

preserved as an outstanding ecological and recreational landscape, but only as a result of firm and timely provincial action now, before further opportunities are lost. The Province needs to take steps to reduce development pressures in the short term, and to provide immediate protection for such critical areas as wetlands, valleylands, and significant natural areas.

The development of an improved information base on the groundwater hydrology of the moraine, along with effective provincial or conservation authority actions to protect that groundwater resource, should be considered matters of urgency. Integration of protective strategies for the moraine into municipal planning documents should be mandatory.



## Recommendations

9. The Province should take immediate steps to preserve the ecological, scenic, and recreational significance of the Oak Ridges Moraine, and to ensure that future land use in the moraine does not result in cumulative impairment of the ecological quality of downstream rivers or the waterfront.
10. In view of the number of jurisdictions and the complexity of issues involved, a discrete planning group with a clear provincial mandate, working in a limited time-frame, should be established to:
  - a) identify conservation priorities for wetlands, valleylands, and significant natural landscapes;
  - b) document the extent and characteristics of groundwater resources;
  - c) identify significant scenic and cultural landscapes and potential trail locations;
  - d) analyse the cumulative impact of various types of development activity;
  - e) identify the appropriate type, scale, density, and location of future development;
  - f) identify suitable mechanisms to achieve conservation and land-use objectives on the moraine;
  - g) analyse the best means of implementing a conservation plan for the moraine.
11. While the planning study is under way, the Province should declare a Provincial Interest in the moraine under the *Planning Act*, in order to protect the integrity of the planning process and to control development pressures on the moraine.

## 4. Water Quality

The problems of water quality in the Greater Toronto Bioregion are well known: they include lake and river waters polluted with nutrients, bacteria, organic chemicals, and heavy metals; beaches closed for swimming; wildlife habitat degraded or lost to development; contaminated bottom sediments; and persistent toxic chemicals in aquatic biota.

The last problem is the most disturbing, because wildlife are indicators of ecosystem health — the canaries in our coal mine. In the Great Lakes Basin, some 16 species near the top of the food chain have suffered population declines since the 1950s, as the result of exposure to persistent toxic chemicals.

It is obvious to the Royal Commission that restoration of water quality is one of the major environmental issues facing residents and governments in the bioregion, and that regeneration of the waterfront and the bioregion is not possible without clean water.

The importance of our water resources was stated very succinctly in the *Fifth Biennial Report on Great Lakes Water Quality*, released by the International Joint Commission in the spring of 1990:

The Great Lakes are an immeasurably important resource. They are ecologically important in their own right: the home of many species (some now

extinct) and one of the greatest reservoirs of fresh water in the world with all its hydrological, meteorological, geological and biological implications. They are also the economic and social lifeblood of a large part of our two countries. They provide drinking and irrigation water, fisheries and wildlife habitat, transportation, power, processing water, recreational opportunities and many other services to humans living in and outside of the Great Lakes Basin.

Cleaning up the waters of the bioregion is a complex task, with technical, social, and economic implications. But inaction, too, has profound implications. To quote the International Joint Commission again:

Despite the significance of the Great Lakes and our collective rhetoric to restore and enhance them, we as a society continue to mortgage their future by poisoning, suffocating and otherwise threatening them because of insufficient knowledge, other priorities and short-sightedness. What our generation has failed to realize is that, what we are doing to the Great Lakes, we are doing to ourselves and to our children.

Using an ecosystem approach recognizes that cleaning up the waters in the Greater Toronto Bioregion is linked to cleaning up Lake Ontario, which is in turn linked to remediation and preventive measures throughout the Great Lakes Basin to restore water quality. It will require concerted and collaborative efforts by all levels of government in Canada and the United States, and will involve the public and private sectors.

This co-ordinated effort must begin now, and must focus on the goal of “zero discharge”: stopping the flow of persistent toxic substances into Lake Ontario and the other Great Lakes. The purpose is not just to protect aquatic wildlife — humans (35 million of them) live in the Great Lakes Basin too.

They drink its water, eat its fish, and breathe its air.

The International Joint Commission has concluded that:

When available data on fish, birds, reptiles and small mammals are considered along with human research, the Commission must conclude that there is a threat to the health of our children emanating from our exposure to persistent toxic substances, even at very low ambient levels.

#### **LAKE ONTARIO TOXICS MANAGEMENT PLAN**

In recognizing environmental problems throughout the Great Lakes, governments around the basin are developing lake-wide remedial plans under the guidance of the International Joint Commission. The plan for Lake Ontario, the most contaminated of the Great Lakes, is the Lake Ontario Toxics Management Plan (LOTMP), which is being developed by the governments of Canada and the United States, the State of New York, and the Province of Ontario.

