CANADIAN INSTITUTE FOR ENVIRONMENTAL LAW & POLICY

WALKERTON INQUIRY FINAL REPORT: A SUMMARY AND A RESPONSE

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June 13, 2002

Introduction

The Canadian Institute for Environmental Law and Policy presents this summary of the Walkerton Inquiry Report 2, released Thursday May 23rd, 2002, containing over 90 recommendations. The purpose of this summary is to compile the main subjects covered to better understand the recommendations, to facilitate a comparison of the provincial government's response to the Report and to protect Ontario's drinking water sources.

Any commentary on the Report is in italics, otherwise the highlights provided are actual quotes from the Report, complete with page references to the full Report. Please also note that some footnotes in the text have been deleted. The full Report can be found at www.walkertoninquiry.com. The topics covered in this summary are as follows:

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Main Recommendations

I recommend that the Province develop a comprehensive, source-to-tap, government-wide drinking water policy and enact a ***Safe Drinking Water Act*** embodying the important elements of that policy. The purpose of the *Safe Drinking Water Act* (SDWA) is to gather in one place all legislation and regulation relating to the treatment and distribution of drinking water.[1] I recommend that the government establish two specialized branches within the Ministry of the Environment (MOE). These branches would be responsible, respectively, for watershed planning and for overseeing water systems. It is essential for the Province to strictly enforce drinking water regulations and to commit sufficient resources, financial and otherwise, to enable the MOE to play this role effectively.

I propose that the **MOE take the lead** in developing and implementing the policy.p13, … (having) the knowledge and experience required to oversee water treatment, monitoring, distribution, and the competent management of a water system. To date, the MOE has conducted investigations and prosecutions of those suspected of non-compliance with regulatory requirements through its Investigations and Enforcement Branch (IEB). I am satisfied that the IEB of the MOE should remain as presently constituted, a separate branch within the ministry.

The reason commonly given for outsourcing government functions is cost savings, and there is no doubt that outsourcing the inspections function may provide cost savings to the government. Cost is always important, but some government functions are of such a nature that the potential for cost savings alone should not lead to a decision to transfer all or part of the government regulatory function to a third party. In my view, the oversight of the safety of Ontario's drinking water is such a function

As I discuss in Chapter 13, the provincial government should not devolve or transfer its regulatory function to third parties unless it is established that this will result in greater safety. Specifically, I propose that cost should not be the reason for any devolution. P 324….

[1] Legislation related to drinking water, as well as virtually all of the recommendations in my report, should be put into four pieces of legislation, together with relevant regulations hereunder: a new *Safe Drinking Water Act,* containing provisions dealing with the treatment and distribution of drinking water; amendments to the EPA and regulations hereunder, containing provisions necessary to bring my source protection recommendations into effect; an act or regulation dealing with drinking water protection on farms; and an Act governing asset management in relation to municipal water systems. P 405

The **total costs** of my recommendations, including the one-time costs amortized over 10 years at 7% interest, would amount to an average of between $7 and $19 per household per year.[2] Comparing the average water rates with those for less essential services such as cable television, telephones, or Internet access makes this point powerfully.

The cost of the Walkerton tragedy itself also makes for a compelling comparison. A study commissioned by the Inquiry estimates the economic impact of the Walkerton events to be more than $64.5 million.9 Of course, this figure does not include the tragedy's great impact in terms of human suffering and loss of life. Still, it does show that from an economic standpoint alone, the costs of a system failure can be enormous.

The provision of drinking water is characterized by a high degree of **natural monopoly**. The service – in terms of both water treatment and distribution – can realistically only be provided by a single entity. The need to ensure the accountability of that entity is acute and, as such, it is understandable why municipalities have played a central role in the provision of drinking water.

Over 80% of Ontarians are served by municipally owned water systems. Although municipalities are permitted to sell their systems, there was no suggestion during the Inquiry that any municipalities are even considering doing so. Moreover, nothing I heard during the Inquiry led me to conclude that I should make recommendations about the ownership of municipal systems in order to address water safety issues. P.11

Given that municipal responsibility and accountability flow from municipal ownership, I see no advantage for safety reasons to turning over ownership of municipal water systems to either the provincial government or to the private sector. Changes in the ownership regime for water systems would raise a number of significant issues in relation to the recommendations in this report. I have premised many recommendations on continued **municipal ownership** of water systems. P 323.

From the perspective of protecting water quality, the Province should adopt a position of **neutrality with respect to the decision of municipalities to engage, or not to engage, private operating agencies** to deliver water services. The provincial government should ensure that this neutrality is reflected in provincial legislation and regulations including Bill 46, *An Act Respecting the Accountability of Public Sector Organizations*, introduced

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[2] summary, Strategic Alternatives estimates the following:
• One-time cost of implementing this Inquiry's recommendations: $99 million to $280 million.
• Ongoing annual cost of implementing the Inquiry's recommendations: $17 million to $49 million per year.
• One-time cost of steps taken by the provincial government since the Walkerton tragedy: $100 million to $520 million.7
• Ongoing annual cost of steps taken by the provincial government since the Walkerton tragedy: $41 million to $200 million per year, p. 6

into the Legislature in May 2001, and the provision of SuperBuild funding for water systems.[3]

Municipal ownership, and the ensuing responsibilities, should provide a high degree of public accountability in relation to the local water system. In the event of mismanagement, municipal residents are in a position to hold those responsible accountable through the electoral process. I see this as a significant advantage to municipal ownership.

The risks of unsafe drinking water can be reduced to a negligible level by simultaneously introducing a number of measures: by placing **multiple barriers** aimed at preventing contaminants from reaching consumers, by adopting a cautious approach to making decisions that affect drinking water safety, by ensuring that water providers apply sound quality management and operating systems, and by providing for effective provincial government regulation and oversight.

Multiple barriers to unsafe drinking water:
• ***Source protection*** keeps the raw water as clean as possible to lower the risk that contaminants will get through or overwhelm the treatment system.
• ***Treatment*** often uses more than one approach to removing or inactivating contaminants (e.g., filtration may be followed by chlorination, ozonation, or ultraviolet radiation).
• Securing the ***distribution system*** against the intrusion of contaminants and ensuring an appropriate free chlorine residual throughout is highly likely to deliver safe water, even when some earlier part of the system breaks down.
• ***Monitoring programs,*** including equipment fitted with warning or automatic control devices, are critical in detecting contaminants that exist in concentrations beyond acceptable limits and returning systems to normal operation.
• Well-thought-out, thorough, and practised ***responses to adverse conditions***, including specific responses for emergencies, are required when other processes fail or there are indicators of deteriorating water quality. P 73

All of these elements should be supported by the clear assignment of responsibility, competent operators and management, **effective regulation** and provincial oversight.

If an agreement can be produced and is acceptable to the MOE, then PTTW and Certificates of Approval granted by the MOE should follow the agreement. If the participants cannot agree on **allocations**, the MOE should determine the distribution of rights. Under neither of these circumstances should the total amount of water allocated or the total loading of pollutants under the combined PTTW or Certificates of Approval exceed the amount of water sustainably available or the system's assimilative capacity according to the watershed source protection plan. P 106

[3] The establishment of the Ontario SuperBuild Corporation was announced in the 1999 provincial budget. The Ontario Small Towns and Rural Initiative (OSTAR) is a "subsidiary initiative" administered by the Ministry of Municipal Affairs that is intended to fund infrastructure capital expenditures (i.e., water and sewage works) in smaller municipalities. *The OSTAR is set to end shortly, likely by passage of the Sustainable Water and Sewer Act.*

The development of plans intended to protect drinking water sources is, among other things, a land use planning activity. Most land use planning is currently done at the municipal level (under provincial guidance), and the provision of drinking water is a primarily municipal function. Source protection must be undertaken on a watershed basis – the level at which cumulative impacts on the drinking water sources become apparent. This implies the need for a planning body to operate at the watershed level, but with the full participation of the municipalities in the watershed. Such entities already exist for the watersheds that contain over 90% of Ontario's population: they are the **conservation authorities** p 98.

Regarding **water quantity and use**, the amount used is already large, and it is likely to increase substantially, to over 50% of the reliable annual runoff by 2021. P. 88 It will not be long before an amount equal to half of Ontario's reliably available annual water supply is used, in some form, at least once.

I make specific recommendations for improving a number of current practices in setting standards. These recommendations relate to such matters as turbidity levels, disinfection by-products, heavy metals and priority organics, selecting appropriate treatment processes, continuous monitoring of operational measurements, and collecting and testing samples. Of the 659 plants inspected in 2000, a total of 267 were identified as having **inadequate sampling programs.**

In addition to using mandatory abatement to achieve compliance with standards, it is also appropriate for the MOE to use voluntary abatement techniques to improve performance beyond minimum requirements. Voluntary abatement is particularly useful in regard to source protection. To avoid confusion, I will refer to this latter form of abatement as "technical assistance."

