average American consumed 53 L, or in excess of three times the Ontario per capita consumption rate, a result attributed to "the fact that the U.S. bottled water market has been in existence for a longer period of time and is a more developed market."[378]

Rates of water usage remain a significant issue because – on average – Canadian urban dwellers use twice as much water per capita as urban residents of most other industrialized nations. Overall treatment costs bear some relationship to consumption, and some indications show that, by overburdening sewage treatment facilities, high levels of consumption may increase the risk of environmental damage.[379] Nonetheless, significant improvements have recently been registered, associated with a series of innovations and regulatory controls. For example, the introduction in 1993 of plumbing code amendments calling for the adoption of water-conserving toilets, showerheads, and faucets in new buildings partially contributed to a decline in per person municipal water use for all sectors of about 11% between 1991 and 1994. That represents a decline of 73 L per person per day. Metering too has had an impact, as 1994 statistics indicated that Canadian households that paid for water on the basis of volume

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[375] Ontario, Ministry of Environment and Energy, 1994, *Water Management: Guidelines and Procedures of the Ministry of Environment and Energy* (Toronto: MOEE).
[376] R.S. Tobin, G.C. Wood, and M.J. Giddings, 1991, "Development of drinking water guidelines for public health protection," *Canadian Water Resources Journal*, vol. 16, p. 433.
[377] Organisation for Economic Co-operation and Development, 1995, *Environmental Performance Reviews: Canada* (Paris: OECD).
[378] Hidell-Eyster International, 1999, "A perspective on water: The United States and Canada bottled water markets and bottled and bulk water trade between the United States and Canada," unpublished consultant's report to the International Joint Commission, July, Hingham, Mass.
[379] Canada, Health Canada, 1997, *Health and Environment* (Ottawa: Health Canada).

consumed used 42% less than households on a flat rate – 258 L per person per day compared with 445 L per person per day.[380]

More detailed 1994 figures for Ontario indicate that daily per capita use was 300 L, compared with a U.S. average of 426 L and with western European use ranging from 150 to 200 L per day. It was estimated that of the water provided by municipal treatment plants in 1991, approximately 33% (641 billion L) went to household use, 26% (476 billion L) went to industry, and a further 23% (421 billion L) to commercial use.[381] Roughly 16% (293 billion L) was lost to leakage. Noting that water processing costs had risen nearly threefold from about $600 million in 1980 to $1.7 billion in 1991, the province announced a water efficiency initiative intended to achieve zero growth in water use by 2011.[382] Conservation initiatives have been renewed by subsequent governments amidst increasing interest in municipal water conservation schemes, pricing reforms, and other forms of demand management. In 1994, 79% of Ontario's municipal population was on metered water, up significantly from 65% in 1989.[383]

Shifts in sources of municipal supply may also be of interest. In the decade or so preceding 1994, the number of Ontario residents supplied by groundwater alone or by a combination of groundwater and surface sources increased. As of 1989, the proportion of Ontario's population using groundwater (through wells or municipal systems) was 23% or roughly two million people. The corresponding figure for 1994 was 24%. This was more or less consistent with national figures of 26% of Canadians using groundwater for domestic supplies. Perhaps more notable is the longer-term trend upwards from 10% in 1960. On both a provincial and national basis, the percentage was much higher in rural areas.[384] One possible explanation for the increasing resort to groundwater supplies proposed by Schaefer and Hurst is that municipalities might be seeking

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[380] Canada, Environment Canada, 1996, "Urban water: municipal water use and wastewater treatment," SOE Bulletin No. 96-6, fall (Ottawa: Environment Canada).

[381] Schaefer and Hurst, p. 423, show a somewhat higher proportion of consumption in the domestic sector (51% in 1994, up from 42% in 1983).

[382] Ontario, Ministry of Natural Resources, 1991, "Water efficiency in Ontario" (Toronto: Ministry of Natural Resources).

[383] Schaefer and Hurst, 1997, p. 423.

[384] R. Cotton, 1992, "Regulation and clean-up of groundwater contamination: A Canadian perspective," in P. Thomas, ed. *Water Pollution and Liability* (London: Graham & Trotman and the International Bar Association), p. 364; A. Roman and D. Ferris, 1989, "Regulation of groundwater contamination in Canada," *Chicago-Kent Law Review,* vol. 65, p. 519; Schaefer and Hurst, 1997, p. 423.

out local sources to avoid the high costs of infrastructure associated with importing water from more distant locations.[385]

Again, urban/rural differences in the use of groundwater have been noted. As one scholarly examination of the question reports, groundwater use – and therefore the significance of groundwater supplies – varies on a sectoral and locational basis:

> [A]lthough the volume of groundwater consumption is less than that of surface water it is more important to the livestock subsector, small municipalities and the rural users (including small farms) which are located in places where it might be expensive to extend surface water supply. In other words, the consumptive importance of groundwater is not to be measured by how much of it is consumed compared with surface water but rather by the kinds of needs it meets and the geographical locations in which it meets those needs.[386]

The possibility of groundwater contamination, already a problem of considerable magnitude in the United States, was emerging as a source of concern in Canada as well. Noting the relationship between surface and groundwater quality, a 1990 study for Environment Canada put the matter this way: "[T]oday's contaminated groundwater is tomorrow's contaminated surface water."[387] Assessing the state of groundwater monitoring and the level of understanding in 1985, however, one commentator concluded that "groundwater quality is still poorly defined in most of Canada, and that baseline data on the quality and changes in quality of groundwater discharging to the major surface water systems are essentially lacking."[388] Observers were concerned not only about the limited degree of understanding of groundwater resources, but about lack of coordination and policy in regard to these increasingly important supplies:

> Responsibility for regulating groundwater problems is dispersed among various government ministries and governed indirectly rather

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[385] Schaefer and Hurst, 1997, pp. 423–24.

[386] K.K. Orie, 1992, Legal Aspects of Groundwater Allocation and Quality Protection in Canada (PhD Thesis, McGill University) [unpublished], p. 32.

[387] Canada, Environment Canada, 1990, *Background on the DOE Ground Water Strategy: A Management Approach to the Ground Water Issue* (Ottawa: Environment Canada).

[388] J. Vonhof, 1985, "Ground water issues: An overview," pp. 74–75, quoted in Roman and Ferris, 1989, "Regulation of groundwater contamination," p. 519.

> than directly by various statutes, regulations and even guidelines. Despite the recognition for many years by scientists that groundwater contamination is a problem, we have no national policy. Indeed, it would be fair to say that Canada's policy is to have no policy. That may be because real solutions may already be perceived as prohibitively costly and, as well as creating few economic winners and many losers.[389]

An Ontario study by the Legislative Research Service in 1987 confirmed that the province had no groundwater strategy, no requirements for wellhead protection programs, no long-term plan to monitor quality, and no policy statement under planning legislation to require municipalities to have regard for groundwater when developing land-use planning documents.[390]

As a consequence of Jonathan Harr's best-selling book, *A Civil Action*, and a critically acclaimed dramatization starring John Travolta, groundwater contamination at Woburn, Mass. may be more familiar to Ontario residents than the domestic experience. But pollution of groundwater from commercial and industrial sources was of more than theoretical interest to certain Ontario municipalities during the 1970s and 1980s. The water supplies of both Port Loring and Elmira were contaminated as a consequence of problems on commercial or industrial sites, in the former case by petroleum from a leaky underground storage facility, and in the latter as a result of inadequately contained N-nitrosodimethylamine.[391] In each case the relevant corporations paid substantial amounts for cleanup or to provide alternative water supplies.[392]

Municipal landfills have been implicated in the contamination of aquifers used for drinking water supply purposes in Alliston, Kitchener-Waterloo, and North Bay.[393] One of the few analyses of Ontario's approach to groundwater protection during the 1980s was severely critical of its inherent willingness to accommodate groundwater degradation within the framework of a 'reasonable use' policy.[394]

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[389] Cotton, 1992, p. 550.
[390] D. Neufeld, 1987, *Groundwater: Its Management and Protection in Ontario,* Ontario Legislative Research Service, Current Issue Paper no. 58 (Toronto).
[391] For an extensive discussion of the Elmira incident, see *Re Uniroyal Chemical Ltd.*, 1993, *Canadian Environmental Law Reports* (Environmental Appeal Board), vol. 9, p. 85.
[392] Cotton, 1992.
[393] J.A. Cherry, 1987, "Groundwater occurrence and contamination in Canada," *Canadian Bulletin of Fisheries and Aquatic Sciences*, vol. 215, pp. 402–03.
[394] Orie, 1992, p. 368.

6.2.3 Water-Taking Permits

Overall responsibility for water-taking permits of either surface or groundwater, as provided for in the *Ontario Water Resources Act*, for some years, has rested with the minister of the environment. Currently, under section 34 of the *OWRA*, users whose daily requirements exceed 50,000 L require a permit from an official designated as a director. Other users, regardless of their levels of consumption, might be required to secure a permit if, in the opinion of a director, their water withdrawal interferes with a public or private interest in water.

