# Clean Waters *Clear* CHOICES

# PROGRESS REPORT *1999*

TORONTO & REGION
REMEDIAL ACTION PLAN

October 2000

For more information about the Toronto and Region Remedial Action Plan, see the listing of publications, websites and orgnizations at the back of this report, or contact the Waterfront Regeneration Trust or the Toronto and Region Conservation Authority.

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# Section 1 INTRODUCTION & HIGHLIGHTS

## Introduction

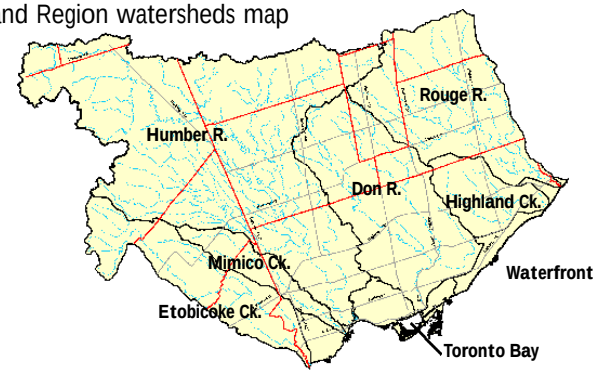
This report, the *1999 Toronto and Region Remedial Action Plan (RAP) Progress Report*, summarises actions taken and progress made in 1999 towards restoring the water quality and habitats of the Toronto waterfront and the tributary watersheds: Etobicoke Creek, Mimico Creek, Humber River, Don River, Highland Creek, and Rouge River (Figure 1).

This report is meant to be read as an addendum to *Clean Waters, Clear Choices: 1998 Progress Report*, which provided a more detailed description of the environmental conditions, challenges and opportunities, as well as overall progress made in the past decade. A copy of the 1998 report is available on the Waterfront Regeneration Trust's website (www.waterfronttrust.com) or by phoning (416)943-8080.

The Toronto and Region RAP program was initiated in response to the identification of 42 Areas of Concern (AoCs) or "hot spots" around the Great Lakes Basin in 1987 by Canada, the United States and the International Joint Commission. The Toronto waterfront is one of the 42 AoCs. This is not surprising since Toronto is the largest urban centre on Lake Ontario, is under heavy growth pressure and like many other urban areas suffers from contaminated runoff, loss of habitat, and the degradation of natural landscapes. As well, Lake Ontario is the last in the chain of the Great Lakes, and the Toronto waterfront is influenced by water from the Niagara River and elsewhere. It also receives direct atmospheric deposition to the nearshore and watercourses, as well as runoff contaminated with pollutants originating in the large airshed to which we belong. Each AoC has been identified as "impaired" for one or more reasons. Table 1 details impaired uses in the Toronto AoC.

The leadership for the Toronto and Region RAP implementation is achieved through a four party Memorandum of Understanding between Environment Canada, Ontario Ministry of the Environment, Waterfront Regeneration Trust

Figure 1. Toronto and Region watersheds map




A watershed approach to the Toronto and Region RAP

The Toronto waterfront – the receiving body of water identified by Canada and the USA on their list of Areas of Concern – will be de-listed when the local sources of contaminants are eliminated and/or remediated. Many of these sources originate in the watersheds.

With 210,600 hectares of land, 6 major watersheds, and 45 km of waterfront, the Toronto RAP drainage area is large and complex. Many community groups are actively working at a watershed or subwatershed level, and their actions cumulatively move us closer to restoration. See Section 6 for some highlights from each watershed.

The Rouge is one of the healthier watersheds in the Toronto Area of Concern,and could be the first of our watersheds to be partially "de-listed".

(WRT), and the Toronto and Region Conservation Authority (TRCA). The WRT and TRCA deliver coordination and implementation, while Environment Canada provides 80% of the annual funding support for this agreement and the Ministry of the Environment provides the balance.