Environmental regulations and conditions on provincial approvals must be consistently and strictly enforced-the Environmental Protection Act, Ontario Water Resources Act, or the Safe Drinking Water Act when ready and the Fisheries Act in collaboration w MNR and DFO, enforcing Certificates of Approval and PTTW, land uses, effluent qualities, consistent with source protection plans P.122.

This recommendation runs slightly counter to the Gibbons Report that focused on cooperative approaches to environmental compliance.[4] – P.120…There is little room for negotiating voluntary compliance arrangements when public health is threatened. P 121.

CELA argued for the creation of a "**citizen's suit**" mechanism that "allows Ontarians to enforce drinking water requirements in civil court." The Ministry of the Environment

[4] After the Walkerton tragedy, the Government of Ontario retained Valerie A.Gibbons and Executive Resource Group to prepare a report and make recommendations on how the province could improve its approach to environmental regulation and oversight. The report, entitled *Managing the Environment: A Review of Best Practices*, was released in January 2001. In Gibbons's own words, the focus of the report was on "identifying best practices in other jurisdictions that could be implemented in Ontario as part of establishing this Province as a leading environmental jurisdiction and a model for others."76

should initiate a process whereby the public can require the Investigations and Enforcement Branch to investigate alleged violations of drinking water provisions. P. 453.

Some parties in Part 2 recommended that continuous on-line monitoring be available to the consumer so that any member of the public could access monitoring information on the Web… I am not recommending that they be implemented. Although such systems contain a good deal of information, in my view they will not be of much use to the average consumer…The combination of consumer confidence reports, an effective emergency response plan, and the annual province-wide reports I have recommended below will give consumers a more digestible, and ultimately more useful, package of information.

I urge the government to proceed with the proposed Integrated Divisional System and that it include in one **database**, or provide central access to, information related to source protection, each drinking water system in Ontario, and all data reasonably required by the drinking water branch and the local boards of health.

Main Elements of the Safe Drinking Water Act

Owner's Licences

The provincial government should require water system owners to obtain licences. In order to obtain a licence, an owner will have to have a Certificate of Approval for the facility, a PTTW, an approved operational plan, an approved financial plan, and an accredited operator.[5] The concept of a licence and its elements should be set out in the SDWA.

Standard of Care

The SDWA should include the standard of care to be applied to those who exercise the municipal oversight functions.

Approvals

The SDWA should set out the requirement for Certificates of Approval, Permits to Take Water, and operational plans.

Operating Agencies

In regard to operating agencies of municipal water systems, the SDWA should:

- set out a requirement that by a date to be fixed, all operating agencies of municipal treatment and distribution systems be accredited;
- require the promulgation of regulations that designate a body to design and oversee an accreditation system, set out certain minimum standards for the accreditation system (regarding classes of operator, biannual audits, and so on), and provide for government oversight of the process; and
- require that contracts with external operating agencies be public.

[5] It is important to be clear that accreditation is not a substitute for regulatory oversight, p. 454

Certification and Training of Operators
The SDWA should set out, or authorize regulations setting out, matters relating to the certification and training of operators.

Standard Setting
In respect of standard setting, the SDWA should: • provide for the creation of an advisory council on standards; and
• require regulations setting out standards for drinking water quality. I have recommended in relation to drinking water quality standards and elsewhere that there be a requirement or authority for making regulations. In making this recommendation, I am mindful of the submissions of some parties that as much of the regulatory detail as possible be set out in the SDWA itself. P.13 The rationale for this submission is that legislation is more difficult for a government to change, and therefore less likely to be interfered with, should the government's financial position deteriorate. P. 408

Treatment, Distribution, and Monitoring
The SDWA should require regulations setting treatment, distribution, and monitoring requirements for both municipal and private drinking water systems. The SDWA (or the relevant regulations passed pursuant to it) should clearly define the systems to which it applies. The SDWA should also set out the criteria and procedure for obtaining a variance in respect of treatment or monitoring standards.

Inspections
In regard to inspections, the SDWA should:
• create the Office of Chief Inspector – Drinking Water Systems;
• set out a requirement that if in the course of an inspection or an accreditation audit a deficiency is found, a follow-up inspection must take place within one year;
• require regulations dealing with the frequency of inspections and the actions required and response time in the event of a deficiency; and
• authorize regulations for various abatement tools.

Enforcement
In regard to investigations and enforcement, the SDWA should:
• maintain the investigation and enforcement function in a separate Investigation and Enforcement Branch (IEB) of the MOE; and
• authorize regulations regarding procedures and protocols for investigations and enforcement.

On Public Accountability

My recommendations are intended to improve both transparency and accountability in the water supply system. Public confidence will be fostered by ensuring that members of the public have access to current information about the different components of the system, about the quality of the water, and about decisions that affect water safety. Public confidence will also be raised by ensuring that those who make decisions about drinking water safety are accountable for the consequences of those decisions. – P.6

On the Constitution

It must be recognized that the environment is not an independent matter of legislation under the *Constitution Act, 1867,* that it is a constitutionally abstruse matter which does not comfortably fit within the existing division of powers without considerable overlap and uncertainty[6] Four powers set out in section 92 of the Constitution provide the provinces with a broad jurisdiction over drinking water safety: local works and undertakings (s. 92(10)); property and civil rights in the province (s. 92(13)); matters of a local or private nature (s. 92(16)); and municipal institutions in the province (s. 92(8)). Section 109 gives the provinces jurisdiction over natural resources.[7] This is reinforced by section 92A, which provides the provinces with exclusive jurisdiction over the development, conservation, and management of non-renewable resources. The provinces also have jurisdiction, held concurrently with the federal government, to regulate with respect to agriculture in each province. P.37.

Although this lead responsibility of the province is consistent with the allocation of powers set out in the Constitution, there is constitutional authority for significant federal participation in the area. Specifically, a number of federal powers, including those over navigation, fisheries, and agriculture, as well as the broad peace, order, and good government and federal spending powers, authorize a significant federal involvement in the subject matter. The federal responsibility for Indians and lands reserved for Indians results in a substantial federal role for drinking water safety on First Nations reserves.

The Report failed to consider water as an exhaustible natural resource may be subject to a public trust under the 1867 Constitution Act, Section 109.

Setting Standards in Canada

Drinking water quality standards are expressed as maximum acceptable concentration (MAC) limits for certain microbes, chemicals, and physical properties. Where data are insufficient but a hazard is suspected, an interim maximum acceptable concentration (IMAC) limit may be specified. Canada's drinking water quality standards are set in two steps. First, a committee of officials from the federal, provincial, and territorial governments, working without a great deal of public involvement or political oversight, examines toxicological and epidemiological evidence as well as other information and

[6] See R. Foerster, 2002, "Constitutional jurisdiction over the safety of drinking water," Walkerton Inquiry Commissioned Paper 2, pp. 3–14. (GET) See P.W. Hogg, 1992 (looseleaf) *Constitutional Law of Canada,* vol. 1 (Toronto: Carswell) at 18-11–18-12; *Schneider v. The Queen*, [1982] 2 S.C.R. 112. Note also that shared jurisdiction in these areas is emphasized by s. 36 of the *Constitution Act, 1982*, which commits both levels of government to provide essential public services of measurable quality to all Canadians.

[7] Section 109. All Lands, Mines, Minerals, and Royalties belonging to the several Provinces of Canada, Nova Scotia, and New Brunswick at the Union, and all Sums then due or payable for such Lands, Mines, Minerals, or Royalties, shall belong to the several Provinces of Ontario, Quebec, Nova Scotia, and New Brunswick in which the same are situate or arise, subject to any Trusts existing in respect thereof, and to any Interest other than that of the Province in the same.

publishes a set of recommended *Guidelines*.[8] Second, provinces and territories decide which of the contaminants and MACs ought to be adopted in their jurisdictions. Sometimes, as was the case for many years in Ontario, the federal–provincial *Guidelines* were carried over simply as guidelines or objectives by the implementing jurisdictions. In a few provinces, they were given the force of law by being made regulations under appropriate provincial legislation. In Ontario, a version of the *Guidelines* was incorporated as an objective into the Ontario Drinking Water Objectives (ODWO), until shortly after Walkerton, when they were extended and incorporated into law as Ontario Regulation 459/00 under the *Ontario Water Resources Act*.

For many years, as noted, the federal–provincial recommendations became "guidelines" or "objectives" in Ontario and other jurisdictions. Increased administrative flexibility resulted in weak enforcement. P.156.

Recommendation 21: I suggest that the federal–provincial process for proposing drinking water quality guidelines be refined to provide for greater transparency and public participation.

Given national concerns over water quality, that voluntary measures provide for weak enforcement and that NAFTA facilitates intensive livestock operations to establish in Canada, the Report should have recommended a National Safe Drinking Water Act rather than rely on unenforceable Guidelines[9]

On Full Costs

The costs (of implementing the recommendations) may be allocated among the provincial government, municipalities, and individuals in a variety of ways. No matter how they are allocated, given that this province has over 11 million people (and assuming that the Strategic Alternatives estimates are reasonably accurate), the overall cost of safe water for Ontario would still compare favorably with that in other jurisdictions, as well as with expenditures typically made by Ontario households for other services.