In the absence of statutory guidance, directors enjoy exclusive discretion in relation to the issuance of permits, the terms of such permits, and the alteration of those terms or the cancellation of a permit.[395] Thus, section 34(6) of the *OWRA* states: "A Director may in his or her discretion issue, refuse to issue or cancel a permit, may impose such terms and conditions in issuing a permit as he or she considers proper and may alter the terms and conditions of a permit after it is issued."[396] An applicant for a water-taking permit is simply expected to indicate the nature or purpose, volume, and location of the proposed water use. Policy statements indicate that, in the assessment of permit applications, consideration is given to a number of goals and objectives:

- protection of the water supply of "ordinary" users;
- protection of the interests of existing permit holders;
- maintenance of the "natural functioning of the stream" (ecological balance, fish populations).

Permits are issued without charge and, in the case of surface water, for a five-year period. Groundwater permits were ordinarily issued for ten years, although more recently these have been available on an open-ended basis.[397] Permit holders must report to the ministry at least annually on their rates of withdrawal. Terms and conditions have included requirements to lower withdrawal rates during periods of seasonal short supply, or call for compensatory assistance to adversely affected users.

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[395] Policies and guidelines regarding documentation, typical terms and conditions, and administrative practices did exist. See Ontario, Ministry of the Environment, 1984b, *Permit to Take Water Program: Guidelines and Procedures Manual*" (Toronto: MOE).

[396] *OWRA* s. 34.

[397] S. Renzetti and D. Dupont, 1999, "An assessment of the impact of charging for provincial water use permits," *Canadian Public Policy*, vol. 25, p. 373, note 6.

The Ministry of Environment and Energy stated in 1994 that the goal of the permit system is "to ensure the fair sharing of the available supply of water to protect both withdrawal and in-place uses of water."[398] Intermittent and mounting controversy surrounding the assessment of applications for permits to take water peaked with an application by the Nova Group to export water in bulk from Lake Superior.[399] In the aftermath, the provincial government addressed the questions of water taking and inter-basin transfers by means of a regulation supplementing and replacing the less formal procedures that had been in place.[400]

6.2.4 Safeguarding Drinking Water and Ambient Water Quality

It will be recalled that the OWRC took note of the 1946 U.S. Public Health Service's drinking water standards, although they were not treated as enforceable. As of February 1964, the OWRC approved objectives for drinking water in Ontario. These objectives were subsequently revised in 1968, 1976, 1978, 1984, and again in 1994 on the basis of more sophisticated techniques for detecting the presence of contaminants.

Medical advice from the provincial ministries of Health and Labour also contributed to the formulation of the drinking water objectives whose refinement has been further facilitated by the 1978 *Guidelines for Canadian Drinking Water Quality*. The guidelines were themselves subject to ongoing revision on the basis of a two-stage process involving risk assessment and risk management. Their preparation was overseen by a Federal-Provincial Subcommittee on Drinking Water, administratively and technically supported by the Department of National Health and Welfare. Guidelines proposed by the subcommittee proceed to further review by health committees of the federal, provincial, and territorial governments, whose unanimous approval is required for their adoption.[401] In most Canadian jurisdictions, the guidelines remained unenforceable, although Quebec and later Alberta established drinking water standards by regulation.[402]

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[398] Ontario, Ministry of Environment and Energy, 1994, *Water Management: Guidelines and Procedures of the Ministry of Environment and Energy* (Toronto: MOEE).

[399] H.J. Leadlay R.D. Kreutzwiser, 1999, "Rural water supply allocation in Ontario: An evaluation of current policy and practice," *Canadian Water Resources Journal*, vol. 24, pp. 5–10; J. Flagel, 1999, "Factual basis and disposition of Nova," conference material, Linking Water Quality and Quantity in the Great Lakes Basin, Legal Institute of the Great Lakes, Toledo, Ohio.

[400] *Water Taking and Transfer Regulation*, O. Reg. 285/99.

[401] Tobin, Wood, and Giddings, p. 433.

[402] *Alberta Potable Water Regulation*, Alta. Reg. 133/93, s. 6(1) stated that "the physical, microbiological, chemical and radiological characteristics of the potable water in the waterworks

Ontario incorporated the guidelines in the form of objectives whose general scope and purpose was indicated in the introduction to the 1984 edition of the *Ontario Drinking Water Objectives*:

> The primary purpose of drinking water objectives is for the protection of public health. Any water intended for human consumption should not contain any disease-causing organisms or hazardous concentrations of toxic chemicals or radioactive substances. Aesthetic considerations may also provide a basis for drinking water objectives since the water should be pleasant to drink. Temperature, taste, odour, turbidity and colour are all important in achieving waters which are aesthetically acceptable and pleasant to drink. Other aspects of water quality such as corrosiveness, tendency to form incrustations and excessive soap consumption should be controlled on the basis of economic considerations because of their effects on the distribution system and/or the intended domestic and industrial use of water. The limits described in this document are considered to outline the minimum requirements necessary to fulfil the above objectives.[403]

Three types of limits were identified for purposes of the drinking water objectives: maximum acceptable concentration (MAC), interim maximum acceptable concentration (IMAC), and maximum desirable concentration (MDC). The statement of objectives also addressed sampling techniques for designated substances and provided guidance on identifying unsafe water and procedures for corrective action. More current details, including discussion of the recent introduction of regulatory standards[404] may be found in other papers prepared for the Inquiry.

In contrast to the general Canadian approach based on guidelines, the United States in 1974 introduced the *Safe Drinking Water Act*, with the intent of establishing enforceable standards through the regulatory process. Pressure for such measures derived in large part from findings in 1970 that a significant proportion of tap water sampled exceeded one or more of the existing Public

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system must be maintained to meet as a minimum (a) the health related concentration limits for substances listed in the latest edition of Guidelines for Canadian Drinking Water Quality, as published by Health and Welfare Canada, and (b) any additional or other limits established by the Director in an approval."

[403] Ontario, Ministry of the Environment, 1984a, *Drinking Water Objectives* (Toronto: MOE), p. 1.

[404] *Drinking Water Protection Regulation*, O. Reg. 459/00.

Health Service standards for bacteriological and chemical contaminants. In two rounds of substantial revisions to the original legislation, in 1986 and 1996, emphasis shifted somewhat away from performance standards linked to contaminant limits to a stronger focus on the protection of drinking water sources, particularly underground sources.[405] The European Community (now the European Union) also took action during this period to safeguard drinking water. Following five years of discussion at the council level, Directive 80/778 relating to the quality of water intended for human consumption was adopted in July 1980. Member states had two years to implement legal measures required to bring about compliance and five years to achieve compliance with the water quality standards of the directive.[406]

A provincial Drinking Water Surveillance Program (DWSP) for Ontario was implemented in 1986 with the intention of its ultimately serving all municipal water supplies. Personnel trained in applicable procedures were assigned to gather water samples for analysis, usually at the MOE Laboratory Services Branch, successor to the OWRC's Bacteriological Branch, whose operations have been noted above. In addition to regular reporting, the program was intended to provide 'Action Alerts.' The general protocol called for resampling and confirmation if the reported level of a substance in treated water exceeded the Ontario Drinking Water Objective. It was intended to ensure that operational staff, health authorities, and the public would be notified as soon as possible of confirmation of an 'exceedance' and that remedial action be taken. Where the Ontario Drinking Water Objectives were silent on a particular contaminant, guidelines or limits from other agencies were to be used. MOE's Parameter Listing System incorporated guidelines for 650 parameters from agencies throughout the world. If these guidelines were exceeded, the results were to be flagged and evaluated by DWSP personnel. An Action Alert would be issued if warranted. By 1990, the DWSP was operational in 76 municipalities.

In a 1984 companion volume to the *Ontario Drinking Water Objectives*, the ministry set out goals, policies, objectives, and implementation procedures related to ambient water quality objectives. *Water Management: Goals, Policies, Objectives and Implementation Procedures* articulated policies applicable to both quality and quantity issues in relation to surface and ground waters, not only in light of drinking water requirements, but with regard to other uses, such as recreational

[405] W.E. Cox, 1997, "Evolution of the *Safe Drinking Water Act*: A search for effective quality assurance strategies and workable concepts of federalism," *William and Mary Environmental Law and Policy Review*, vol. 21, p. 71.
[406] L. Kramer, 1993, *European Environmental Law* (London: Sweet and Maxwell).

and agricultural. As the ministry explained: "The surface waters of Ontario are put to many uses, and each use has specific water quality requirements. Water quality must be managed, preserved, and restored where necessary to permit the greatest number of uses, based on the best interests of the people of Ontario."[407]

The water quality objectives for different uses served in turn to provide a point of reference for effluent requirements in different provincial waters:

> For a desired level of water quality, every river or lake has a definable dilution, dispersion or assimilation (self-purification) capacity for receiving waste discharges. Efficient use of this capacity is a key to optimizing water pollution control programs. The emphasis of the Ministry's water quality management program is to set effluent requirements based on the waste receiving capacity of a water body and the Provincial Water Quality Objectives, with consideration also given to the federal and provincial effluent regulations or guidelines and controls on non-point sources of pollution.[408]