Table 1. Impaired Uses in the Toronto and Region Area of Concern

- Restrictions on fish consumption
  ~ fish consumption advisories still in place across most of the AoC
- Degradation of fish and wildlife populations
  ~ this includes both loss of species and low numbers,and in Toronto is mainly due to alterations to habitat
- Loss of fish and wildlife habitat
  ~ can be due to outright destruction (filling a wetland or cutting a woodlot) or degradation of habitat from poor water quality, sediment deposition,etc.
- Degradation of benthos
  ~ mainly due to degradation or loss of habitat
- Degradation of phytoplankton and zooplankton populations
  ~ requires further assessment;likely minor impairments due to general urban degradation
- Restriction on Dredging Activities
  ~ in some places on the Toronto waterfront,dredged sediment is not clean enough to meet open water disposal guidelines
- Eutrophication or undesirable algae
  ~ impaired at the west end of the Toronto waterfront (Etobicoke) and some inland lakes
- Beach Closures
  ~ most designated swimming and body-contact recreation areas are posted at least some of the swimming season
- Fish tumours and other deformities
  ~ requires further assessment in the Toronto area;likely not impaired
- Bird or Animal Deformities
  ~ requires further assessment in the Toronto area;likely not impaired
- Drinking Water
  ~ treated drinking water drawn from Lake Ontario is not impaired, but occasional taste/odour episodes do occur

Through an extensive public and broad agency process in the early 1990s, a plan for restoring the RAP area was developed: *Clean Waters, Clear Choices: Recommendations for Action*(1994). The goal of the plan is a waterfront and watersheds that are fishable, swimmable, drinkable, and aesthetically pleasing.

## 1999 Highlights

1999 was a year of growing concern and public awareness about the headwaters areas in the ***Oak Ridges Moraine***. At the RAP Clean Waters Summit in November, which focused on the Moraine, over 230 participants gathered and the majority called for:

- immediate Provincial action to release, update and implement the 1994 Oak Ridges Moraine Strategy,
- a freeze on land use and infrastructure development until new measures are put in place, and
- greenspace acquisition to protect natural areas, landforms and biodiversity.

For a summary of the Summit, visit the WRT website www.waterfronttrust.com/docs/trustdoc/rap.html. Also in 1999, several key development applications on the Moraine in the Richmond Hill area were appealed to the Ontario Municipal

Board. The Regional Municipalities of Peel, York and Durham jointly prepared a discussion paper and recommendations for provincial action, and also initiated a groundwater management strategy with the local conservation authorities.

On the waterfront, the level of interest in redevelopment, including major environmental improvements, grew when Toronto Mayor Mel Lastman released his waterfront vision, ***Our Toronto Waterfront: the wave of the future!*** (1999), and a Task Force chaired by Robert Fung was set up jointly by all three levels of government to develop recommendations on how it could be achieved. The bid to host the 2008 summer Olympic Games in Toronto was launched, with a focus on the waterfront.

The Mayor's vision for the Toronto waterfront includes a naturalized Don River mouth, in place of the Keating channel.

The City of Toronto elevated its efforts to deal with stormwater and combined sewer overflows by establishing a workplan and a Steering Committee for the ***Wet Weather Flow Master Plan Phase II***, a planning process that will take at least two years and, when fully implemented, should eliminate combined sewer overflows, enabling the restoration of many of the impaired uses on the waterfront.

At the watershed level, state of the watershed reports were completed for the ***Etobicoke, Mimico and Highland Creeks***, and watershed strategies for the ***Etobicoke and Mimico Creeks*** are under development to focus restoration efforts in those watersheds. The ***Humber and Don watershed*** groups initiated report cards providing detailed information and targets on environmental and social conditions - the report cards will be available in the Fall of 2000.

At the Great Lakes scale, a review was initiated for the ***Great Lakes Water Quality Agreement*** and the International Joint Commission published a study on diversions and exports of water in the Great Lakes, recommending a moratorium until a protocol could be put into place. Also, the 3rd report of the ***Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA)*** was released, summarizing progress made between 1997-1999 by federal and provincial government agencies and their partners in meeting COA targets. The report can be viewed on the internet by visiting: www.on.ec.gc.ca/glimr/news_e.html.

## Funding Highlights

Funding of the RAP and other efforts that improve the Toronto AoC comes from a variety of public and private sources. Following are selected funding highlights in the Toronto AoC that have had a significant impact on the Toronto area watersheds in 1999.