The provincial government should require municipalities to submit a financial plan for their water system, in accordance with provincial standards, as a condition of licence for their water systems.

For reasons of safety, full cost should be defined to include, at a minimum, all of the operating and capital costs of the system.[10] Operating costs arise from running the system on an ongoing basis, including its operation, repair, and routine maintenance of physical

[8] Federal–Provincial–Territorial Committee on Environmental and Occupational Health, Federal–Provincial Subcommittee on Drinking Water, 1996, *Guidelines for Canadian Drinking Water Quality*, 6th ed. (Ottawa: Health Canada) [hereafter *Guidelines*]. A more updated version of the *Guidelines* can be found at <http://www.hc-sc.gc.ca/ehp/ehd/catalogue/bch_pubs/summary.pdf> [accessed April 30, 2002].

[9] See Christine Elwell, NAFTA Effects on Water, produced for the Commission on Environmental Cooperation and available at www.sierraclub.ca/national.

[10] P. 304, See Strategic Alternatives, 2002b, p. 48; and C.N. Watson and Associates, 2001b, for the Canadian Environmental Law Association, "Financial management of municipal water systems in Ontario," Walkerton Inquiry Submission, p. 4-2.,

assets, and general administration and billing. Examples are costs for labour, materials, energy, taxes, and contract services. Operating costs generally recur on an annual basis and are normally recovered during the year in which they are incurred. One of the most important operating costs is the cost of training for management and operating staff. Training is an investment in the quality of operating costs also include the cost of continuous monitoring of water quality, periodic sampling of raw and treated water, and reporting of results to regulatory agencies and to the public, in accordance with provincial standards. As such, since the closure of provincial testing laboratories in 1996 full cost also includes the cost of laboratory services. P.305 Finally, it is reasonable to expect the cost of accreditation and operational planning, as recommended in Chapter 11, to be recovered from the water system. These costs include the cost to develop a quality management system and an operational plan according to a drinking water quality management standard for the industry, and to undergo third-party audit and peer review.

Given the Enron accounting scandal, and the value of water as an exhaustible natural resource, the Report should have recommended that third party audits of water system operational plans be undertaken by MOE, or another appropriate public body.

Sustainable Asset Management

Sustainable asset management entails both full-cost accounting and full-cost recovery for the costs of water infrastructure. The provincial government will need to define "full cost" as it applies to mandatory cost recovery and develop a methodology for sustainable asset management. It should do so as part of a provincial standard. This process should involve municipalities and industry stakeholders. It should also involve the Ministry of Municipal Affairs and Housing and the Ministry of the Environment, given their joint interest in this area...(and) should provide guidance regarding what constitutes a safety-related water system deficiency, in association with the provincial asset management standard, P.310.

What about the role of the public? First Nations? Conservation Authorities?

On Metering

There are compelling arguments, for reasons of conservation and efficiency, to implement full-cost pricing and metering, to the extent they are appropriate in the local circumstances, in designing rate structures for water services. P.316… Doing so gives them a better appreciation of the value of water, and encourages them to use it wisely. I encourage municipalities to adopt full-cost pricing in the context of the water system. Full-cost pricing generally means that most water system costs are recouped from the water rate; only water rates allow consumers to be charged according to the amount of water they use.

However, it may be that some costs are appropriately recouped from other municipal revenue sources, such as using property taxes for fire protection and capital charges for

system expansion. P.93 Municipalities may also decide to adopt exceptions to full-cost pricing for reasons of household affordability, as discussed

Given the recognized link between conservation and efficiency, the Report should have recommend a consistent provincial-wide policy to include the provision of water use meters in the design of rate structures for water services.

Environmental Costs

Water services include costs to the environment, some of which may not be accounted for in the financing of the water system. These costs result from the impacts of water takings and wastewater emissions in particular. Costs associated with these impacts are often considered "external" because they tend not to be incurred as actual expenditures by the municipality or its customers. P.65 Over the course of the Inquiry, there was a great deal of discussion about whether municipalities should recover an amount for environmental costs of water (and sewage) services, to support efforts to protect and clean up water sources. Many parties felt that they should, mainly because of the environmental benefits, but also because these costs are undeniably a part of the cost of our consumption of water and disposal of wastes into the environment. Other parties submitted that it is too difficult and contentious to assess and allocate environmental costs, and it would be unfair to charge water ratepayers without charging other users of the resource.

I do not consider it necessary for safety reasons to recommend that the provincial government require municipalities to incorporate environmental costs as part of the full cost of water systems. Municipalities should consider the option of raising funds from the water system to support at least part of the costs of implementing the measures I recommend relating to source protection. P.306

Given the debate around environmental cost and values, the government should announce a call for papers and a public discussion. What are the environmental benefits associated with sustainable water use, ecotourism, biodiversity, climate mitigation? What would be a reasonable contribution towards watershed protection and preservation?

The Proposed Sustainable Water and Sewage Systems Act

On December 12, 2001, the provincial government introduced Bill 155, proposing a *Sustainable Water and Sewage Systems Act, 2001*, for first reading. If it is passed into law, the proposed Act would require all municipalities to submit to the Ministry of Municipal Affairs and Housing a written report on the full cost of providing water and wastewater services to the public (the "full cost report"). In addition, the proposed Act would require municipalities to submit to the ministry, within six months of the approval of its full-cost report, a plan outlining how it intends to pay the full cost of water and wastewater services to the public (the "cost-recovery plan"). The regulations may specify those sources of revenue that a regulated entity is, or is not, permitted to include in the plan and may impose conditions or restrictions with respect to different sources of revenue. P. 302

In CIELAP's 6th Year Ontario Environment Report, we note significant concerns with both the Sustainable Water and Sewage Systems Act as well as the proposed Nutrient Management Act. The lead given to the private sector in developing financial and operating plans relating to water systems and to large farms in developing nutrient plans, that could supercede conflicting local by-laws, is a significant risk to the public interest, requiring a full public review[11].

Household Affordability

Ideally, water rates will rise as necessary to generate adequate resources for drinking water safety while remaining within reasonable boundaries of affordability. This should be possible in the large majority of municipalities. I also recognize, however, that rising rates may constitute a significant burden for low-income families and individuals. I do not see it as being within my mandate to comment on the means by which this problem might be addressed. There are a variety of possible approaches. Suffice it to say that, since water is an essential need, it would be unacceptable for those who are unable to pay for safe water to go without. The provincial and municipal governments should ensure that this does not occur by whatever means they consider appropriate.

Given the Report's characterization of water as an essential need, it fails to clearly recognize the human right to safe and affordable drinking water.[12]

On the Role of the Ministry of the Environment

The Ministry of the Environment (MOE) is currently the key player in the management of the drinking water system.[13] It administers both the *Environmental Protection Act* (EPA) and the *Ontario Water Resources Act* (OWRA) – the two statutes most directly related to the safety of drinking water. The MOE sets standards for water quality and applies those standards through a system of approvals, permits, certification, monitoring, inspection, and enforcement. It can take action to ensure compliance or it can initiate prosecutions or applications for court orders to prevent damage. The legislation also

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[11] In Perth County, where the West Perth township council passed a zoning bylaw limiting the size of livestock operations to 600 animal units and stipulating the intensity and location of manure-spreading activities, the bylaw was challenged before the Ontario Municipal Board by several farm operators and by the Ministry of Municipal Affairs and Housing. Protection of drinking water was the principal argument advanced by the council in defence of the bylaw, and the council bolstered its case by demonstrating that existing regulations are not adequately enforced. The board upheld the validity of the bylaw. The appeal to the Divisional Court was dismissed. See *Ben Gardiner Farms Inc. v. West Perth (Township)*, ([2001] O.J. No. 4394 (S.C.J. (Div. Ct.)). – p56. But the draft Nutrient Management Act could reverse this decision, see www.cielap.org/whats new

[12] See Elwell, ibid, fn. for further discussion and references.

[13] The Ministry of the Environment was created in 1972. It absorbed the Ontario Water Resources Commission, which constructed and operated water and sewage works from 1956 to 1971. See N. d'Ombrain, 2002, "Machinery of government for safe drinking water" Walkerton Inquiry Commissioned Paper 4; and J. Merritt and C. Gore, 2002, "Drinking water services: A functional review of the Ontario Ministry of the Environment," Commissioned Paper 5.

authorizes the MOE to approve the taking of water, the construction of water and sewage treatment facilities, and the licensing of well contractors and technicians. Section 6 of the EPA prohibits the discharge into the natural environment of any contaminant in excess of the limits prescribed in regulations[14].

The OWRA serves a dual purpose in dealing with both environmental protection and the treatment and distribution of drinking water. It is the main statute for the management and protection of surface water and groundwater in the province and makes the Minister of the Environment responsible for "the supervision of all surface waters and ground waters in Ontario" for the purposes of the Act. The OWRA also empowers the MOE 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."