The ministry explained that, in ideal circumstances, objectives would be set to secure "no negative effect" results based on long-term testing of sensitive organisms.[409] It acknowledged, however, that this standard was not practically achievable in the circumstances. Other limitations in the water quality program oriented to the objectives included the fact that the system did not account for the additive effects of multiple contaminants and that not all effluent discharges would satisfy the concentration levels of the objectives until some process of dilution had occurred in so-called mixing zones. Environmental losses would occur in the mixing zones.[410]

In relation to sewage, the *OWRA*, building upon predecessor legislation dating back to the public health era, established a regulatory regime involving approvals for sewage works. Such works were defined as "any works for the collection, transmission, treatment and disposal of sewage, or any part of such works" with sewage itself described as including "drainage, storm water, commercial wastes and industrial wastes."[411] Approvals, issued for indefinite terms and

[407] Ontario, Ministry of the Environment, 1984c, *Water Management: Goals, Policies, Objectives and Implementation Procedures* (Toronto: MOE), p. 4.
[408] Ibid., p. 15.
[409] Ibid.
[410] Ibid.
[411] Ontario, Ministry of the Environment, 1971, *Guidelines and Criteria for Water Quality Management in Ontario* (Toronto: MOE).

without charge, were nonetheless subject to terms and conditions. However, dischargers who operate within the scope of an approval have continued to enjoy the benefit of operating under statutory authority as established in the aftermath of the *Richmond Hill* and *Burgess* cases.[412]

Ontario's approach – based on goals and objectives for maintaining the quality of receiving waters in light of their possible use for industrial, agricultural, and other public purposes – went "somewhat further than a simple effluent treatment or equipment standard in being formally linked to environmental requirements."[413] Officials in both the industrial waste treatment and sanitary engineering branches of the ministry formulated effluent quality 'objectives' primarily intended to address contaminant concentrations and water quality impacts. In practice, these objectives provided notice to applicants for approvals of the basic expectations and created a framework for subsequent particularized negotiations. As explained by Richard Campbell and his associates in the early 1970s:

> In result, the treatment required of individual dischargers varies considerably. Most new industrial facilities in recent years have been approved under the above procedures and criteria, and achieve a level of abatement acceptable to the Ministry; but many older works do not meet the objectives. Where discharges from older works and others, that are not approved, fail to meet the desired standard the Ministry negotiates with the owner to seek agreement on an acceptable construction programme to improve waste treatment. The effectiveness of this voluntary approach apparently depends upon the good working relations and professional respect between officials and industry, and the potential power of the Executive Director to issue orders to achieve the desired results.[414]

By the mid-1980s, the Canadian Council of Resource and Environment Ministers was involved in efforts to promote the harmonization of water quality

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[412] Section 59 of the *OWRA* states: "Sewage works that are being or have been constructed, maintained or operated in compliance with this Act, the Environmental Protection Act and the regulations under both Acts and with any order, direction or approval issued under the authority of the Act or any predecessor of any provision of this Act shall be deemed to be under construction, maintained or operated by statutory authority."

[413] R.S. Campbell et al., 1974, "Water management in Ontario: An economic evaluation of public policy," *Osgoode Hall Law Journal*, vol. 12, no. 3, p. 505.

[414] Ibid., p. 508.

guidelines.[415] The example provided by U.S. efforts to establish cleaner waterways had suggested the virtues of a more informed and more vigorous water quality protection strategy. U.S. officials, seeking to identify the best available technology economically achievable (BATEA), took into account the costs of applying a particular control technology, the age of process equipment and facilities, the process employed, process changes, the engineering aspects of applying various types of control technologies, and non-water quality environmental considerations. As developed in the context of the 1972 *Water Pollution Control Act* amendments and the *Clean Water Act* of 1977, this approach by the U.S. Environmental Protection Agency (U.S. EPA) provided something of a model for Ontario's Municipal-Industrial Strategy for Abatement (MISA) as introduced in 1986.

The point of departure for this more enforcement-oriented approach was an initial definition of municipal and industrial sectors, and the classification of individual companies and municipalities within them. On the basis of literature reviews and regulation-based monitoring programs, Ontario environment officials then set out to identify the conventional contaminants and toxics of primary concern to each sector. Existing treatment technologies were next assessed along with each industry's compliance record in relation to current guidelines and control orders.

Ontario relied heavily on the U.S. EPA experience, partly for the reason that most industries in North America employed similar processes. Nonetheless, the inquiry extended to other Canadian provinces and an effort was certainly made to determine whether any substantial differences existed between industries in Ontario and their U.S. counterparts, based on variations in operating conditions, processes, raw materials, and economics. From this foundation, the review set out to formulate statistical performance levels for the various designated technologies using the long-term average performance and the maximum variations that might be expected in plants that were normally well operated. Ultimately, "based on treatment efficiency and cost, the best available technology and its abatement performance will be defined. In choosing the best technology, the Ministry will consider non-water quality impacts in order not to favour technologies that would transfer equal or greater problems to other media."[416]

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[415] W.M.J. Strachan, 1987, "Development needs for Canada's national water quality guidelines," *Water Pollution Research Journal of Canada*, vol. 22, p. 280.

[416] Ontario, Ministry of the Environment, 1986, *Municipal-Industrial Strategy for Abatement: A Policy and Program Statement of the Government of Ontario on Controlling Municipal and Industrial Discharges into Surface Waters* June (Toronto: Queen's Printer), pp. 31–44.

Best management practices were also defined for each sector, but the effluent limits themselves were to be framed exclusively in terms of performance, with each industry or municipality given the option to choose its own means to achieve those limits. Notwithstanding the general amelioration expected to result from the effluent-based approach, the ministry remained apprehensive about adverse effects on waterways receiving discharges. "Care must be taken," the initial MISA policy document emphasized, "to ensure that discharge loadings and concentrations do not adversely affect public health, aquatic life, wildlife or any other water quality use over the short or the long term." So, ambient provincial water quality objectives, especially for toxics, also came under review.[417]

6.3 Federal Initiatives

For reference purposes, various federal government initiatives in relation to water may be briefly noted. In the 1970s, amendments to the *Fisheries Act* were intended to enhance the government's ability to deal with pollution problems and damage to fish habitat.[418] Then, following the enactment of the *Canadian Environmental Protection Act* in 1988, regulations aimed at pollution concerns related to the pulp and paper industry were formulated.[419] Throughout this period, public attention and a good deal of federal policy-making effort were directed at the question of acid rain, and in particular at its implications from the perspective of Canadian-U.S. relations.

The Central Mortgage and Housing Corporation (CMHC, now Canada Mortgage and Housing Corporation) financing initiative, launched in 1960, continued to operate until November 1980 when it was finally terminated. During the 20-year period, a series of programs had provided approximately $2.8 billion (in current dollars) in the form of loans and grants to support the construction of municipal water supply and wastewater infrastructure. The overall significance of CMHC funding is indicated by the relative contribution of CMHC funds to the cost of the works undertaken. The CMHC Sewage Treatment Program (1961–1974) contributed on average 46% of the total sewerage expenditure in the country. From 1975 to 1978, through its Municipal

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[417] Ibid.

[418] See T. Conway and G.B. Doern, 1994, *The Greening of Canada: Federal Institutions and Decisions* (Toronto: University of Toronto Press).

[419] *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations*, SOR/920267; *Pulp and Paper Mill Defoamer and Wood Chip Regulations* SOR/920268.

Infrastructure Program, CMHC provided 35% of all capital spending in Canada on water supply and sewerage. During the final era, 1979–1980, CMHC's Community Services Contribution program was the source of 10% of total capital expenditures for water and sewage development.[420]

The federal government's most direct involvement in water quality matters, including drinking water, centred on work carried out by Environment Canada and the Department of National Health and Welfare as it was known for much of this period. At Environment Canada, the Inland Waters Directorate, through the activities of its Water Quality Branch, conducted research and provided monitoring facilities and support. Amongst its other responsibilities for endeavouring to reduce adverse environmental impacts from human activity, the Environmental Protection Service of Environment Canada produced a National Inventory of Municipal Waterworks and Wastewater Systems (MUNDAT). In addition to Environment Canada and Health and Welfare, other federal departments with water-related responsibilities and interests included Agriculture Canada; Energy, Mines and Resources; Fisheries; Public Works; Indian and Northern Affairs; and Regional and Industrial Expansion. An Interdepartmental Committee on Water fulfilled coordinating responsibilities. This body, actually comprising representatives of 21 federal departments and agencies, held 53 meetings from its formation in 1968 to the beginning of 1985.[421]

Health and Welfare, as previously noted, had assumed a central role in the formation of standards for drinking water. The 1978 *Guidelines for Canadian Drinking Water Quality*, which were developed by a federal-provincial committee set up in 1974 at roughly the same time as the U.S. *Safe Drinking Water Act* was under consideration, in effect represented a revision of an earlier Health and Welfare initiative. In 1968, the department had replaced the U.S. Public Health Standards of 1946 on which those concerned with drinking water quality in Canada had essentially relied for two decades with a statement of "Canadian Drinking Water Standards and Objectives – 1968."