The plan will address critical pollutants on a lake-wide basis, including inputs from atmospheric sources, direct and indirect industrial sources, municipalities, agricultural activities, and contaminated sediments. The Niagara River is considered the greatest source of pollution in Lake Ontario. Other sources of contaminants include the discharges from the Greater Toronto Area, Hamilton Harbour, and many rivers in the Lake Ontario watershed.

The problems in some of these regional sources are being addressed by Remedial Action Plans being developed for eight sites around Lake Ontario, one of which is the Metropolitan Toronto Waterfront.

Of the five lake-wide management plans being developed, apparently the Lake Ontario Plan has so far received the most attention and effort. However, it is proceeding slowly, and has had a very low profile and little or no formal public input.

Public support for cleaning up Lake Ontario is essential for success, but the general public is not aware of the LOTMP, and does not have access to information on pollution loadings from both sides of the border. Because Ontario municipalities will have to deliver on the strategies being developed in the LOTMP, they must be aware of the plan and involved in its development. This is not now the case.

Cleaning up Lake Ontario will be costly, and the toughest challenges may be social and economic, rather than technical. It will take considerable time to develop and implement solutions — and it could be decades before restoration is complete. In recognition of the urgent need for collaborative efforts to restore water quality, the following recommendations of the Royal Commission are addressed to all levels of government — federal, provincial, regional, and municipal.



## Recommendations

12. The federal government and the Province of Ontario should establish a process that ensures the Canadian public is fully involved and consulted in the way the Lake Ontario Toxics Management Plan is developed and remediation priorities are set under it.
13. The federal and provincial governments should establish a process for informing and involving municipalities around Lake Ontario in developing the LOTMP.
4. Subsequent to the above, the International Joint Commission and the four LOTMP parties should review progress on the LOTMP and establish priorities for remedial strategies to be undertaken on a lake-wide basis, taking into account the wishes of the public as expressed in the previously recommended consultations.

15. The IJC and the four LOTMP parties should publish regular reports on the progress being made to restore the environmental integrity of Lake Ontario.

## MISA

Ontario's Municipal-Industrial Strategy for Abatement (MISA) program was set up in 1986 by the Ministry of the Environment to "stop pollution at the source" by reducing the loading of toxic chemicals from nine industrial sectors and from municipalities. The ultimate goal of MISA is the virtual elimination of discharges of persistent toxic substances into Ontario's waters. The approach to be used is to legislate the use of best available technology at source: i.e., where the toxic is created, used or disposed of.

The industrial portion of the MISA program deals with large industries that discharge directly into Ontario's waters — industrial sectors such as petroleum, pulp and paper, and iron and steel. The regulations to be developed for these industrial sectors may not have a considerable direct impact on the Greater Toronto Area — apparently there are no direct industrial dischargers along the waterfront, for example. However, the benefits of MISA will be felt here strongly as industries upstream in the Great Lakes reduce their loadings of persistent toxic chemicals into rivers and the lakes.

The municipal part of MISA will affect the Greater Toronto Area directly. As many as 6,000 industries and commercial establishments in the GTA discharge into systems leading to the 11 sewage treatment plants (STPs) in the area. An estimated 3,000 of these establishments discharge organic chemicals and heavy metals into the sewers — from electroplaters or photofinishers, product manufacturers or autobody shops, or from any industry that produces small amounts of toxic waste and dumps them down the drain.



*Port of Toronto, MT35, Keating Channel dredging*

Sewer dumping of toxic chemicals (from residents as well as industries) is responsible for about 90 per cent of the total load of chemicals reaching the Greater Toronto Waterfront. These toxic chemicals can interfere in the normal functioning of STPs by killing the bacteria that break down septic wastes. They can also cause corrosion in pipes and sewage treatment plants, and can pose a health hazard to STP workers. And because STPs are not designed to treat or remove chemicals, most chemicals dumped into sewers pass directly through to receiving waters.

The chemicals and metals removed by the STPs remain in the sewage sludge and then become an air pollution problem when they are incinerated. (Most sludge in the GTA is incinerated because it is too contaminated to spread on agricultural land.)

The MISA Sewer Use Control Program for the municipal sector, due in 1994, will set tough new standards for sewer discharge of organic chemicals and heavy metals. These will force pre-treatment and/or reduction of the problem at source, using the best available technologies. These technologies could range from end-of-the-pipe treatments (like

reverse osmosis to remove metals from wastewater) or closed-loop systems (where no discharge is needed).