Prior to August 2000, the province applied two main policy guidelines to decisions about drinking water protection and management: the Ontario Drinking Water Objectives (ODWO)31 and the Chlorination Bulletin. 32 The ODWO were first introduced in 1964. They were last revised in 1994 and superseded by Ontario Regulation 459/00 in August 2000 and included a requirement that all public water supply systems using groundwater be sampled for the following physical parameters: turbidity, disinfectant residuals, volatile organics, inorganics, nitrates/nitrites, and pesticides and PCBs – P.44

Ontario Regulation 459/00[15], which gave the ODWO (now the Ontario Drinking Water Standard) the force of law. The conditions of approval for new facilities are based on six broad criteria that are addressed as standards under the ODWS. The six standards, performance, monitoring and recording, operations and maintenance, notification and reporting, conditions as compliance/enforcement tools, and other conditions provide the basis for inspection and enforcement of compliance. Currently, the Environmental Assessment and Approvals Branch of the Operations Division issues Certificates of Approval for waterworks under the OWRA.

The regulation applies to all water treatment and distribution systems requiring approval under section 52(1) of the OWRA which states that no person shall establish, alter, extend or replace new or existing waterworks without a Certificate of Approval. [16]

[14] However, animal wastes disposed of in accordance with normal farm practices are exempt from section 6.

[15]Ontario Regulation 459/00, Regualtion Made Under the Ontario Water Resources Act entitled Drinking Water Protection.

[16] The Province has historically delivered water services directly, especially following the creation of the Ontario Water Resources Commission in 1956. The MOE used to own and operate about 25% of all water and sewage treatment plants in Ontario. In 1993, the MOE's water treatment division was made into Ontario Clean Water Agency which assumed ownership of those plants. In 1997, the *Water and Sewage Services Improvement Act* transferred ownership to municipalities. In total, 230 plants were transferred. See Association of Municipalities of Ontario, 2001, p. 23. The Province continues to provide operational services for water systems through OCWA. It has 95% of the market for municipalities that choose to outsource the operation of such facilities; the remaining 5% is operated by the private sector. At the end of 2000, the agency operated 161 water treatment and 233 sewage facilities for more than 200 municipalities; 222 of its 383 contracts were with small municipalities and were worth less than $100,000 annually.

On Watershed Source Protection Plans

I recommend that two new branches be created within the MOE. The Watershed Management Branch and a specialized Drinking Water Branch within the MOE. responsible for overseeing drinking water treatment and distribution systems and for granting most of the approvals necessary for operating a drinking water system.p 14. I recommend a new form of approval – the owner's licence – that will collect in one set of documents all the approvals and conditions necessary for operating. The Drinking Water Branch (see Recommendation 69) should have the responsibility for recognizing the drinking water quality management standard that will apply in Ontario and for ensuring that accreditation is properly implemented. Following the adoption of the provincial standard, the requirement for owners of water systems to have an accredited operating agency should be a statutory requirement under the *Safe Drinking Water Act* that I recommend. Operational plans should be approved and reviewed as part of the Ministry of the Environment approvals and inspections programs. P.359

Watershed Source Protection Plans

The first barrier to the contamination of drinking water involves protecting the sources of drinking water.[17] I recommend that the Province adopt a watershed based planning process, led by the MOE and by the conservation authorities 4 (where appropriate), and involving local actors. The purpose is to develop a source protection plan for each watershed in the province. The plans would be approved by the MOE and would be binding on provincial and municipal government decisions that directly affect drinking water safety. Large farms, and small farms in sensitive areas, would be required to develop water protection plans that are consistent with the watershed source protection plans.

If source protection plans are to be meaningful, they must be respected by the various actors in a watershed. Once the MOE has approved a plan, therefore, provincial Permits to Take Water and Certificates of Approval for sewage treatment plants and any other activities that pose a threat to water quality will have to be consistent with the approved plan. In cases involving a significant direct threat to drinking water sources, municipal official plans and zoning decisions will also need to be consistent with the local source protection plans[18]. – P.10 In all other situations, municipal official plans and zoning decisions should at least take the relevant source protection plans into account. P.91

[17] Ontario, Ministry of the Environment and Energy and Ministry of Natural Resources (MOEE/ MNR), 1993a, *Watershed Management on a Watershed Basis: Implementing an Ecosystem Approach* (Toronto: Queen's Printer); Ontario, Ministry of the Environment and Energy and Ministry of Natural Resources (MOEE/MNR), 1993b, *Subwatershed Management* (Toronto: Queen's Printer); Ontario, Ministry of the Environment and Energy and Ministry of Natural Resources (MOEE/ MNR), 1993c, *Integrating Water Management Objectives into Municipal Planning Documents* (Toronto: Queen's Printer). Watershed Planning Implementation Project Management Committee (WPIPMC), 1997, *An Evaluation of Watershed Management in Ontario*
*w*ww.ene.gov.on.ca/envision/techdocs/3513e.pdf>[accessed May 1, 2002]

[18] The *Planning Act* provides the Minister of Municipal Affairs and Housing with the power to amend official plans if a matter of "provincial interest" such as "the supply, efficient use and conservation of water".

In addition to using mandatory abatement to achieve compliance with standards, it is also appropriate for the MOE to use voluntary abatement techniques to improve performance beyond minimum requirements. Voluntary abatement is particularly useful in regard to source protection. To avoid confusion, I will refer to this latter form of abatement as "technical assistance." P.439.

But if source protection is the first barrier to unsafe drinking water, why was the Report satisfied that "voluntary abatement is particularly useful in regard to source protection"?

Where there is no conservation authority, the MOE should define the geographic extent of the watersheds for planning purposes. In recommending that the provincial government adopt watersheds for planning purposes, I recognize that groundwater aquifers may be located in more than one watershed. In such instances, there will be a need to coordinate the planning process among the watersheds. P.95

Recommendation 17: The regulation of other industries by the provincial government and by municipalities must be consistent with provincially approved source protection plans. A large number of other industries and activities may have an impact on sources of drinking water. Those mentioned include the following:
• the spreading of road salt;
• forestry;
• mining;
• urban development; and
• industrial plants.

These industries and activities can pose just as serious threats to the safety of drinking water as those resulting from farming operations. I envision that the potential for these activities to contaminate drinking water sources should be limited by the appropriate regulatory agencies in accordance with the watershed-based source protection plans. In the end, I recommend that no activities, whatever the source, be permitted to contaminate drinking water sources in contravention of source protection plans. P.145 Did not mention bottle water industry

Given the link between water quality and water quantity, the Report should have specifically found that the expanding bottle water industry in the province is also a direct threat to safe drinking water, especially from groundwater supplies.

On Water Quantity and Use

It was pointed out that although it is often said that Canada has more fresh water per capita than just about any other country, such statements usually refer to the gross stocks of water rather than the annual net runoff. A pattern of water use that exceeds annual net runoff is often compared to dipping into capital instead of living on interest. There is no question that when it comes to water resources, sustainability must be a cornerstone of public health. P.84. Comparing consumptive use in Ontario to total runoff shows that, in

total, Ontarians consume very little of what is reliably and sustainably available.[19] Much less than 1% of the average annual runoff is consumed in most of Ontario, and just under 1% (or 1.25% of reliable runoff) is consumed in the Great Lakes basin.

On the other hand, the total intake of water (which may include some double counting, because water is reused as it moves through a watershed) in 1996 was approximately 38% of the reliable annual runoff, and may rise to over 50% by 2021. This amount is already large, given the amount of water in the province, and it is likely to increase substantially, to over 50% of the reliable annual runoff by 2021. It will not be long before an amount equal to half of Ontario's reliably available annual water supply is used, in some form, at least once.

While the Ministry of Natural Resources (MNR) does not play a major role in the provision of safe drinking water, it is the lead ministry for programs primarily related to water quantity, including drought and low water levels; flood forecasting, warning, and emergency response; watershed management; dams; water diversions, transfers, and withdrawals; and water conservation. The MNR works closely with local conservation authorities, and is currently developing a groundwater-monitoring network with the MOE. [20]

On Conservation Authorities

I recommend that the provincial government's responsibility for protecting water sources be implemented on a watershed basis through the already existing conservation authorities, rather than by establishing new local bodies to fulfill this role. If a conservation authority is unable to carry out the new responsibility, the MOE itself should do so. I expect that the use of existing institutions will facilitate the adoption of these recommendations and reduce the costs of implementing them.

The MNR administers the *Conservation Authorities Act.* There are 36 conservation authorities in Ontario. Their functions include the control of potential flood damage, and in many cases watershed management including planning, education, prevention, treatment, and monitoring. In managing particular watersheds they also protect lands and wetlands for recreation and wildlife and have the power to acquire lands and build structures such as reservoirs and dams. The relevant municipality (or municipalities, if the watershed extends into other municipalities) appoints the members. They are financed through user fees, municipal levies, and provincial grants.P. 57 A substantial portion of the province (containing about 10% of the population) is not covered by a conservation authority.