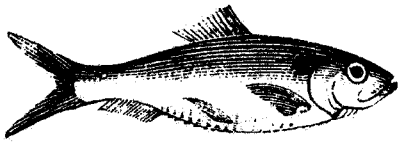
- Environment Canada project funding remains strong. The Great Lakes 2000 Clean-Up Fund provided $682,000 in support towards 26 projects, and $407,500 towards another 15 projects, to restore impaired beneficial uses in the Toronto and Region Area of Concern. The EcoAction Fund provided $1,048,000 in support to 34 community-based projects over the last 2 years. Partners in the these projects have included the City of Toronto, Town of Richmond Hill, Regions of York, Peel, Durham, Toronto and Region

Conservation Authority, the Waterfront Regeneration Trust, Ministry of the Environment, the Ministry of Natural Resources, Ryerson University, York University, Ducks Unlimited Canada, Canada Trust, Ontario Streams, Rouge Park Alliance, Bombardier Aerospace, Canadian Sportsman Shows, Lever-Ponds, Consumers Gas, and Ontario Hydro.

- The Toronto and Region Conservation Authority's Annual Report lists $10 million worth of projects funded in 1999 through provincial/municipal/private partnerships, some of which includes the above-mentioned Environment Canada grants. Approximately $1.2 million was spent on regeneration projects affecting the entire RAP area, $1.5 million was spent on erosion and flood control, $700,000 on natural heritage restoration, and over $5 million was spent on waterfront related projects.

- In 1998-99, a new source of funding for Great Lakes restoration became available. The Ontario government helped establish the Ontario Great Lakes Renewal Foundation, with a mandate to use a base of $5 million in provincial seed money, to attract additional funding from the private and non-profit sectors. In 1999, the OGLRF funded three projects in the Toronto AoC: Milne Hollow, Palgrave Pond, and The Black Creek Conservation Project.

- The Canadian Millennium Partnership Program, has joined the Humber Watershed Alliance, the TRCA and other partners in restoring the Humber River watershed. CMPP will provide $400,800 for various projects related to habitat restoration, community outreach, and trail development.



# Section 2 WATER

Stormwater and combined sewer overflows contain high levels of bacteria,resulting in closed beaches

Summarizing overall nearshore water quality conditions for an area as large and diverse as the Toronto and Region Area of Concern is difficult, as contaminant levels are highly variable spatially and temporally. Higher levels of contamination are most common at tributary mouths and point sources of stormwater or effluent discharges. For instance, the Ontario Ministry of Environment's 1997 Lake Ontario Reconnaissance Monitoring revealed local elevated chloride, phosphorus, and nitrate concentrations in the vicinity of the Don River, Toronto Bay's north shore, Mimico Creek, Humber River, and the Humber and Ashbridge's Bay sewage treatment plant outfalls. Much of the pollution at the river mouths and in Toronto Bay is contributed from stormwater and combined sewer overflows.

## 2.1 Storm sewers and combined sewers

Contaminated stormwater and combined sewer overflows are the most significant local sources of pollution to our waterfront and tributary rivers. Precipitation runoff combines with contaminants such as oil, grease, road salt, and pesticides, and in some parts of the City of Toronto, it combines with sanitary sewage and overflows to the Don and Humber Rivers and the waterfront. Eliminating combined sewer overflows and reducing contaminants in rain runoff over the next few decades will result in cleaner beaches, improved habitat and water quality, healthier fish and invertebrate populations, and cleaner sediments, which will bring us very close to de-listing the Toronto Area of Concern.

Progress:

- Essential to identifying opportunities for source control and upgrading the myriad of sanitary and storm sewer infrastructure in the City of Toronto, is the Wet Weather Flow Management Master Plan currently being developed. The data collection, modeling, and identification of preferred strategies is scheduled for completion by January 2002, while implementation itself is expected to take some 25 years. In 1999, the City secured the planning budget, established the Steering Committee, confirmed the workplan and held a series of seminars. The Waterfront Regeneration Trust and Toronto and Region Conservation Authority sit on the Steering Committee and represent the Remedial Action Plan interests. For more information on the Wet Weather Flow Management Master Plan, contact Tracey Ehl Harrison at the Works and Emergency Services Public Consultation Unit, (416)392-2996, or email tracey.ehl@city.toronto.on.ca.


Solutions for combined sewer overflows will likely include a combination of structural techniques - such as the Eastern Beaches detention tanks,seen here from the inside prior to operation - and non-structural techniques.