Applying the MISA Sewer Use Control Program will result in dramatic improvements in the quality of sludge and effluents from STPs and, in turn, in local air, water, and sediment quality. Although the MISA regulations are not expected until 1994, some municipalities are already taking action. For example, Metropolitan Toronto has, as an important interim step, moved to implement a “model sewer use by-law” developed by the Province; it will significantly decrease the loading of persistent toxic chemicals into Metropolitan Toronto’s sewage treatment system.

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### Recommendation

16. The regions of Peel, Halton, York, and Durham should implement a “model sewer use by-law” similar to that adopted by Metropolitan Toronto, as an interim step until the MISA Sewer Use Control Program is in place. These sewer use by-laws should become part of the Waterfront Partnership Agreements developed for the regions.

### SEDIMENTS

Even after the Metro Toronto RAP and MISA programs are fully implemented — five, ten, 20 years from now — the historical legacy of past activities will remain in the form of toxic chemicals, metals, and nutrients in bottom sediments. Unless these sediments are treated, they will continue to be a problem in the years to come, and many deputants at the Royal Commission hearings expressed concerns about them.

These problems exist all along the Greater Toronto Waterfront and at virtually all of the 42 Areas of Concern around the Great Lakes designated by the IJC. They are of concern because toxics and nutrients can become

resuspended in the water column when disturbed by dredging or lakefilling. Organic chemicals and heavy metals are also taken up by bottom-dwelling organisms and can thus enter the food chain, eventually affecting humans.

The Commission believes that a complete evaluation of sediment quality along the entire waterfront is required. Such a study would provide the public and clean-up agencies with information that is vital to the ecosystem approach to remediation, and would offer data against which remedial progress could be measured. Such a study would also serve as a model for similar programs elsewhere around the Great Lakes.

The Commission also believes that vital work needs to be done on possible remedial options for contaminated sediments. At present, most remedial action consists of dredging and disposal, options that move the problem around rather than solving it.



## Recommendations

7. The Province of Ontario should conduct a study to determine the overall chemical and bacteriological quality of bottom sediments along the GTA waterfront. Such a study should include geographic trends, effects on biota, and options for remediation.
18. The federal and provincial governments should fund research on technically sound methods of sediment rehabilitation and should focus such research on remediating the polluted sediments found in virtually all Great Lakes Areas of Concern.

### THE METRO TORONTO REMEDIAL ACTION PLAN

As one of 42 Areas of Concern designated by the International Joint Commission,

the Metropolitan Toronto waterfront is the subject of a Remedial Action Plan (RAP) being developed by the federal and provincial governments. The goal of the RAP is to restore local water quality, to make it “swimmable, drinkable and fishable”.

The Royal Commission’s first interim report, released in 1989, included comments on the RAP. While the Commission supported the goals of the RAP, it felt that, at the time, the process being used to develop and implement it had problems.

As part of the process, the RAP team released a *Draft Discussion Paper on Remedial Options* for public comment immediately prior to the Commission’s hearings on environment and health in May 1990. The discussion document identified a range of options and the associated costs for restoring water quality on the waterfront. As such, it is a valuable technical paper.

It would appear, however, that there are still problems with the RAP process used to date. At the hearings, a number of deputants made comments on the RAP discussion paper, criticizing it as being confusing and difficult to read. Therefore, it is unlikely to generate much discussion from the public at large.

Sarah Miller, of the City’s Waterfront Remedial Action Plan Committee, pointed out that the next stage of the RAP process — ranking preferred remedial options — was impossible to achieve because there was no link made between water quality goals and remedial options. She suggested that there was too much emphasis on “end-of-pipe” treatment and dilution, and not enough on preventing problems from occurring.

Another concern expressed at the hearings in May, as it had been in the Commission’s 1989 environment and health hearings, is how slowly the Toronto RAP is being developed. Subsequently, the RAP Public Advisory Committee (PAC) said it was concerned with the way it is isolated from the RAP writing team, and the lack of funds given it to carry out its work.

All of those who commented on the RAP mentioned implementation difficulties because of the many jurisdictions involved. For example, although it is a member of the RAP's Technical Advisory Committee (TAC), part of the RAP's development, the City of Toronto's Public Works Department does not currently consider the RAP in its planning or in setting its priorities. Similar comments were received from the City of Etobicoke. To overcome the fragmentation of jurisdictions and ensure implementation of the final Remedial Action Plan, a fully funded public advisory or watchdog committee was suggested. In Sarah Miller's words:

I think the pivotal point around which the public is going to support or reject the RAP process will be in the support that the process gives to the role of continuing public involvement and expanded public committees for each RAP area. If this continuance in support is denied the public, their interest is going to wane and we can surely know that the RAPs are going to languish. Politicians are going to change, bureaucrats are going to move from one agency to another; the only continuum, I think, that RAPs have is the public interest and that has to be given precedence.