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[19] International Joint Commission, 2000, *Protection of the Waters of the Great Lakes: Final Report to the Governments of Canada and the United States* <www.ijc.org/boards/cde/finalreport/ finalreport.html>

[20] E.O. Frind, D.L. Rudolph, and J.W. Molson, 2001, "The case for groundwater protection in Ontario: Results of the workshop held at the University of Waterloo, May 1, 2001 – A contribution to the Walkerton Inquiry, Phase II," Waterloo, Ontario, pp. 16–19 and see Ontario, Ministry of the Environment, 2001, "Terms of Reference for Hydrogeological Study to Examine Groundwater Sources Potentially under Direct Influence of Surface Water" <http:// www.ene.gov.on.ca/envision/techdocs/4167e.pdf> [accessed April 30, 2002].

The conservation authority or the MOE – whichever body is coordinating the draft plans' development – should ensure that a committee consisting of affected local groups is convened. That committee should be responsible for developing the draft watershed-based source protection plan. P.110 The Plan would include a model that describes the fate of pollutants in the watersheds, P.104[21]

If an agreement can be produced and is acceptable to the MOE, then PTTW and Certificates of Approval granted by the MOE should follow the agreement. If the participants cannot agree on allocations, the MOE should determine the distribution of rights. Under neither of these circumstances should the total amount of water allocated or the total loading of pollutants under the combined PTTW or Certificates of Approval exceed the amount of water sustainably available or the system's assimilative capacity according to the watershed-based source protection plan. P.106

Many conservation authorities are tested, publicly respected, and accepted organizations that can build on a significant amount of goodwill in their communities and among affected local groups to facilitate source protection planning. I am reluctant to recommend the creation of new bodies when existing institutions are able to fulfill the role.[22] If the source protection planning process receives appropriate guidance, participation, and approval from the MOE, I do not believe that there is a significant risk that municipalities will exert undue influence on the process. I am recommending that the planning process not only include affected parties, but also be completely transparent to the public. I believe that public scrutiny affords significant protection against unreasonable behaviour. Given that the province will ultimately have to approve all source protection plans, there will be sufficient safeguards to address the concern that the local political actors would be able to impose unreasonable requirements on the planning process. P.101

On the Role of Municipalities[23]

In making the recommendations in this chapter, I have considered the following general objectives:

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[21] There should be a narrow right of appeal for watershed-based source protection plans. I am concerned that appeals should not become commonplace and, in effect, emerge as the main forum for resolving planning issues. The right to appeal should be restricted to parties who are directly affected and should be limited to failure of a plan to conform to provincial guidelines or failure to follow the proper process in developing a plan. P. 115

[22] I received one submission suggesting that rather than relying on the conservation authorities for source protection, river basin (or catchment) management authorities should be established to manage and regulate source protection and other regulatory aspects of drinking water provision on a watershed basis.33 It was suggested that these bodies would also have authority for land use planning and for granting permits and licences. The number of drinking water providers in the province would be reduced to match the number and geographic extent of the catchment management authorities. This proposal was based on experiences in Europe and Great Britain. One of the principal advantages of the new authorities, it was argued, would be a greater independence from municipalities. Without such independence, it is feared, improper political influence could adversely affect the process of promoting drinking water safety. I am not convinced that such a radical change in the governance of water and water systems is necessary., p. 107

[23] From 1996 to January 2002, 566 municipalities were amalgamated into 198, and the total number of municipalities in Ontario was reduced from 815 to 447; Ministry of Municipal Affairs and Housing, "Restructuring *Flash*News" <http://www.mah.gov.on.ca/business/flashnews/flashnews-e.asp> [accessed April 3, 2002].

• public accountability for decisions relating to the water system,
• effective exercise of the owner's oversight responsibilities,
• competence and effectiveness in the management and operation of the system,
• full transparency in decision making. P.278

Water systems in Ontario have been owned and operated by municipalities or other local institutions for well over a century. Local decision makers have governed the delivery of water services from the early days of the industry. About 8.9 million Ontarians – 82% of the population – receive their drinking water from municipal water systems.5 The systems range from single groundwater supplies to large networks of treatment plants and distribution systems.[24]

Municipalities have historically played a central role in this area for good reason. Water is unique as a local service. It is, of course, essential to human life and to the functioning of communities; in an urban environment, it is simply not possible to go without a communal water system. Water systems are also normally built around local water sources. As the Walkerton tragedy so clearly showed, the consequences of a failure in the water system tend to be most seriously felt by those who depend on it locally

First, the owners of municipal water systems should be required to have, and to periodically renew, an MOE licence for their water system(s). Second, in addition to the current approvals requirements, an owner's licence should have the following conditions:
• a requirement to have an accredited operating agency in accordance with a provincially recognized quality management standard
• a requirement to have an operational plan for the water system – focusing on operating and performance requirements; and
• a requirement to have a financial plan for the water system in accordance with provincial standards for full-cost recovery and asset management. P.281. In proposing each municipality to have a financial plan that provides for full cost recovery and for proper asset management in accordance with provincially established standards. Provincial subsidies should be available only in exceptional cases – specifically, when safety is at risk and when no other alternatives, either technological or managerial, are available. P.13

There are a number of different ways in which a municipality may choose to manage and operate the water system it owns. Possible approaches include a variety of internal management structures, regionalization or consolidation with other municipalities, and contracting with external operating agencies such as the Ontario Clean Water Agency, various private operators, or other municipalities. There are advantages – and, in some

[24]The first communal water and sewage systems in Ontario were built in the mid-1800s. Municipal ownership and operation of these systems came about after the passage of the *Baldwin Act* in 1849. See Ontario Sewer and Watermain Construction Association, 2001, "Drinking water management in Ontario: A brief history," Walkerton Inquiry Submission. Today, municipal authority to provide water services arises from various provincial statutes, including the *Municipal Act*, the *Public Utilities Act*, the *Local Improvement Act*, and the *Planning Act*. For a more detailed description of relevant legislation, see Strategic Alternatives, 2002a, "Governance and methods of service delivery for water and sewage systems," Walkerton Inquiry Commissioned Paper 17, pp. 13–22. The remaining 18% are served by private water systems, such as household or communal wells or direct surface water connections.

cases, drawbacks – to each choice. What is best for a particular municipality will depend on its circumstances. The first consideration, however, in choosing any management or operational structure should always be safety. It will be through the process of mandatory accreditation and operational planning that we will gain assurance about the competence of operating agencies, whether public or private.

Despite natural monopoly function of water systems and the need to ensure public accountability, Report found that the decision by municipalities to operate its water system was distinct from the issue of municipal ownership. This opinion contradicts the Reports conclusions on the need for MOE integrity in terms of policy and operational functions.(said it better)

I recommend that each municipality review the available options, with provincial guidance where required, to determine the management structure that will best promote the safety of its drinking water. Whatever management structure is chosen, the arrangement must be such that the municipality, as the system's owner, remains accountable for the provision of safe drinking water. To promote accountability, I recommend that the persons designated by a municipality to oversee the management and operation of its water system be held to a statutory standard of care for the safety of the water, like the duty of a director of a corporation.

There is no one-size-fits-all solution. Municipalities can decide for themselves how best to structure the delivery of water services within the provincial regulatory framework. I do not see a need for the provincial government to prescribe specific changes to the municipal governance structure except in the most extreme circumstances of noncompliance. P.282

The province should remain neutral regarding the municipalities' decision to engage or not to engage the private sector to operate local water systems, P. 322.

The elected Public Utility Commission is, in my view, a very attractive model because of the balance it achieves for accountability, expertise, and business autonomy. P. 287[25] The Chair of the Peterborough Utilities Commission recommended to the Inquiry that all municipalities adopt this model. He cited numerous benefits including competent oversight by the board of directors, dedicated revenues, and enhanced borrowing capacity without the need for private sector involvement. He also indicated that existing economies of scale can be maintained under this model by purchasing services from the municipality. P.288

The Report's review of options for the operation of municipal water systems failed to acknowledge that if a Public Utility Corporation model is selected, the Ontario Business Corporation Act removes public access to freedom of information requests, otherwise

[25]In a few cases where regional governments were established, the responsibility for water is shared between the regional government and the lower-tier governments.42 The regional government treats the water and sells it at a wholesale rate to the lower-tier governments, which in turn distribute it to consumers. The lower-tier governments also collect revenues from water rates. P 293

applicable to internal water departments or commissions, thus reducing public access to information and accountability.

The Report noted: Municipalities are permitted to borrow for capital spending as long as they are within their borrowing limit as set out by the provincial government. This means a municipality's debt charges cannot exceed 25% of its local revenue sources without approval from the Ontario Municipal Board. Most municipalities are well within this limit, and thus have room to borrow within provincial guidelines. P.90 This estimated borrowing capacity would be available to finance future capital costs. P.315.