In 1984, when Neil Young, Toronto NDP MP, introduced a private member's bill, Bill C-212, "An Act to Enhance the Quality of Drinking Water in Canada," there were indications that Health and Welfare was considering a similar measure. Speaking on behalf of the government, M. Jean-Luc Joncas informed

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[420] Grover and Zussman, 1985, p. 32.
[421] Ibid.

the House of Commons that Health and Welfare had entered into discussions with provincial governments with a view to formulating federal legislation on drinking water quality, including measures to ensure quality control of chemical products and substances used in water treatment and associated equipment.[422] Five years later, progress was reported as follows:

> Canada is one of the few developed nations that does not have national drinking water legislation. National Health and Welfare is examining the legislative options for drinking water, and plans are in place to introduce legislation for a Canada Drinking Water Safety Act, although no date has been set.[423]

During the mid-1980s, an inquiry on federal water policy commissioned a series of research studies culminating in a 1985 report, *Currents of Change*, that articulated a series of principles for water management. The report drew attention to the importance of the watershed as a unit of management and to the interdependence of multiple land and water uses. *Currents of Change* called for recognition of the continuity of the water cycle and stressed the need to sustain the natural health and productivity of water systems. The inquiry pointed to a need to take account of economic and environmental risks and uncertainties and to the importance of recognizing the intrinsic value of natural flows when contemplating irreversible alterations. Users, the findings stressed, should be encouraged to recognize the value of the water they use. The findings also called for effective public participation to ensure that "the full spectrum of public values is considered in water management."[424] In addition, the inquiry placed considerable emphasis on techniques of demand management, notably pricing, and on the seriousness of threats to water quality from a wide range of contaminants. "Judging from the submissions at our public hearings and other evidence available to us, the proliferation of toxic and other persistent substances that find their way into waterways is the single most widespread concern about water management."[425] If proof were needed that drinking water quality had become an issue of public concern, it might be found in reports from the early 1980s such as Pollution Probe's *Toxics on Tap* and *Drinking Water: Make it Safe*, or, in the words of a major study for Toronto's health department: "There is a

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[422] Canada, House of Commons, 1985, *Debates* (January 21), p. 1524 (M. Jean-Luc Joncas).
[423] Canada, Interdepartmental Committee on Federal Water Policy, 1990, *A Progress Report*, March (Ottawa), p. 34.
[424] P.H. Pearse, F. Bertrand, J.W. MacLaren, 1985, *Currents of Change: Final Report,* Inquiry on Federal Water Policy (Ottawa: Environment Canada).
[425] Ibid.

widening gap between our ability to detect the presence of contaminants in drinking water and our ability to interpret these data for human health."[426]

Although the federal inquiry examined a wide range of water-related issues, one study specifically addressed the federal role in safeguarding Canadian drinking water. Some of the conclusions of this report might well have been regarded as a wake-up call:

- "[F]ederal activities related to drinking water are not sharply focused and in some cases appear uncoordinated."

- "Quebec is the only province with drinking water quality regulations which are legally enforceable."

- "Relatively little information exists about the quality of drinking water actually supplied to Canadians. That which exists is not systematically recorded and generally available to interested parties."

- "[I]t would appear that current monitoring practices are concerned more with ensuring that the water is aesthetically acceptable than in assuring its safe quality."

- "One province (B.C.) had discontinued routine surveillance of all parameters (from the drinking water guidelines), except in response to consumers' requests, as an economy measure."[427]

In 1987, on the basis of *Currents of Change*, the federal cabinet adopted a federal water policy statement setting out five strategies designed to recognize the central position of water as an element of a healthy environment and as an economic resource: realistic pricing, scientific leadership, integrated planning, legislative renewal, and public awareness. More specific commitments were formulated in relation to particular aspects of water policy. With regard to groundwater, for example, federal policy was intended to

> develop with provincial governments and other interested parties, appropriate strategies, national guidelines and policies for groundwater assessment and protection; conduct research and

[426] Keating, 1986, p. 114.
[427] Canada, Environment Canada, 1987, *Federal Water Policy* (Ottawa: Environment Canada), p. 19.

> undertake technological development and demonstration projects in response to groundwater problems; develop exemplary groundwater management practices involving federal lands, responsibilities, facilities and federally-funded projects; develop measures to achieve appropriate groundwater quality in transboundary waters; and provide information and advice on groundwater issues of federal and national interest.[428]

One formal consequence of the federal policy was a review of federal environmental legislation, completed in 1989. Nevertheless, apart from certain high-profile incidents, initiatives related to water have not been prominent on the federal agenda since that time. Financial constraints associated with deficit reduction have taken their toll, and critics have suggested that the 1987 federal policy statement represented the high water mark of Canadian government interest in the field. In the words of two well-placed observers, including the former chair of the federal water policy inquiry, "federal interest in water appears to have declined sharply as again more dominant issues have taken centre stage."[429] In relation to groundwater, one close observer of the ebb and flow of activity reported in 1989:

> Since 1987, federal funds directed at groundwater issues have declined. The number of groundwater researchers in Environment Canada has gone from more than 20 in 1984 to less than ten today. Federal funding for water research in universities which was considerable in the 1970s diminished to almost nothing in the mid-1980s and did not increase as a result of the 1987 policy.[430]

6.4 International Considerations

6.4.1 IJC and the Great Lakes Water Quality Agreement

Great Lakes pollution, the subject of IJC investigations launched as early as 1912 and renewed in 1946, was again under consideration in 1964 when indications of marked deterioration in Lakes Erie and Ontario demanded attention. By the time the commission delivered its final report to the governments of the United

[428] Ibid.

[429] Pearse and Quinn, 1996, p. 3.

[430] J.A. Cherry, 1989, "Groundwater protection and lack of government action in Canada," *Hazardous Materials Magazine* (Nov./Dec.), p. 20.

States and Canada six years later, public concern over environmental issues had increased significantly, and institutional responses in the form of new departments of environment and legislative initiatives were well underway. The completion of the IJC study in 1970 and its finding that "grave deterioration of water quality on each side of the boundary" was "causing injury to health and property on the other side" stimulated action at the international level.[431]

The *Great Lakes Water Quality Agreement* (*GLWQA*) was signed by the two neighbouring governments in April 1972, subsequently renewed in 1978 and extended in 1987 by means of a protocol. It was a vital landmark in the series of official attempts to reverse the deeply entrenched pattern of disregard for the condition of the aquatic environment along extensive lengths of the international boundary. The *GLWQA* established a five-year program that corresponded in general terms to existing IJC proposals for sewage remediation. At the same time, the governments approved two new references calling upon the IJC to study Great Lakes pollution from land-use activities, including agriculture and forestry, and to examine pollution problems of Lakes Huron, Superior, and northern Lake Michigan. The actual works were to be carried out by the relevant jurisdictions with coordination, evaluation, and verification by the commission itself.[432]

The original agreement enumerated both general and specific water quality objectives, identified a series of programs for preventive and remedial purposes, authorized the parties to proceed with implementation according to their own legislative regimes, and accorded the IJC certain functions relating to information gathering and exchange, coordination, monitoring of progress, and making recommendations. According to the general water quality objectives, the waters were to be made

> (a) Free from substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life or waterfowl;
>
> (b) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or deleterious;

[431] Ibid.

[432] J.E. Carroll, 1983, *Environmental Diplomacy: An Examination and a Prospective of Canadian-U.S. Transboundary Environmental Relations* (Ann Arbor: University of Michigan Press), p. 130.

> (c) Free from materials entering the waters as a result of human activity producing colour, odour or other conditions in such a degree as to create a nuisance;
>
> (d) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life;
>
> (e) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.[433]

The IJC served as "the principal institutional repository of the international jurisdiction inherent in the agreement's mandate."[434] Yet it was not by any means a manager. Rather, the IJC monitored the progress and performance of the various jurisdictions that remained responsible for implementing pollution control programs.

The 1978 agreement reaffirmed the basic objectives, but added several extremely important elements to the definition of the task ahead. First, although the 1972 agreement had extended the scope of operation beyond the narrowly defined 1909 definition of boundary waters to encompass tributary waters of the Great Lakes system, the 1978 agreement went still further in extending the challenge to what was known as the "Great Lakes Basin Ecosystem." This was defined to mean "the interacting components of air, land, water and living organisms, including man, within the drainage basin of the St. Lawrence River."[435] Second, although the 1972 agreement made reference to toxic materials, it had primarily addressed problems of eutrophication arising from high levels of phosphorous entering the Great Lakes and so-called hazardous polluting substances with the latter understood to be "any element or compound ... which, when discharged in any quantity into or upon receiving waters or adjoining shorelines, presents an imminent or substantial danger to public health or welfare."[436] By the end of the decade, with measures taking hold to deal with phosphates and municipal sewage treatment, the parties were prepared

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[433] Ibid., p. 342
[434] Ibid.
[435] Ibid., p. 325.
[436] Ibid., p. 341.

to single out toxics for more elaborate definition and treatment.[437] In 1978, a toxic substance was recognized as "a substance which can cause death, disease, behavioural abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions or physical deformities in any organism or its offspring, or which can become poisonous after concentration in the food chain or in combination with other substances."[438] Prominent candidates included mercury, DDT, mirex, PCBs, and dioxin.