Over the last year, the Commission has worked closely with both levels of government on the Remedial Action Plan and some progress has been achieved as the result of this co-operation. However, the Commission believes that the hurdle of jurisdictional fragmentation can be overcome only if remedial measures are implemented by partnerships on a watershed basis.

In the Humber River watershed, for example, there are three regions, ten municipalities, and 515,000 people. In such a situation, one municipality acting alone can achieve little. Clean-up of the rivers in the watershed will require the co-operation and involvement of all governments and residents.



## Recommendations

19. The federal and provincial governments should modify the RAP process by elevating each municipality from being one of many stakeholders, to being a joint partner in developing and implementing the RAP. Using the watershed approach, all municipalities within a given watershed should be asked to collaborate on the RAP.
20. The federal and provincial governments should rewrite the *Draft Discussion Paper on Remedial Options* as soon as possible, in order to make it more readily understandable to the general public, to provide information on a watershed basis, and to establish clear links between the RAP goals, the impaired uses, and the remedial options.
21. The federal and provincial governments should provide funds and resources to the RAP Public Advisory Committee to allow it to function effectively. Funds should include *per diems* for participants in meetings.
22. The current "caucuses" that are part of the RAP public involvement program are organized on a sectoral basis. The federal and provincial governments should also organize them to bring the sectors together on a watershed basis.
23. The Remedial Action Plan, when finalized, should become part of the Waterfront Partnership Agreements previously recommended by the Royal Commission, negotiated for the rivers draining into the Metropolitan Toronto waterfront.

## WATER QUALITY AND CONSUMPTION

Since the early 1980s, public concern about water has centred on quality issues — the

quality of drinking water, toxics in bottom sediments, high bacterial counts at beaches, and contaminants in aquatic wildlife. Some deputants at the environment and health hearings argued, however, that water quantity is as pressing a concern as water quality, and furthermore, that it is integral to water quality issues. In other words, the argument is that water quality cannot be restored without broad strategies to conserve water.

As a society, we have become accustomed to using vast amounts of cheap water for washing, bathing, and gardening, as well as for commercial and industrial uses. Environment Canada estimates that water consumption increased by 54 per cent between 1972 and 1981, while the population of Canada increased by only about five per cent. Most residents of the GTA pay a flat yearly rate for water, and only 30 per cent of houses in the area have water meters. Residents blithely water lawns and wash cars, unaware of (and protected from) the costs of their actions. But there are hidden environmental costs to water use — costs that are not reflected in water bills and are borne by the environment.

Every litre of water pumped and treated for residential, commercial or industrial use becomes wastewater that then has to be treated at a sewage treatment plant. In addition to passing through toxic chemicals, (which they are not designed to treat), STPs discharge high amounts of nutrients into surface waters. During major rainstorms, STPs regularly bypass partially treated sewage and stormwater from combined sewer overflows, which causes degradation of lakes and rivers.

The usual engineering solution has been to increase STP size to deal with increasing volumes of wastewater; deputants at the hearings argued that water conservation strategies to decrease the use of water should be adopted by municipalities in the GTA.

The 1987 Federal Water Policy had, as its overall objective, “to encourage the use of freshwater in an efficient and equitable manner consistent with the social, economic

and environmental needs of present and future generations”. This underlies a commitment to promote the wise and efficient management and use of water and, in doing so, to protect and enhance the quality of water resources. Deputants made the case that comprehensive municipal water conservation strategies (including realistic pricing per litre for users) would induce a decline in water use of as much as 20 per cent or more. In turn, that would mean lower levels of wastewater production, and better control of effluents (thereby reducing the pollution from STPs). Moreover, capital costs for new or expanded sewage treatment facilities and utility costs would be reduced.

Realistic pricing and water metering would generate greater revenue for municipalities, revenue that could be used for upgrading aging sewage treatment infrastructures or for local efforts such as a RAP to improve water quality.



## Recommendation

24. The Province, through an appropriate designated agency, and in collaboration with the Canadian Water and Wastewater Association, should conduct a case study to examine the extent of the relationship between water quality and the volume of water used by the population of the Greater Toronto Area. The study should also assess conservation methods (including pricing) and how they contribute to improved water quality.

## 5. Lakefill

In its 1989 interim report, the Royal Commission made a series of recommendations concerning lakefill along the Metropolitan Toronto waterfront. While recognizing that some exemptions might be necessary for extraordinary projects, the Commission