On the Private Sector

In Ontario public sector regulation, ownership, and management is the order of the day. The dominant pattern is provincial regulation, and municipal ownership and operation of water systems. P.100 Municipalities have had the option of contracting with private actors to operate their water system, but have generally chosen not to. Yet, even in what would universally be acknowledged as a public system, the private sector has a notable presence.[26] P.101.

The provision of water services is almost a natural monopoly. It is not realistic to think of several service providers – governments or private actors – competing in the offering of some of the key services in question. Just as there can practically be only one electrical power grid in any given territory, there will be only one water system. Unlike electricity, however, which can have several electricity providers competing over a common grid, a water system doesn't usually accommodate multiple suppliers. This is because distinct lines of accountability for the quality and reliability of the water that is carried through the pipes is difficult. P.321

Given that municipal responsibility and accountability flow from municipal ownership, I see no advantage for safety reasons to turning over ownership of municipal water systems to either the provincial government or to the private sector. P.323.

Over 80% of Ontarians are served by municipally owned water systems. Although municipalities are permitted to sell their systems, there was no suggestion during the Inquiry that any municipalities are even considering doing so. Moreover, nothing I heard during the Inquiry led me to conclude that I should make recommendations about the ownership of municipal systems in order to address water safety issues. The recommendations in this area are therefore premised on continued municipal ownership. P.11

The private sector offers an option for municipalities seeking to contract with an external operating agency. There are a number of companies in Ontario that are capable of

[26] See D. Cameron, 2002, "Drinking water safety: Do ownership and management matter?," Walkerton Inquiry Commissioned Paper 18, c. 4, for an account of the different ways in which three Ontario municipalities coped with the challenges they faced. The three municipalities reported on are the regional municipalities of York and Peel, and the amalgamated City of Hamilton.

operating all or part of a municipal water system. So long as an operating agency is accredited and regulated effectively, in my opinion the question of whether it is publicly or privately owned does not impact on issues of safety. Ensuring public accountability for the safety of drinking water is very important, however, and, in cases where a municipality decides to employ a private operating agency, the means to ensure accountability necessarily shifts to the contractual relationship with that agency. I discuss this issue in section 10.4 of this chapter. P.296

It is thus more appropriate to speak of designated roles for the private sector in the water field, than it is to speak comprehensively about the wholesale "privatization" of water.[27]The latter suggests the existence of a market in a monopolistic industry in which, for the most part, there will be regulated service delivery by a single supplier, not market competition among multiple actors. To the extent that the advantages claimed for privatization rest on assumptions about the benefits of the market mechanism, therefore, they cannot be assumed to automatically exist in the largely monopolistic water industry. Normal market mechanisms simply do not apply, or apply only at specific points in the process, such as the bidding for a contract.

The operating agreement, or contract, becomes "the means by which the public and private interest are brought together." P.106 It effectively transfers responsibility for addressing a portion of the public interest to the private operator who is accountable for doing so only within the terms of the contract; the longer the term of the contract, the more this is the case. P.107 As such, the operating contract between the public and private entities takes on a great deal of importance in terms of the municipality's responsibility for the system. It lays out the respective responsibilities, allocates the benefits, and assigns the risks between the two parties. Disputes will be resolved according to the contract or otherwise through the legal process.

Given the importance of the operating agreement, municipalities must ensure they are fully apprised of the legal implications in terms of future liability, financial responsibilities, information disclosure, dispute resolution, and enforcement.[28]

Despite the Reports acknowledgement that the implications of the NAFTA's investment provisions, not to mention national treatment obligations in services and restructured public monopolies, was a subject discussed at some length at the Inquiry, the Report failed to recommend provincial or national standards or protocols or any advise to local

[27] According to Canadian Environmental Law Association/Canadian Union of Public Employees/
Ontario Public Sector Employees Union, 2001, "Water services in Ontario: For the public, by the public," Walkerton Inquiry Submission, p. 14: The ways in which private companies can be involved in the water supply and delivery systems vary. The most common are for municipalities to contract with private companies to design and build water treatment plant, to clean out water mains or carry out other maintenance activities, and to buy technologies from private companies for water filtration and other kinds of water treatment methods. These types of private sector involvement in the municipal water supply and delivery system are not considered to be forms of privatization because the municipality simply purchases a clearly defined service and maintains total ownership and daily control over operations., see Footnote 102, p. 322 of Report.

[28] This includes the implications of investment provisions under the North American Free Trade Agreement and other relevant trade agreements, a subject discussed at some length during Part 2, footnote 108, p. 326 of Report. See also Steven Shrybman, Thirst for Control, www.cupe.ca/national.

governments on the public interests at stake when significant governance structures are changed. A full and public discussion on the trade aspects of water system governance is urgently needed. Water is a common and exhaustible natural resource, possibly subject to a public trust under the 1897 Constitution Act, Section 109, see above p. and access to it is a recognized human right.

On Standards and Technology

After source protection, the next set of barriers to the contamination of drinking water relies on having in place effective standards and technology for treating water and for monitoring its quality as it makes its way to the consumer. I recommend that Ontario's standards and technology be continually updated according to the most recent knowledge and experience. The processes for doing so should be open and transparent. In addition, I make specific recommendations for improving a number of current practices in setting standards. These recommendations relate to such matters as turbidity levels, disinfection by-products, heavy metals and priority organics, selecting appropriate treatment processes, continuous monitoring of operational measurements, and collecting and testing samples.

New threats will continue to be identified and old ones will be periodically re-evaluated. I recommend the establishment of an expert advisory council to advise the Minister of the Environment on setting standards. There are, in particular, two areas where current standards may be obsolete: the use of total coliform [29]as an indicator, and the apparently lax standard for turbidity. P.149

An enormous array of chemicals may be present in drinking water sources. Metals such as lead, cadmium, or chromium; organics including benzene, toluene, vinyl chloride, pesticides[30], herbicides, and some pharmaceuticals; radiological contaminants like radon or uranium; and even the by-products of drinking water disinfection may all be present to one degree or another. Possible sources include industry, landfills, urban runoff, sewage disposal, agriculture, atmospheric transport, and nature itself: cyanotoxin, for example, is produced by blue-green algae. Ontario Regulation 459/00 specifies maximum acceptable concentration (MAC) levels for 54 chemicals, 14 natural radionuclides, and 64 artificial radionuclides. In addition, there are interim maximum acceptable concentrations (IMACs) for another 22 chemicals. Appendix A to this report compares the limits specified in Ontario Regulation 459/00 with those in the federal-provincial *Guidelines* and the standards set by the U.S. Environmental Protection Agency, Australia, and the World Health Organization. P.165 Some chemicals ranked low on the risk scale simply because scientific information was lacking.

While the new Ontario Drinking Water regulation may now set limits on 54 chemicals and other standards, the Report should have noted that in fact the province only provides

[29] Recently, better tests specific for *E. coli* have become available, that is cheaper and quicker to measure directly the species of interest than the broad family of look-alike bacteria, … regulatory standards should follow.p 163

[30] The only pesticide identified by one study as being a potential problem in Ontario drinking water was **atrazine**, detected "in 6.6 and 10.5% of approximately 1,300 domestic wells sampled in the winter and summer respectively" of Ontario farm wells surveyed in 1998.82 This is a small number p. 175.

municipalities and conservation authorities with laboratory testing on 38, see CIELAP forthcoming publication "A Checklist of Provincial Water Quality Standards"

Those most likely to repay investment in research were nitrates[31] and the pesticide atrazine in rural drinking water wells, and lead and disinfection by-products in municipal systems. [32]An expert meeting added fluoride, water treatment chemicals, endocrine-disrupting substances, and pharmaceuticals to the list as chemicals that should receive closer scrutiny. P.166

The chemicals added to water for disinfection can form disinfection by-products (DBPs). Chlorine may react with dissolved organic material in water to form trihalomethanes (THMs) and haloacetic acids. At high-dose levels, some of these chemicals are carcinogenic. P.171

Turbidity is important because microbes can shelter themselves on, within, or behind (in the case of ultraviolet radiation disinfection) suspended particles. Moreover, to the degree that the particles have an organic origin, their downstream reaction with chlorine will not only reduce the chlorine residual but may also produce unacceptable levels of DBPs.[33] Turbidity by itself has little meaning for public health. Rather, it is the consequences of turbidity that are worrisome: the lower the level, the better.

In addition to a review of old standards on the basis of new evidence, there is a need to provide a first round of examination for many chemicals, particularly when a standard has been struck on the basis of the precautionary principle, in advance of experimental evidence, including bromate, aluminum, and uranium.[34] P.171

On the Precautionary Principle and risk management

The key features of a good approach to managing risk include being preventive rather than reactive; distinguishing greater risks from lesser ones, and dealing first with the former; taking time to learn from experience; and investing resources in risk management that are proportional to the danger posed.