Moreover, by 1978, the parties had adopted an overall statement of purpose: "to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." For that purpose they adopted as a policy that "The discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated."[439] Overall, then, the 1978 agreement carried forward the original agenda while extending the geographical scope of the assignment and placing greater emphasis on toxics, on non-point pollution, and on a broader ecosystems' approach to basin management. All these themes have become increasingly evident in legislation.

A protocol negotiated in 1987 introduced further initiatives designed to advance the objectives of the *GLWQA*. Lakewide Management Plans were intended to provide comprehensive and long-term frameworks for each of the lakes in order to channel a wide-ranging effort on the part of diverse stakeholders to protect the overall Great Lakes ecosystem. The concept of Remedial Action Plans was introduced to allow local stakeholders to identify and implement measures to address the challenges of restoring approximately 40 Areas of Concern around the Great Lakes where significant accumulations of contamination required an extended commitment.

For approximately the first two decades of activity under the *GLWQA*, a series of agreements negotiated at intervals between Canada and Ontario (1971, 1976, 1982, and 1985) set out principles for cost-sharing on projects to be implemented

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[437] Ibid., pp. 133–34; B. Sadler, 1993, "Shared resources, common future: Sustainable management of Canada-U.S. border wars," "Managing North American Transboundary Water Resources," Part II, *Natural Resources Journal*, p. 385.

[438] Carroll,1983, p. 326; P. Muldoon and M. Valiante, 1989, *Toxic Water Pollution in Canada: Regulatory Principles for Reduction and Elimination with Emphasis on Canadian Federal and Ontario Law* (Calgary: Canadian Institute of Resource Law, University of Calgary).

[439] Carroll, 1983, p. 327.

by the province in fulfillment of obligations undertaken at the national level. An initial $50 million from the federal government was largely devoted to enhancing the treatment capacity of sewage plants on the Canadian side of the Great Lakes. Typically, the federal contribution amounted to 15% of project costs with the province and the municipality concerned assuming responsibility for 40% and 45% respectively.[440] By the early 1990s, however, the willingness of senior governments, preoccupied with deficit control, to renew their commitments was in some doubt. Nevertheless, a further Canada-Ontario agreement was entered into in 1994 with a six-year lifespan and three principal objectives: the restoration of degraded areas, notably Canadian and binational Areas of Concern; the prevention and control of pollution, including the virtual elimination (90% reduction in use) of a series of designated toxics; and the conservation and protection of human and ecosystem health.[441]

Despite uncertainty over the availability of funding to pursue the persistent remedial backlog, the impact of the *GLWQA* on environmental and water quality protection has been profound. The agreement fostered valuable scientific inquiry and research while it simultaneously provided forums for the exchange of information amongst those concerned with environmental quality in and around the Great Lakes. In addition, ongoing refinements of the original 1972 agreement have served to crystallize and articulate policy objectives for governments, thereby contributing a mechanism of accountability. Authoritative pronouncements in the form of biennial reports help to remind interested parties of the significance of matters at stake. For example, in 1992, in its sixth biennial report on the *GLWQA*, the IJC stated, with regard to the impact of toxics on human health and injury to other living things, that "the evidence is sufficient that many persistent toxic substances are indeed causally involved, and there can be no defensible alternative: their input to the Great Lakes must be stopped. The urgent need is for effective programs to achieve virtual elimination."[442] Finally, many of the public interest groups (and their successors) spawned in the transitional era of the late 1960s and 1970s, when public participation began to assume its current significance, have developed expertise and credibility by participating in projects associated with programs under the *GLWQA*.

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[440] L. Botts and P. Muldoon, 1996, *The Great Lakes Water Quality Agreement: Its Past Successes and Uncertain Future* (Hanover, NH: Dartmouth College, Institute on International Environmental Governance) p. 35.

[441] For a review of performance under the 1994 Canada-Ontario agreement, see M. Winfield and G. Jenish, 1999, *Troubled Waters? A Review of the Performance of the Governments of Canada and Ontario under the 1994 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* (Toronto: Canadian Institute for Environmental Law and Policy, March).

[442] B. Sadler, 1993, p. 421.

6.5 Legal and Enforcement Matters

To strengthen the enforcement effort during the mid-1980s, Ontario acted both formally through legislative amendment to increase penalties, and in practice by way of restructuring within the Ministry of the Environment. In an address to the legislature in 1980, the minister announced the formation of a special environmental police force intended to supplement normal inspection, abatement, and enforcement capability. Although directed primarily at waste disposal, this initiative reflected a trend with later implications for water protection. The original Special Investigations Unit, consisting of about a dozen staff, was replaced in 1985 when the ministry created a larger investigations and enforcement branch. There were to be 64 investigators in the new branch, recruited largely from the ranks of the police and those with scientific expertise. Simultaneously, legal services were expanded. Together with a new policy to proceed to prosecution in appropriate circumstances and measures to improve the training of inspectors in relation to evidence gathering and preparation for presentation at trial, these changes soon saw the number of prosecutions increase significantly. By 1989, some 20 environmental prosecutions were being launched each month, up from 54 for the entire year in 1984.[443] Additional funding in the amount of $10 million in 1988–89 to support enforcement and inspections led to a further increase in prosecutions in 1991. In that year, 312 prosecutions were initiated, involving just under 2,000 separate charges for violations of Ontario's environmental laws.

In addition to an increased number of convictions and fines through the mid-1980s and early 1990s, a succession of high-profile decisions attracted attention to the potential severity of the consequences of enforcement, the virtues of due diligence, and the stringency with which water quality protection measures might be applied.

Jetco, an electroplating plant in Weston, was facing thousands of dollars in fines on the basis of over 50 convictions for violations of the Municipality of Metropolitan Toronto's water pollution by-laws when the city sought a court order to prohibit further offences. Justice of the Peace White (acting under section 326 of the *Municipal Act*) made such an order in April 1985, but Jetco took no remedial action, with the result that a further 14 convictions and an

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[443] D. Saxe, 1989, "Fines go up dramatically in environmental cases," *Canadian Environmental Law Reports*, (New Series), vol. 3, p. 104; J. Swaigen, 1987–88, "Ontario's *Environmental Enforcement Statute Law Amendment Act, 1986*," *Canadian Environmental Law Reports* (New Series), vol. 2, p. 14.

additional $28,000 in fines were soon on the books. With these further violations the matter escalated to a new level: Jetco's conduct and that of its president, Keith Alexander, were now a question of contempt of court.

The company's defence was lack of knowledge of White's prohibition order; but since Jetco had chosen to absent itself from the criminal proceedings, it attracted very little sympathy from Justice Montgomery, who heard the contempt charges. Montgomery, noting that $100,000 in fines had been ineffective in directing the company's attention to the need for abatement, assessed a further $200,000 for the contempt before turning to Alexander, "the directing mind of the corporation."[444] Alexander, by his own admission, had treated the fines as "licensing fees for doing business." He had taken no action to remedy Jetco's deficiencies, which, it might usefully be noted at this point, involved discharging excessive amounts of nickel, cadmium, cyanide, and arsenic into the water system. The consequences, as detailed for the court, were to:

> (i) interfere with, impair, upset or completely retard sewage treatment plants and processes;
> (ii) enhance the toxicity of other chemicals in the system;
> (iii) interfere with and poison biological systems in Lake Ontario;
> (iv) cause contamination of surface and ground water in the area of landfill sites where sludge containing cyanide is applied;
> (v) cause air pollution when sludge containing cyanide is incinerated;
> (vi) corrode sewers requiring their costly replacement.[445]

For his influential contribution to this litany of environmental degradation, Alexander was originally sentenced to a year in jail, with a further one-month sentence up to a maximum of 15 months for each day of delay in deciding finally to undertake the measures necessary to bring Jetco into compliance with the by-law.[446]

Under the direction of a Mr. Siapas, B.E.S.T. Plating was another Toronto metal shop with a remarkable record for environmental violations involving adverse impacts on water quality. With 49 convictions and $67,750 in fines accumulated under the city's By-law to Regulate the Discharge of Sewage and

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[444] *R.*v. *Jetco Manufacturing* (1987), 1 CELR (NS) 79 at 83-4 (Ont. SC).
[445] Ibid., pp. 81–2.
[446] Ibid., p. 84.