- Where land is available, stormwater ponds are a good means of holding back rainfall and allowing contaminanted sediment to settle out. Stormwater management facilities (ponds) contain limited storage capacity, and collected sed-

iment must be removed to maintain effective treatment. New technologies have evolved rapidly in recent years, and a report, *Storm Water Management Facility Sediment Maintenance Guide*, released in August 1999 by Greenland International Consulting, the TRCA, and SWAMP (Stormwater Assessment Monitoring and Performance Program), evaluates the cost-effectiveness of different sediment removal and disposal methods. For more information visit: www.ryerson.ca/civil/swamp/program.html#5

Road salt and motor oil runoff to the sewer system and then make their way to streams and the waterfront. Pesticides used for lawncare also pose a significant problem.

- A Stormwater Management Retrofit Study carried out by the TRCA within the City of Brampton identified three existing ponds having retrofit potential and 21 locations where new ponds are feasible at uncontrolled storm outfalls. In 1999, Ryerson Polytechnic University further developed a GIS-based planning tool to evaluate various stormwater management retrofit measures within the lower reaches of Mimico Creek(within the former City of Etobicoke).

- A 1999 summary of *Metropolitan Toronto Watershed and Lakefront Pollution Abatement Work 1996-1997* (City of Toronto, Works and Emergency Services, 1999) outlines some 302 point source pollution problems within the Metropolitan Toronto area, identified between 1996-1997. Evidence suggests that many more incidents had occurred but were not formally documented. Pollution abatement work undertaken by the City typically includes inspections of sewer outfalls and industry premises, correcting sewer overflow problems, identifying sources of illegal spills and dumping, issuing violation notices and pressing charges against those found guilty, and engaging in site clean-ups when necessary. The industrial sector was found to have contributed over one-third of the problems in both years, with large industrial spills and cross-connections from sanitary to storm sewers representing two of the most significant problems. Incidents in the transportation sector include a ruptured hydraulic oil line on a garbage truck and tanker truck roll overs, while household problems include dumping waste paints, solvents, and used motor oil down catch basins (Table 2). These data highlight the importance of continuing the pollution abatement work, as well as the need for extensive education and awareness about spills prevention, reporting and containment.

Table 2: Major Incidents of Contaminated Discharges by Watershed (1996-1997)

| Incident Type | Etobicoke Ck (21,128 ha) | Mimico Ck (7,708 ha) | Humber R (90,736 ha) | Don River (36,042 ha) | Highland Ck (10,157 ha) | Rouge R (33,394 ha) | L.Ontario | Total |
|---|---|---|---|---|---|---|---|---|
| Spills | 4 | 1 | 22 | 16 | 2 | 0 | 7 | 52 |
| Dumping | 1 | 1 | 3 | 1 | 5 | 0 | 4 | 15 |
| Poor Housekeeping | 1 | 0 | 5 | 1 | 2 | 0 | 1 | 10 |
| X-Connection | 0 | 0 | 4 | 3 | 2 | 0 | 0 | 9 |
| CSO/ Blocked Sanitary Sewers | 0 | 0 | 3 | 4 | 0 | 0 | 1 | 8 |
| Groundwater/Leachate | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Miscellaneous | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 6 | 2 | 38 | 25 | 11 | 0 | 14 | 96 |

Source: *Metropolitan Toronto Watershed and Lakefront Pollution Abatement Work 1996-1997*, Works and Emergency Services, Toronto.

- According to a 1999 TRCA analysis of MOE water quality data 1990-1995, it appears that within Etobicoke and Mimico watersheds, elevated concentrations of nutrients, metals, chloride, suspended sediments and bacteria are linked to land use and associated human activities. For example, downstream reaches near major highways fail to meet Provincial Guidelines for copper and zinc more frequently than upstream reaches. In contrast, upstream agricultural areas exceed the Provincial Guidelines for phosphorus and unionized ammonia more frequently than downstream locations.

- Phase I construction of the Western Beaches Storage Tunnel was completed in 1999 at a cost of $31.5M. The system - a 50m x 30m deep shaft and pumping station at Battery Park, south of Strachan Avenue - was designed to accommodate peak stormwater flows preventing the direct discharge of sewage into Lake Ontario. Phase II of this project will extend the tunnel westward to Parkside Drive. When completed (in late 2000) the system will have a total storage capacity of 85,000 cubic metres and will intercept 62% of sewage overflow from lake deposition, significantly improving the quality of water along Toronto's western beaches.