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[31] **Nitrates** are found in concentrations exceeding the levels specified in Ontario Regulation 459/00 in many wells in rural Ontario. One study indicated that 14% of Ontario's rural wells contain nitrates in concentrations exceeding the MAC set out in the regulation.58 Nitrates are also found in treated municipal water, but they rarely exceed provincial standards. 168

[32] Regarding **Arsenic**, we can expect the Federal–Provincial Subcommittee on Drinking Water to take careful note of the U.S. debate and the scientific evidence underlying it and to propose any necessary change to the Canadian *Guidelines* IMAC level of 25 ppb (0.025 mg/L). Ontario is not known to have arsenic problems, even though arsenic is often a by-product of gold mining and occurs elsewhere in groundwater in Canada, P.167 The Ontario Centre for Environmental Technology Advancement and operating under a licence agreement with Environment Canada within the Environment Technology Verification program , including water and wastewater treatment technologies had a recent success with a novel process to remove arsenic from drinking water. P 222

[33] The current standard of 1 NTU73 is an example of the Federal–Provincial Subcommittee on Drinking Water lagging behind good practice among the better water providers, most routinely produce water at 0.3 NTU or better, p. 172.

[34] Both the Federal–Provincial Subcommittee on Drinking Water and the U.S. Environmental Protection Agency publish priority lists of contaminants that are candidates for regulation.7979
See <www.hc-c.gc.ca/ehp/ehd/bch/water_quality/priority_lst.htm>; <www.epa.gov/safewater/ccl/cclfs.html> [accessed April 30, 2002]. The US has almost completed a new codification of its primary surface water standard, the Long-Term Stage 2 Enhanced Surface Water Treatment Rule, which will come into effect over the next several years.97 p 179.

Recommendation 19: Standards setting should be based on a precautionary approach, particularly with respect to contaminants whose effects on human health are unknown.

In setting up systems that affect human health, decision makers usually err on the side of safety, regardless of the costs. A refinement to this approach is the precautionary principle, a guide to environmental action that has been recognized in international law and cited approvingly by the Supreme Court of Canada. [35] Precautionary measures include setting standards to account for uncertainties, investments in risk mitigation or alternative technologies, and investments in research. This prudent approach must still consider costs, but as prevention usually costs much less than remediation, the precautionary principle has a role to play in risk management and should be an integral part of decisions affecting the safety of drinking water. P.150

On Alternative Technologies

Chlorine is the oldest and most widely used disinfectant. It is effective against bacteria and viruses, though not against encysted protozoa. *Giardia* is very resistant to chlorine, whereas *Cryptosporidium* cannot be inactivated by chlorine doses that are compatible with drinking water treatment. P.195

Chlorine has disadvantages – handling problems, need for precise dosage, DBPs – as well as one other: the final effluent must be dechlorinated before release because even the small quantities associated with a chlorine residual in drinking water distribution systems can be harmful to aquatic fauna. Fish, crustaceans, and other aquatic organisms breathe dissolved oxygen, with the result that they will be exposed to dissolved chlorine through their respiratory apparatus as well as through their gastrointestinal tract. [36]

Use of Chlorine Dioxide: A strong oxidant used mainly for taste and odour control, chlorine dioxide is also used to oxidize iron and manganese. Since it is highly unstable, it cannot be transported or stored and must be produced on site on a continuous basis. It is effective against *Giardia* and *Cryptosporidium,* and its application is mainly restricted by the limitations on its undesirable inorganic by-products, chlorate and chlorite.

Ozonation: The main chemical alternative to chlorine, ozone is used in several of the larger treatment plants in Ontario, notably in those of Windsor and Kitchener-Waterloo. Widely used in Europe, the United States (more than 400 plants), and Quebec (more than

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[35] The Supreme Court of Canada has said that "there may be a 'currently sufficient state practice to allow a good argument that the precautionary principle is a principle of customary international law'": 114957 Canada Ltée (Spraytech, Société d' arrosage) v. Hudson (Town), [2001], S.C.J. No. 42 at para. 32. 9 114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)., and see p. 76-78 of the Report for further discussion.
10 Canada, Treasury Board Secretariat, 1994, Risk Management Policy; and Canada, Treasury Board Secretariat, 2001, Integrated Risk Management Framework <www.tbs-sct.gc.ca/pubs_pol/dcgpubs/RiskManagement/siglist_e.html> [accessed December 23, 2001]. See also Canada, Privy Council Office, 2000, Risk Management for Canada and Canadians: Report of the ADM Working Group on Risk Management (Ottawa: Privy Council Office

[36] L. Ritter et al., 2002, "Sources, pathways, and relative risks of contaminants in water," Walkerton Inquiry Commissioned Paper 10., "Threats to sources of drinking water and aquatic ecosystem health in Canada,"*NWRI Scientific Assessment Report Series 1* (Burlington, ON: National Water Research Institute)

20 plants), ozone is used to oxidize organic matter (including trihalomethane precursors); to reduce objectionable taste, odour, and colour; and to inactivate pathogens. Ozone is effective against bacteria, viruses, and protozoa. It is one of the few disinfectants capable of inactivating *Cryptosporidium*. P.197 The ozonation by-product of concern is bromate, formed by the oxidation of bromide.[37]

Technically, wastewater treatment shares many features with drinking water treatment. An impure influent must be cleaned, but not to the same standards as those required for drinking. Rather, the standards are constructed (somewhat loosely) around the notion of no harm being done to receiving waters or their fauna. It is not just technical similarity that makes the topic worthy of concern, however. Protecting source waters by introducing sewage treatment is one of the most important public health measures ever devised Anaerobic digestion, the normal process in a septic tank, produces methane gas and a relatively inert sludge.

Sewage treatment plant discharges should be brought within the cumulative loadings established under the watershed management plans. P.211

On Alternative Treatment

It is in this context that alternative technologies such as ultraviolet radiation (UV) disinfection and membrane filtration have recently been recognized as efficient technologies to remove or inactivate these chlorine-resistant pathogens in drinking water. P.201 UV radiation is extremely effective against chlorine-resistant pathogens such as *Cryptosporidium* and *Giardia* and requires small dosages for bacterial inactivation, whereas the inactivation of certain viruses requires significantly higher dosages. P 202 Perhaps the most obvious attraction of UV is its low cost. It is increasingly thought of as inexpensive insurance, and several utilities are installing UV without being compelled to do so by regulatory obligation.[38] Membrane filtration is used in a number of medium-sized communities in Ontario, notably Owen Sound and Thunder Bay; Walkerton now has such a system, operated under contract by the Ontario Clean Water Agency.

Their costs have been coming down rapidly. UV systems are already available at the scale of individual households, and a household-scale membrane system is just becoming available in Ontario at the time of writing. Maintaining home UV systems is not difficult, especially when the unit has a monitor showing that the lamp has not burned out. Household scale UV systems now cost $400 to $1,500. Membrane systems are priced at $4,000 but deal with a wider range of contaminants. P.205

New technologies may be particularly helpful for very small systems, ranging from one to several dozen households. Sometimes, point-of-use devices may be more efficient for certain contaminants than large central facilities. Continuous improvement in water

[37] Bromate is not regulated in Ontario but the European Union, the United States Environmental Protection Agency, the World Health Organization, Australia, and Quebec do set maximum contaminant levels for bromate. P 199

[38] In 2001, Quebec reviewed its drinking water regulations, a minimum 2-log *Cryptosporidium* removal requirement was introduced. As a result, more than 100 projects are now under review for approval by Quebec's MOE, P 204.

quality in response to emerging threats will require new and refined treatment techniques P.216

On Sampling and Monitoring

Of the 659 plants inspected in 2000, a total of 367 were identified with one or more of the following deficiencies, including inadequate sampling programs (267).

Ontario Regulation 459/00 makes mandatory the old sampling recommendations of the ODWO (s. 7 and Schedule 2). Generally, the sampling and analysis requirements for chemical and physical parameters under the regulation are either the same as, or more stringent than, those of the ODWO. P.226 The maximum acceptable concentration (MAC) standards for chemical and physical parameters in the Regulation remain virtually unchanged from the standards outlined in the ODWO.

One improvement is that more pesticides and volatile organics are now monitored under the regulation. Also, the list of radiological MACs has expanded from five to 78. However, radiological parameters are not measured as part of the mandatory sampling program outlined in Schedule 2 of the Regulation. Radiological sampling is mentioned in section 4.4 of the ODWS, but a specific program is not identified. Consequently, sampling requirements for radiological parameters (such as Tritium) must be included in a Certificate of Approval for their MAC standards to be legally enforced. Once their measurement is required, corrective action becomes legally enforceable under section 9(a) of the regulation. P.226

Given that the new Ontario drinking water regulations removed the requirement to sample drinking water for Tritium, a dangerous radon associated with nuclear power plants, it is difficult for the Report to maintain that the new regulation is an improvement from the earlier Ontario Drinking Water Objectives. Tritium should be specifically and regularly measured and treated.