Land Draining in the Metropolitan Area, B.E.S.T. was also the subject of a prohibition order against further offences. Nonetheless, cyanide, copper, zinc, and nickel continued to enter the municipal sewage system in amounts far exceeding permitted limits. An inventory of the implications developed by a pair of pollution engineers suggested that the discharge

> tends to interfere with, impair, upset or completely retard the growth of foliage plants and enhances the toxicity of other chemicals in the system, interferes with and poisons biological systems in Lake Ontario, causes contamination of surface and ground water of the area of landfill sites where sludge containing cyanide is incinerated, and alters the pH factor (the acidity) of such waste water below or above the acceptable range of 6.0 to 10.5, thereby potentially causing or contributing to excessive corrosion damage to the sewer system requiring replacement at a very substantial cost.[447]

A prosecution for contempt resulted in a fine of $100,000 against the company and a six-month sentence against Siapas, notwithstanding his belated efforts to install equipment that would bring the operation into compliance.[448]

A high-profile prosecution against Bata Industries and a number of the company's senior officials for irregularities in waste management practices that threatened to contaminate groundwater renewed corporate awareness of environmental due diligence a decade or so after the *Sault Ste. Marie* decision.[449] Another notable prosecution against the Toronto Electric Commissioners following the drainage of PCB-contaminated oil to the sewage system and ultimately into Lake Ontario has become associated with the impression that Ontario has a zero tolerance policy on water pollution under section 16(1) of the *OWRA*. Expert witnesses expressed divergent opinions concerning the nature of the impact of the PCB discharge on water quality. One witness suggested that if drinking water standards (three parts per billion of PCBs) were not exceeded, there would be no impairment of water quality while another insisted: "It is inconceivable ... that a quantity of a toxic material which is persistent which bio-accumulates does not impair the environment in that area to a degree."[450] In accepting that the latter account of the impact of the PCB

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[447] *R.*v. *B.E.S.T. Plating Shoppe Ltd.* (1987), 1 CELR (NS) 85 at 90 (Ont. SC).
[448] Ibid., p. 94.
[449] *R.*v. *Bata* (1992), 9 OR (3d) 329 (Ont. Ct. (Prov. Div.)).
[450] *R.*v. *Toronto Electric Commissioners* (1991), 6 CELR (NS) 301at 312-13 (Ont. Ct. (Gen. Div.).

discharge indeed constituted impairment within the meaning of the legislation, the court stated that "the use of the words 'may impair' shows the intention of the legislation is ... to prevent the discharge of any material which, by its nature, may impair the quality of the water course."[451]

Although the decisions described here have made a lasting impression in some respects, it must also be noted that the level of environmental prosecutions declined sharply in Ontario after 1995 from a peak in 1992.

7 Concluding Comments

This historical survey of the evolution of water supply and sewage systems in Ontario offers some perspective on the current situation by highlighting certain elements of the development of that water supply and the sewage infrastructure over the past century or so.

The origins of a public or municipal water supply system in Ontario date from roughly the mid-nineteenth century, although the establishment of municipal water services in many communities came about much later. Construction arrangements, including the selection of sources, the adoption of technology and other design features, as well as operational practices have been influenced by the efforts of engineers, public health specialists, provincial officials, and local governments, among others. Implementation and maintenance of these vital services have been interdisciplinary undertakings and there is no reason to imagine that this will change. It is necessary to acknowledge, however, that compromises emerging from conflict rather than collaboration between the participants occurred frequently.

Public health officials, having largely dominated policy development in the early period, continue to exercise vital responsibilities, although relatively less prominent than in former times. Other professionals, notably engineers, and, more recently, various specialists in environmental sciences have become increasingly concerned with water and sewage operations from the perspective of environmental impacts extending beyond the health concerns of the formative era. All of this activity now occurs within a framework in which public participation has taken on a degree of importance hardly countenanced by the experts who oversaw the development of the system up to the early 1970s.

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[451] Ibid., p. 316.

In a formal sense, the goal or objective has always been the provision of pure and wholesome water for domestic consumption in sufficient quantities to fulfill other needs relating to fire protection, industrial use, and so on. Reference to the concept of 'pure and wholesome' may be traced to waterworks legislation dating from at least the early-nineteenth century. Nevertheless, experience and changes in the techniques and capabilities of scientific investigators have continued to refine understanding of the more specific implications of that general standard. Innovations following late-nineteenth century bacteriological discoveries concerning the transmission of typhoid provide a significant illustration.

While steadfastly maintaining that water is a matter of local responsibility, provincial governments' attempts to shape the system and to oversee its effectiveness have been ongoing from at least the late-nineteenth century. As summarized in appendix 6, an array of instruments has been employed to this end. Through advice, supervision, various forms of financial support, and occasionally explicit direction and control, backed by fluctuating levels and variable styles of enforcement, provincial agencies and officials have endeavoured to ensure that certain levels of performance are achieved. With occasional exceptions, those responsible for water quality and environmental enforcement in Ontario have tended to favour conciliatory over coercive compliance strategies, hoping thereby to encourage necessary steps while avoiding formal confrontation. Whether the explanation lies in a lack of enforcement resources or a reasoned preference for the virtues of the conciliatory model remains a question.

In relation to provincial supervision of water supply systems, it is noteworthy that as capital requirements and technological standards have increased, concern over the capacity of smaller communities to perform adequately has been a recurring theme. In relation to sewage services and treatment, the situation has been quite similar, with most observers noting a tendency for investment in this form of infrastructure to lag even further behind a willingness to pay for water supply and treatment. Whether to attribute this to confidence in water treatment or its comparative inexpensiveness relative to forceful source protection may be debated. One certainty, however, is that the quality of natural waters from which drinking water is derived has been allowed to deteriorate. Provincial willingness to sacrifice ambient water quality to perceived industrial imperatives as in the KVP case may well have been a factor, together with municipal expectations that senior levels of government might eventually offer financial assistance.

The financial implications of establishing appropriate infrastructure have always challenged local municipalities whose reluctance or inability to undertake desirable expenditures has frequently been noted by officials at the provincial level. Intermittently, significant initiatives embodying financial support from senior levels of government – federal as well as provincial – have greatly accelerated the installation, extension, and refinement of these essential works.

On several occasions, external pressures, whether originating in the international or federal spheres, in public opinion, or in the determined efforts of individual litigants from Samuel Fieldhouse to Annie Stephens, have been instrumental in encouraging governments to address water and sewage requirements more systematically.[452] It took unconscionable rates of typhoid in comparison with European levels of the disease to spur governments into action through the IJC at the turn of the twentieth century, and it seems to have required extreme experience with floods and droughts following extensive deforestation to demonstrate the utility of watershed conservation. The question of mechanisms to ensure more continual vigilance has always been central for the reason offered by J.W.T. Spinks 40 years ago: "Because water is so much an intimate part of our daily lives, most of us give little thought to it."[453]

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[452] A prosecution of the city of Kingston for *Fisheries Act* violations is in this tradition. See *Fletcher* v. *Kingston* (1998), 28 CELR (NS) 229.

[453] Canada, Department of Northern Affairs and National Resources, 1961, *Resources for Tomorrow*, p. 161.

Appendix 1 Water Filtration Plants in Ontario, 1890–1936

Date of Installation	Municipality	Approximate Population Served	Type	Number of Units
1890	St. Thomas	17,500	mechanical, gravity	4
1893	Grimsby	2,500	mechanical, pressure	3
1895	Chatham	17,500	mechanical, pressure	8
1897	Renfrew	5,360	mechanical, pressure	6
1898	Cardinal	1,400	mechanical, pressure	2
1900	Arnprior	4,200	mechanical, pressure	3
1911	Haileybury	2,720	mechanical, pressure	5
1912	Toronto	700,000	slow sand	1
1913	Cobourg	6,100	mechanical, pressure	5
1914	Wallaceburg	4,915	mechanical, pressure	2
1915	Orillia	8,664	mechanical, pressure	5
1915	Port Hope	4,344	slow sand	1
1917	Dundas	5,000	mechanical, gravity	2
1917	Lindsay	7,167	mechanical, pressure	5
1917	Niagara	1,800	mechanical, pressure	3
1917	Oshawa	26,120	mechanical, gravity	8
1918	Perth	4,215	mechanical, pressure	2
1918	Amherstburg	3,200	mechanical, gravity	4
1918	Perth	4,215	mechanical, pressure	2
1918	Tecumseh	3,200	mechanical, pressure	3
1918	Toronto	700,000	mechanical, gravity	10
1919	Hawkesbury	5,600	mechanical, gravity	4
1919	Owen Sound	11,935	slow sand	1
1921	Richmond Hill	1,374	mechanical, gravity	3
1921	Scarborough Twp.	5,200	mechanical, gravity	4
1922	Dunnville	3,605	mechanical, gravity	3
1922	Kincardine	2,036	slow sand	1
1922	Peterborough	23,473	mechanical, gravity	6
1922	Port Credit	1,225	slow sand	1
1922	Whitby	4,360	slow sand	1
1923	North York Township	10,000	mechanical, gravity	3
1923	Thornbury	500	mechanical, pressure	6

Appendix 1 Water Filtration Plants in Ontario, 1890–1936, cont'd.