Did you know...? Sources of contaminants to Toronto Bay

- 11 Combined Sewer Overflows
- 17 Storm Sewers
- The Don River (with 30 CSOs and 872 storm sewers)

## 2.2 Pollution prevention

- A new City of Toronto Sewer Use By-law has been under development since amalgamation, setting strict limits on discharges to the sewer system, and requiring industries in key sectors to prepare mandatory Pollution Prevention (P2) plans to reduce the amount and type of pollutants discharged to sanitary and storm sewer systems. Details regarding the Sewer Use By-law can be viewed on-line at www.city.toronto.on.ca/involved. Link to "New Sewer Use bylaw".

- For more information on pollution prevention, a copy of *Pollution Prevention in Ontario's Great Lakes Basin: 1999 Update* can be obtained on-line on the website for the Canadian Centre for Pollution Prevention (C2P2) at http:/c2p2.sarnia.com or by calling C2P2 at 1(800)667-9790.

- The Ministry of the Environment is currently developing a number of partnerships to educate industry on pollution prevention in order to improve air and water quality and prevent spills. One example is the funding and extensive technical advice MOE has provided to the City of Toronto Emery Creek Association. This group works with industrial and commercial operators within a catchment area of the Humber River to practice pollution prevention and energy conservation. For details visit www.city.toronto.on.ca/involved/wpc/pro002.htm.

- The Ministry of the Environment is preparing a stormwater pollution prevention handbook for municipalities, and updating the Ministry's stormwater management planning and design manual. The latter provides guidance on how to integrate subwatershed planning, land use planning, source control,


Between 1997 and 1999, 7,919 properties participated in the City of Toronto downspout disconnection program. Programs like this help prevent CSOs, and return water back to the water table at a natural rate. This is also a great water conservation program. Residents who participate can have their downspouts redirected to their lawn or into a rainbarrel so that water is stored for future use.

site planning and stormwater management practices.

- Hundreds of public events throughout the RAP area are used to promote pollution prevention and water efficiency: For example, on 16 October 1999, the North Toronto Green Community and Fairview Heights Neighbourhood Centre hosted the annual Paint Exchange and Household Hazardous Waste drop-off to encourage people to switch to alternative products and promote reuse activities. More than 3,600 litres of hazardous materials, mostly paint, were collected, which represented an enormous improvement over 1998 when only 250 litres were collected. Additionally, 90 gallons of paint were donated to charity organisations or taken by local artists, residents, and house painters for reuse.

## 2.3 Sewage treatment plants

Ashbridge's Bay Wastewater Treatment Plant

Sewage Treatment Plants

| | |
|---|---|
| Central: | Humber<br>Ashbridge's Bay |
| East End: | Highland Creek |

Water Filtration Plants

| | |
|---|---|
| West End: | R. L. Clark |
| Central: | Toronto Island<br>R.C. Harris |
| East End: | F.J. Horgan |

Sewage Treatment Plants (or wastewater treatment plants) discharge contaminants to the waterfront through everyday effluent and/or bypasses during heavy rainfall. STP effluent is high in phosphorus and nitrates. Contaminants are also consolidated in sludge, as a by-product. As late as 1999, most sludge in Toronto was incinerated. This was traditionally perceived as an effective method of reducing the volume of sludge before final disposal, recovering heat energy, and treating the high volume of toxins present. However, the resulting smokestack emissions of particulates, nitric oxides, sulphur oxides, metals and organic compounds contribute to poor air quality.

Progress:

- In July of 1998 Toronto Council directed Works and Emergency Services to enter into a 100 percent Biosolids Beneficial Use Program, designed to reuse sludge for fertiliser and soil amendments. By December 2000, pelletizer machinery will be employed at the Ashbridges Bay Treatment Plant to produce 26,500 dry tonnes of biosolids pellets per year. This represents the largest installation in North America and will replace the existing system of incineration, with three of six incinerators remaining on standby until the system operates smoothly.