Notification Requirements

The regulation clarifies the confusion about the notification of adverse results. It is now mandatory for a waterworks owner to ensure that notice is given both to the local Medical Officer of Health and the MOE's Spills Action Centre when analysis shows that a MAC has been exceeded or indicates adverse water quality. The notice must be confirmed in writing within 24 hours. In addition to notifying the owner, private laboratories are now legally bound to the same notification requirements as the owner.

Frequency and Responsibility for Sampling

The minimum frequency and location of sampling is normally specified by the MOE on the Certificate of Approval. These references to the MOE are not directly included in either Ontario Regulation 459/00 or the ODWS. The regulation now states: "The owner of a water treatment or distribution system shall ensure that water sampling and analysis is carried out in accordance with" the regulation "or any additional requirements of an approval or an order or direction under the Act" (s. 7(1)). The ODWS says: "The site specific requirements for monitoring and analysis are reflected in the terms and

conditions of the Certificate of Approval for the particular water supply system" (s. 4.1). P.229.

Given that almost half of the water systems inspected since the Walkerton tragedy failed to have adequate sampling programs and that the new Ontario drinking regulations removed all reference to the Ministry of Environment's role to ensure sampling and monitoring, the Report's characterization of the new regulations as an improvement is at best optimistic. The MOE should specifically be charged with overseeing water sampling and monitoring programs to ensure safe drinking water.

Monitoring There is a fundamental divide in the ways things can be measured. Many parameters – such as temperature, turbidity, pressure, and flow rates – can be measured instantaneously (in "real time"). The results can be flashed from the points of measurement to central control points, where operators can adjust processes to maintain high quality. However, measuring other critically important parameters (notably those dealing with the presence of pathogens, but also including many chemical pollutants) require that samples be sent to laboratories for analysis. All laboratory tests take time – time during which people will consume the potentially contaminated water unless a substantial amount of stored, treated water is available. Measuring the presence or absence of microbes can be used only as an after-the-fact method of auditing the integrity of treatment. As long as direct, real-time measurements are not possible, there are significant advantages to the development of indirect or surrogate real time measures for microbial contaminants, such as total coliforms, especially E.coli. P.254

Problems with laboratory tests are exacerbated by sampling problems associated with pathogens. Micro-organisms are not uniformly distributed through a water column: when present, they are generally present intermittently and in low numbers. Samples taken from one location may or may not indicate the presence of micro-organisms in other locations. These sampling problems limit the confidence one can have in any statistical interpretation of the tests P.249

The MOE may wish to consider developing a guidance manual on the design of sampling protocols for analyses of regulated parameters that will produce more accurate and statistically representative results and allow inferences about the status and functioning of water supply systems. Those who collect the samples must have proper skills and training.[39]

At a minimum, weekly sampling of water systems should be required, as is currently the case under Ontario Regulation 459/00. This standard should include the requirement to sample certain parameters more frequently than others on the basis of a risk assessment of source water quality, which includes assessing potential sources of contamination within the watershed and the likelihood of the occurrence of contamination. P.254

[39] In this context, producing representative results requires going beyond taking a few samples at source, in the treatment plant, and in the distribution system. It must also entail taking measurements under conditions that challenge the system (e.g., after heavy rainfall, and at the farthest or most sluggish ends of the distribution system). It means gathering enough data to have confidence about water quality for each regulated parameter throughout the distribution system. Finally, it should include the data necessary for sustainable asset management. P 254

Role of Laboratories

The current requirement for accreditation relates only to specified tests on drinking water. A laboratory is not required to be accredited in order to test for certain chemical and radionuclide parameters. These tests are, however, directed at ensuring the safety of drinking water, and in my view the requirement for accreditation should be expanded to all testing parameters for drinking water. Overall, the MOE, as part of its oversight role, should ensure that adequate verification of laboratory testing takes place, whether through the requirements of MOE licensing or accredition by the Canadian Association of Environmental Analytical Laboratories, P.267.

On the Role of Inspections

Inspections are another critical element in the government's oversight function. The most significant inspection issues raised in the Inquiry were the frequency of inspections, the desirability of unannounced inspections, the need for more direction on the scope of inspections, the need for more attention to follow up on identified deficiencies, and the need to improve the training and qualifications of inspectors. p 423 There is, however, a suggestion in the Gibbons Report that inspections are a type of function that may be appropriate for alternative service delivery. Inspections are an operational rather than a policy function. The Gibbons Report recommends that "at some point in the future" the government should consider creating an arm's-length operating agency to fulfill the MOE's "operational/program delivery" functions. In my view, any such move would have several disadvantages and should in no circumstances be undertaken unless and until it can be established to have no negative impact on safety.

The reason commonly given for outsourcing government functions is cost savings, and there is no doubt that outsourcing the inspections function may provide cost savings to the government. Cost is always important, but some government functions are of such a nature that the potential for cost savings alone should not lead to a decision to transfer all or part of the government regulatory function to a third party. In my view, the oversight of the safety of Ontario's drinking water is such a function.

Even before the delivery of the Part 1 report, the government responded quickly and strongly to address what it saw as the weaknesses in the way its oversight role had been exercised. That response was no doubt dictated both by the concerns about what happened in Walkerton and by the public outcry and concern about the safety of drinking water across the province. I question whether, if the inspections and oversight role at the time of the Walkerton outbreak had been exercised through an independent third party, the government would have been under the same need to be accountable for what took place or would have taken the immediate action that it did. Immediate and direct political accountability for the regulatory and oversight role is an important safeguard for the people of Ontario to ensure the safety of their drinking water. P.430.

I also agree with a point made by Professor Nicholas d'Ombrain in his paper commissioned by the Inquiry. He raises the question of "the viability of what would be left of the Ministry of the Environment if the regulatory and enforcement functions were removed."44 He is referring here to the risk that the ministry would eventually lose all operational expertise if it were not involved in either the operational or the oversight function. This loss would critically hamper the MOE in its policy development role as well as its overall responsibility for the safety of the system.

In summary, while I do not foreclose the possibility of transferring the inspection function to an arm's-length entity at some point in the future, in light of the many potential disadvantages, I suggest that the government proceed cautiously. Further, because the primary concern in regard to drinking water delivery is safety, delegation to a non-government third party should not occur unless it is clearly established that the proposed system is just as – and preferably more – safe. P.430

In my view, among the things that an MOE inspector under the new office of Chief Inspector should be required to review, before beginning an inspection, are data relating to the quality of source waters and circumstances relating to changes in land users or surrounding water. Further, inspections should identify any problems and should recommend the steps required to correct such problems. A copy of this report should be provided to the local conservation authorities. P.433

A number of parties submitted to me that it would be helpful to create a drinking water commission that would have a semi-autonomous existence outside of the MOE and would be responsible for the government oversight of the treatment and distribution functions. I have decided not to recommend a separate commission. If a water commission were to be seen as the beginning of a trend for ways of dealing with important needs of the population, the structure of government could be changed dramatically. In addition, the other effect of increased independence from political influence which has been advocated by some parties, is a decrease in political accountability. If responsibility is passed on to a commission, the government will find it easier to deflect blame when something goes wrong. So long as processes are in place to promote transparency, political accountability can be a powerful democratic tool.

The provincial government should not devolve or transfer its regulatory function to third parties unless it is established that this will result in greater safety. Specifically, I propose that cost should not be the reason for any devolution. P.324

Given the Report's concern that the regulatory and enforcement functions of the MOE not be removed by the establishment of an arms length Drinking Water Commission or industry self regulation, since this would inappropriately reduce operational competence and public accountability, it is ironic that the Report favours a separate public utility commission to regulate municipal water systems and private sector operators.

As part of the recommendations on alternative service delivery, the Gibbons Report suggests the possible devolution of the regulation function to the industry. When it comes

to the safety of drinking water, I have concerns about such a devolution. The public importance of a safe drinking water system, safety can best be ensured when the government is directly involved in regulation and oversight. Allowing the industry to regulate itself could involve conflicts that might have a negative impact on safety. Obviously, if it can be shown that devolution of the function enhances safety, I would not oppose such a move. However, given my concerns, I believe that the onus should be placed on those who propose a form of alternative service delivery to establish that it will enhance safety (and not merely promote efficiency), before such a change is accepted. P. 69

Although the general recommendation of movement away from a command and control model to a more integrated, cooperative approach that would encourage potential polluters to change their ways may be useful for some aspects of the MOE's mandate, including the abatement of pollution, it is not in my view appropriate for the regulation of drinking water safety… The same is also true for the entire treatment and distribution regime. Not only is it susceptible to, but I would add that it requires, rules that are clear, easily ascertained, and strictly enforced. There is no room for variations based on factors such as the impact on the local economy or the interests of local stakeholders. P.69

Environmental regulations and conditions on provincial approvals must be consistently and strictly enforced-p 120 including the EPA, OWRA, or the Safe Drinking Water Act when ready and the Fisheries Act in collaboration w MNR and DFO, as well as enforcing Certificates of Approval and PTTW, land uses, effluent qualities, consistent with source protection plans. P.122.