Date of Installation	Municipality	Approximate Population Served	Type	Number of Units
1924	Chippewa	1,195	mechanical, pressure	1
1924	Port Colborne	11,010	mechanical, pressure	4
1924	Smith's Falls	7,000	mechanical, gravity	3
1925	Crystal Beach	8,000	mechanical, pressure	3
1925	Iroquois Falls	4,976	mechanical, gravity	4
1926	Belle River	1,150	mechanical, pressure	2
1926	Kingsville	2,226	mechanical, pressure	3
1926	St. Catharines	30,000	mechanical, gravity	6
1926	Windsor	109,000	mechanical, gravity	10
1927	Merritton	2,800	mechanical, pressure	4
1927	New Toronto	18,786	mechanical, pressure	18
1927	Thorold	5,100	mechanical, pressure	4
1927	Welland	16,000	mechanical, gravity	4
1928	Kapuskasing	3,350	mechanical, pressure	2
1928	Picton	3,300	mechanical, pressure	2
1928	Swastika	400	mechanical, pressure	1
1928	Thorold Township	1,500	mechanical, pressure	2
1929	Wheatley	950	mechanical, pressure	1
1930	Napanee	3,100	mechanical, pressure	3
1931	Belleville	15,000	mechanical, gravity	4
1931	Brantford	32,212	mechanical, gravity	6
1931	Niagara Falls	24,527	mechanical, gravity	8
1931	Sturgeon Falls	4,300	mechanical, pressure	3
1931	Tilbury	2,000	mechanical, pressure	2
1932	Huntsville	2,750	mechanical, gravity	2
1932	Ottawa	155,000	mechanical, gravity	10
1933	Hamilton	159,020	mechanical, gravity	12
1935	Port Stanley	700 (Winter) 5,000 (Summer)	mechanical, pressure	2
1936	Burlington	4,900	mechanical, gravity	3

Appendix 2 Municipal Sewage Treatment in Ontario, 1904–1934

Date of Installation	Municipality	Approximate Population Served	Treatment Type	Disposal
1904	Galt	1,400	sedimentation tank	tank removal or open drying bed
1905	Collingwood	6,250	sedimentation tank	tank removal or open drying beds
1906	Brampton	4,500	activated sludge	separate digestion
1906	Haileybury	2,850	sedimentation tank	tank removal or open drying beds
1906	Preston	5,700	intermittent sand filters	tank removal or open drying beds
1906	Waterloo	7,450	intermittent sand filters	tank removal or open drying beds/separate digestion
1906	Wiarton	1,950	sedimentation tank	tank removal or open drying beds
1908	Barrie	3,000	sedimentation tank	tank removal or open drying beds
1909	Guelph	21,000	activated sludge	tank removal or open drying beds
1909	Rainy River	1,400	sedimentation tank	not reported
1910	New Liskeard	3,000	sedimentation tank	tank removal or open drying beds
1910	Oakville	3,300	sedimentation tank	tank removal or open drying beds
1910	Oshawa	23,000	sedimentation tank	tank removal or open drying beds
1910	Trenton	6,350	sedimentation tank	tank removal or open drying beds
1910	Wingham	2,300	sedimentation tank	tank removal or open drying beds
1911	Toronto (Morley Avenue)	570,000	sedimentation tank	not reported
1912	Carleton Place	4,250	sedimentation tank	tank removal or open drying beds
1912	Napanee	3,000	Imhoff tank	tank removal or open drying beds
1913	Bowmanville	3,550	Imhoff and sprinkling filters	tank removal or open drying beds
1913	New Toronto and Mimico	14,000	activated sludge	separate digestion/glass-covered drying beds
1913	Tillsonburg	3,400	sedimentation tank	tank removal or open drying beds
1913	Weston	4,150	sprinkling filters	tank removal or open drying beds
1914	Dundas	5,000	Imhoff and sprinkling filters	tank removal or open drying beds
1914	Simcoe	4,500	intermittent sand filters	tank removal or open drying beds
1914	Whitby	5,200	Imhoff and sprinkling filters	tank removal or open drying beds
1915	Burlington	3,400	Imhoff and sprinkling filters	tank removal or open drying beds
1916	London (East End)	6,000	Imhoff and sprinkling filters	tank removal or open drying beds
1918	Iroquois Falls	1,500	sedimentation tank	tank removal or open drying beds
1921	Timmins	5,500	activated sludge	tank removal or open drying beds

Appendix 2 Municipal Sewage Treatment in Ontario, 1904–1934, cont'd.

Date of Installation	Municipality	Approximate Population Served	Treatment Type	Disposal
1921	Woodstock	11,000	activated sludge	glass-covered drying beds
1922	Guelph	21,000	activated sludge	tank removal or open drying beds
1923	Stratford	18,000	activated sludge	tank removal or open drying beds
1924	Chippewa	1,100	sedimentation tank	tank removal or open drying beds
1924	Cochrane	3,000	activated sludge	tank removal or open drying beds
1924	Elmira	3,000	sedimentation tank	tank removal or open drying beds
1924	Kirkland Lake	22,000	sedimentation tank	tank removal or open drying beds
1924	St. Thomas	16,000	activated sludge	tank removal or open drying beds
1925	Crystal Beach	6,000	activated sludge	tank removal or open drying beds
1925	Kitchener (Spring Valley)	7,400	activated sludge	tank removal or open drying beds/separate digestion
1925	London (South End)	5,000	activated sludge	tank removal or open drying beds
1925	Long Branch	3,800	activated sludge	vacuum filtration
1925	North Bay	16,000	sedimentation tank	not reported
1925	Riverside	3,000	activated sludge	tank removal or open drying beds
1925	York Township	60,000	activated sludge	vacuum filtration
1926	East York Township (Todmorden, Greenwood)	10,000	activated sludge	glass-covered drying beds/ separate digestion
1926	London (West End)	60,000	activated sludge	not reported
1926	Peterborough	23,000	activated sludge	not reported
1927	East York Township (Danforth Park)	12,000	activated sludge	separate digestion/glass-covered drying beds
1927	Kingsville	2,400	sedimentation tank and chlorination	tank removal or open drying beds
1928	Blind River	2,800	sedimentation tank	tank removal or open drying beds
1928	Hamilton	153,500	screens (other treatment earlier)	not reported
1928	Palmerston	1,800	activated sludge	tank removal or open drying beds
1928	Port Colborne (East Side)	5,400	activated sludge	separate digestion/glass-covered drying beds
1928	Port Colborne (West Side)	5,400	activated sludge	separate digestion/glass-covered drying beds

Appendix 2 Municipal Sewage Treatment in Ontario, 1904–1934, cont'd.

Date of Installation	Municipality	Approximate Population Served	Treatment Type	Disposal
1928	Scarborough Township	6,500	activated sludge	vacuum filtration
1929	Alliston	1,350	activated sludge	tank removal or open drying beds
1929	Capreol	1,500	sedimentation tank	tank removal or open drying beds
1929	North York Township	1,000	activated sludge	tank removal or open drying beds/separate digestion
1929	Orangeville	2,700	activated sludge	separate digestion/glass-covered drying beds
1929	Stamford Township	6,500	sedimentation tank	tank removal or open drying beds
1929	Swansea	5,500	activated sludge	separate digestion/glass-covered drying beds
1929	Toronto (North Toronto)	60,000	activated sludge	separate digestion/glass-covered drying beds
1929	Tweed	1,350	sedimentation tank	tank removal or open drying beds
1930	Grimsby	2,000	activated sludge	not reported
1931	Almonte	2,350	sedimentation tank	not reported
1931	Crowland Township	1,500	activated sludge	tank removal or open drying beds
1931	Kitchener (Doon)	25,400	sedimentation tank	separate digestion/glass-covered drying beds
1931	Sudbury	18,000	fine screens and incineration	not reported
1932	Aurora	2,600	activated sludge	glass-covered drying beds
1932	Fergus	2,300	sedimentation tank	not reported
1932	Fort William (part of city)	not reported	sedimentation tank	separate digestion
1932	New Toronto and Mimico	14,000	activated sludge	separate digestion/glass-covered drying beds
1933	Cardinal	1,300	sedimentation tank	tank removal or open drying beds
1934	Falkenbridge	300	sedimentation and sprinkling filter	tank removal or open drying beds
1934	Hanover	3,000	sedimentation tank	tank removal or open drying beds
not known	Coniston	2,000	sedimentation tank	tank removal or open drying beds
not known	Fort Erie	6,000	sedimentation tank	tank removal or open drying beds
not known	Nipigon	300	sedimentation tank	not reported
not known	Orillia	not known	not known	tank removal or open drying beds

Appendix 3 Ontario Water Resources and Supply Committee – Terms of Reference

The committee of council have had under consideration the report of the Honourable the Minister of Public Works dated September 13, 1955, wherein he states that:

> Whereas it is considered expedient that a committee be appointed to investigate the water resources and the supply of water for municipal and other purposes, and Whereas it is considered that such a committee should be immediately appointed …
>
> The committee shall report upon the following matters:
>
> 1. The present and prospective need for an integrated system of water supply in Ontario with particular reference to southwestern Ontario.
>
> 2. The best method of providing adequate quantities of suitable water to municipalities, industries, agriculture and other consumers.
>
> 3. The effects of the construction of an integrated water supply system or systems to municipalities on local water tables and on the availability of water resources for agriculture, including irrigation and other purposes.
>
> 4. The extent of pollution in the lakes, rivers and streams, and the best means of controlling it.
>
> 5. What legislation may be necessary to ensure satisfactory control of the water resources as well as the legislation which may be required to provide for transmission of water from source to municipality or user.
>
> 6. The estimated cost of an adequate system or systems and the best means for financing such system or systems on a self-liquidating basis.