- The Ashbridge's Bay Wastewater Treatment Plant (formerly the Main Treatment Plant) plans to implement a new method of disinfecting effluent by 2005. The new ultraviolet (UV) system will use UV light to disinfect, reducing the city's reliance on chlorine as a disinfectant.

## 2.4 Water filtration plants

A relatively new challenge facing water treatment facilities drawing water from Lake Ontario is the increasing number of unpleasant taste and odour episodes. In 1999, a four-week episode took place, compared with two weeks in 1998. The cause of taste and odour episodes is directly related to the temperatures of Lake Ontario water, and affects cities and towns around the entire lake. The average

annual temperature at intake pipes is six to seven degrees Celsius, but can climb to 25 degrees, increasing the amount of algae. These algae produce compounds that can lead to a noticeable odour or taste even at extremely low levels. Toronto episodes have been largely attributed to the presence of geosmin, a naturally occurring chemical during the metabolisation of algae. Despite the discomforts faced by local residents, extensive laboratory testing has confirmed that the presence of the odour-causing bacteria does not pose a human health threat.

R.C Harris Water Filtration Plant

Progress:

- Toronto recently installed a powder activated carbon feed at the R.L. Clark Filtration Plant to control taste and odour episodes, which has reduced the severity of episodes in the western area of the city. The F.J. Horgan Plant will receive a powder activated carbon feed by the end of August 2000, and an alternative approach using granular activated carbon will be implemented at the Island Treatment Plant and R.C. Harris Plant in the next year.

- An Environmental Assessment at the R.C. Harris Water Filtration Plant found that the treatment process was allowing residue to backwash from filtration beds and flow directly into Lake Ontario. Subsequently, the City announced that new facilities to treat the water before returning it to the lake will be built by 2003.

TASTE & ODOUR PROBLEMSWITH YOU DRINKING WATER?

- To track the quality of its water, the City of Toronto would like you to inform them if you experience a taste or odour problem with your drinking water by sending an e-mail including your name, address,and nearest main intersection to: water@city.toronto.on.ca

- If you experience a taste and odour episode, try chilling your water to make it taste better, adding ice cubes or squirting in a few drops of lemon juice.

## 2.5 Groundwater

Groundwater quality and quantity continue to be issues of concern in the Toronto region, as they are across the Province. The lack of adequate data collection and of a comprehensive provincial strategy to protect groundwater resources make it difficult to assess the extent of the problems and necessary remedial and proactive actions. However, it is hoped that increasing awareness of stresses on groundwater supplies and quality, and collaborative studies among conservation authorities, the regional governments and the Ministry of the Environment, will lead to the adoption of effective groundwater monitoring and protection programs including supportive regulations. What is needed is a broad scientifically-based policy that will provide protection and management for all of Ontario's ground and surface water.

Progress:

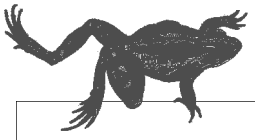
- Local and Regional municipalities are working with TRCA, the Geological Survey of Canada, MOE, and neighbouring Conservation Authorities to develop groundwater management strategies. For example, a co-operative groundwater management study was initiated in early 2000 for York, Peel, and Durham Regions. One important objective for the study is to establish a base from which the three regions can develop the groundwater component of their long-term strategy. Since two-thirds of the Oak Ridges Moraine extends through these three regions, a common plan will assist in ensuring consistency in management approaches across the Moraine.

Water for Tomorrow

York Region's Water for Tomorrow program was initiated in 1999. The program aims to reduce water consumption by 19 million litres per day, through fixture retrofits, leakage reduction projects, audits of industrial and commercial businesses and public education. As part of the program, every household, school and small business currently served by York Region will be offered free water saving devices, including installation. Despite the program's $10 million cost, the Region estimates that figure represents only one-quarter of the amount of money that would be required to supply the same amount of water from new sources.

- Agricultural practices are the leading cause of nitrate pollution in the Toronto RAP area groundwater. Unused nitrogen resulting from inorganic fertilization or manure does not break down easily in groundwater. When too much nitrate is present in an aquifer it becomes unsuitable for the continued supply of municipal water. The Ontario Farm Environmental Coalition formed a Water Quality Working Group in 1997, which, along with a host of partners including the MOE, Ministry of Natural Resources, and University of Guelph, began a nitrogen use efficiency program at 5 working farms in the Waterloo area. If successful, techniques could be applied in the Toronto RAP area. As well, Farm Environmental Management Plans and Nutrient Management Plans have been developed by many Ontario farmers.