7. The co-ordination of action by municipalities and the Provincial Government in the financing, administration and control of the water system or systems.

8. The best administrative organization for maintaining continuity of operation and expansion, and for providing efficient management and effective safeguards to ensure the purity and adequacy of water supplies.

9. The urgency of each portion of the water system or systems so that a schedule of priority of completion may be provided.

10. The best means of ensuring the province's continued control over water resources, particularly with reference to provisions of the international boundary water treaties and any other relevant Statutes.

Source: Archives of Ontario

Appendix 4 Objectives for Water Quality Control in Ontario

Adopted by the Pollution Control Board, May 5, 1953
By
Dr. A.E. Berry, Chairman

These objectives are for all waters in the Province of Ontario, and it is anticipated that in certain specific instances, influenced by local conditions, more stringent requirements may be found necessary.

General Objectives

All wastes, including sanitary sewage, storm water, and industrial effluents, shall be in such condition when discharged into any receiving waters that they will not create conditions which will adversely affect the use of these waters for the following purposes: source of domestic water supply, navigation, fish and wild life, bathing, recreation, agriculture and other riparian activities.

In general, adverse conditions are caused by:

(a) Excessive bacterial, physical or chemical contamination.
(b) Unnatural deposits in the stream, interfering with navigation, fish and wild life, bathing, recreation, or destruction of aesthetic values.
(c) Toxic substances and materials imparting objectionable tastes and odours to waters used for domestic or industrial purposes.
(d) Floating materials, including oils, grease, garbage, sewage solids, or other refuse.
(e) Discharges causing abnormal temperature, colour or other changes.

Specific Objectives

In more specific terms, adequate controls of pollution will necessitate the following objectives for:

(a) Sanitary Sewage, Storm Water, and Wastes from Water Craft

sufficient treatment for adequate removal or reduction of solids, bacterial, and chemical constituents which may interfere unreasonably with the use of these waters for the purposes afore-mentioned.

Adequate protection for these waters, except in certain specific instances influenced by local conditions, should be provided if the coliform M.P.N. median value does not exceed 2,400 per 100 ml at any point in the waters following initial dilution.

(b) Industrial Wastes

(1) Chemical Wastes – Phenolic Type

Industrial waste effluents from phenolic hydro-carbon and other chemical plants will cause objectionable tastes or odours in drinking or industrial water supplies and may taint the flesh of fish.

Adequate protection should be provided for these waters if the concentration of phenol or phenolic equivalents does not exceed an average of 2 p.p.b. and a maximum of 5 p.p.b. at any point in these waters following initial dilution. This quality in the receiving waters will probably be attained if plant effluents are limited to 20 p.p.b. of phenol or phenolic equivalents.

Some of the industries producing phenolic wastes are:

Coke, synthetic resin, oil refining, petroleum cracking, tar, road oil, creosoting, wood distillation, and dye manufacturing plants.

(2) Chemical Wastes, Other Than Phenolic

Adequate protection should be provided if:

(a) The pH of these waters following initial dilution is not less than 6.7 nor more than 8.5. This quality in the receiving waters will probably be attained if plant effluents are adjusted to a pH value within the range of 5.5 and 10.6.

(b) The iron content of these waters following initial dilution does not exceed 0.3 p.p.m. This quality in the receiving waters will probably be attained if plant effluents are limited to 17 p.p.m. of iron in terms of Fe.

(c) The odour-producing substances in the effluent are reduced to a point that following initial dilution with these waters the mixture does not have a threshold odour number in excess of 4 due to such added material.

(d) Unnatural colour and turbidity of the wastes are reduced to a point that these waters will not be offensive in appearance or otherwise unattractive for the afore-mentioned uses.

(e) Oil and floating solids are reduced to a point such that they will not create fire hazards, coat hulls of water craft, injure fish or wild life or their habitat, or will adversely affect public or private recreational development or other legitimate shore line developments or uses. Protection should be provided for these waters if plant effluents or storm water discharges from premises do not contain oils, as determined by extraction in excess of 15 p.p.m., or a sufficient amount to create more than a faint irridescence. Some of the industries producing chemical wastes other than phenolic are: Oil wells and petroleum refineries, gasoline filling stations and bulk stations, styrene co-polymer, synthetic pharmaceutical, synthetic fibre, iron and steel, alkali chemical, rubber fabricating, dye manufacturing, and acid manufacturing plants.

(3) Highly Toxic Wastes

Adequate protection should be provided for these waters if materials highly toxic to human, fish, aquatic, or wild life are eliminated. Some of the industries producing highly toxic wastes are: Metal plating and finishing plants discharging cyanides, chromium or other toxic wastes; chemical and pharmaceutical plants and coke ovens. Wastes containing toxic concentrations of free halogens and wastes containing resin and fatty acid soaps are included in this category.

(4) **Deoxygenating Wastes**

Adequate protection of these waters should result if sufficient treatment is provided for the substantial removal of solids, bacteria, chemical constituents, and other substances capable of reducing the dissolved oxygen content of these waters unreasonably. In addition to sewage, some of the industries producing these wastes are: Tanneries, glue and gelatine plants, alcohol, including breweries and distilleries, wool scouring, textile, pulp and paper, food processing plants such as meat packing and dairy plants, corn products, beet sugar, fish processing and dehydration plants.

Source: Archives of Ontario

Appendix 5 An Act Respecting the KVP Company Limited

Assented to April 31st, 1950.
Session Prorogued April 6th, 1950.

His Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1. (1) Whether or not its operation is now stayed, every injunction heretofore granted against The KVP Company Limited, herein called "the Company," restraining the Company from polluting the waters of the Spanish River, is dissolved.

(2) The dissolution of any such injunction shall not prejudice the right of any person to damages heretofore awarded in the action in which any such injunction was granted and shall not prejudice the right of any person to damages suffered from the date of the trial in which any such injunction was granted to the date when the injunction would have, but for this Act, become effective.

2. Nothing in this Act shall prejudice the right of any person to bring any action against the Company arising from the pollution of the waters of the Spanish River.

3. (1) In lieu of bringing an action against the Company, any person who claims that he has suffered or is suffering damage caused by the pollution of the waters of the Spanish River by the Company may, by notice in writing to the Company, require the Company to submit the matter to arbitration on such terms as may be agreed upon.

(2) Upon receipt of a notice under subsection 1, the Company and the claimant shall forthwith negotiate the terms of the submission and proceed therewith in accordance with its terms.

(3) If the claimant and the Company are unable to agree as to the terms of the submission, any term in dispute may at any time be referred by either party to the judge of the district court of the district in which the damage claimed occurred, and the judge shall, after hearing both parties, determine any such term and his determination shall be final and shall be acted upon by the parties.

4. (1) The Research Council of Ontario shall endeavour to develop methods that, if applied by the Company, would abate or lessen the pollution of the waters of the Spanish River by the Company.

(2) The cost of carrying out its duties under subsection 1 shall be deemed to be a debt due by the Company to the Research Council of Ontario.

5. This Act shall come into force on the day it receives the Royal Assent.

6. This Act may be cited as *The KVP Company Limited Act, 1950.*

Source: SO 1950 c. 33.

Appendix 6 Government of Ontario Initiatives on Water Quality, 1880s–1990s

1882	Establishment of provincial board of health; local boards of health made mandatory
1882	*Municipal Water-works Act*
1884	Mandatory consultation with PBH by municipalities contemplating water and sewage systems
1895	PBH authorized to approve water supply sources and to impose terms and conditions on sewage systems "in the public interest"
1906	Prohibition against pollution of public water supply sources
1910	Provincial officials participate in the conference of the Public Health Committee of the Commission of Conservation
1912	PBH assumes authority to supervise and examine sources of public water supply
1912	Water boards, water companies, water commissioners, and municipal officers required to report to the PBH regarding water supply
1912	PBH authorized to require waterworks or sewerage systems "in the interests of the public health"
1912–18	Provincial officials participate in IJC Water Quality reference
1912	District officers of health created
1924	Department of Health created
1934, 1938	*Grand River Conservation Act*
1946	*Conservation Authorities Act*
1950	Select Committee of the Ontario Legislature on Conservation

1952	Pollution Control Board of Ontario
1953	Pollution Control Board of Ontario adopts Objectives for Water Quality
1955	Ontario Water Resources and Supply Committee
1956	Ontario Water Resources Commission (OWRC)
1957	*Ontario Water Resources Commission Act, 1957*
1964	OWRC approves drinking water quality objectives for Ontario (revised 1968, 1976, 1978, 1984, 1994)
1971	Department of the Environment, later the Ministry of the Environment (MOE)
1971	First *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem*
1972	MOE assumes powers of the OWRC
1975	*Ontario Environmental Assessment Act*
1976	Ontario Agricultural Code of Practice
1986	Drinking Water Surveillance Program
1986	Municipal-Industrial Strategy for Abatement
1993	*Ontario Environmental Bill of Rights*
1993	Ontario Clean Water Agency established
1997	*Water and Sewage Services Improvement Act*
1997	*Municipal Water and Sewage Transfer Act*

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