- Much of our understanding of groundwater in the Toronto and Region AoC comes from academic research. University of Toronto studies conducted by Professors Ken Howard and Nick Eyles and their graduate students in the Greater Toronto Area highlight estimated impacts from urbanization, including information on the threat of landfills, underground storage tanks and road salt, to groundwater quality. For further information please see: Howard, K.W.F. and Livingstone, S., (1997). "Contaminant source audits and ground-water quality assessment". In Eyles, E., (ed.) *Environmental Geology of Urban Areas: The Greater Toronto Area.* Special Publication of the Geological Association of Canada. Geotext #3, 105-118.



Children's Groundwater Festival

Designed to encourage young students to become water stewards, the Children's Groundwater Festival uses hands-on interactive activities to promote awareness of the properties, uses, connections and importance of water in every-day life. In 1999, 13,400 students across the GTA participated.

York Children's Water Festival: Attendance: 4,400 students

Peel Children's Groundwater Festival: Attendance: 5,000 students

Durham Children's Groundwater Festival: Attendance: 4,000 students

Visit the Children's Water Institute website: www.kidsforwater.org

# Section 3 BOTTOM SEDIMENTS, BENTHIC INVERTEBRATES, PHYTOPLANKTON, & ZOOPLANKTON

A certain amount of sediment is natural and healthy in the ecosystem. Sediment becomes a problem when there is an excessive amount, and when it is accompanied by an accumulation of contaminants. Contaminated sediment is usually greatest in calm, depositional areas such as embayments and harbours, where it is not dispersed. By its nature, sediment is difficult to treat because it is wet, fine-grained and tends to become contaminated with compounds that are difficult to remove. These contaminants can kill or impair the growth of benthic invertebrates and bioaccumulate in the food web, leading to harmful concentrations in predators such as fish-eating birds and humans. Pollutants that were discharged many years ago often still reside in bottom sediments, sometimes resuspended in the water column if disturbed.

## 3.1 Bottom sediments

Extensive monitoring of sediments in Toronto Bay took place in 1995-96. It is anticipated that following further analysis of the data, discrete areas of the Bay will be designated a) "no biological effects" where no further action is required, b) "biological effect attributable to active sources" where source control is of highest priority (i.e. adjacent to active combined sewer overflows), or c) "biological effect attributable to historical sources", where remediation or removal may be appropriate (*The Influence of Urban Runoff on Sediment Quality in Toronto Harbour,* presentation by Duncan Boyd, Environmental Monitoring and Reporting Branch, Ontario Ministry of Environment. 1999). The current lower water levels in the Great Lakes could accelerate the need for sediment remediation and management as it is likely that more sediment will be churned up or resuspended by boating or dredging.

Dredging re-suspends sediments and associated contaminants in the water-column.

The TRCA initiated a Sediment Awareness Project in 1998 to address the source of much of the sediment in the Toronto area – sediment generated from construction sites, particularly in the sensitive headwater streams. This project includes developing a monitoring protocol that will provide the framework for new, specific, and practical improvements to the existing provincial standards for Erosion and Sediment Control on Urban Construction Sites.

## 3.2 Benthic invertebrates

During the summer of 1998, the Toronto and Region Conservation Authority conducted surveys of benthic macroinvertebrate communities in Etobicoke Creek, Mimico Creek, Don River, and Highland Creek. The results were analysed using a set of 15 criteria based on existing data from reference locations. None of

the stream sites were considered severely impaired. All of the stations had bethos present, and none were completely dominated by oligocheate worms (which would have been a sign of severe degradation). By the end of 2000, TRCA will have completed invertebrate surveys across all the watersheds of the RAP area. This baseline information will be invaluable for establishing de-listing targets and a timeline.

## 3.3 Phytoplankton and zooplankton

The status of this Beneficial Use – healthy phytoplankton and zooplankton communities – requires further assessment. As stated in the 1998 Progress Report, informal analysis indicates that there is general degradation of populations associated with eutrophic conditions and contaminated sediment in the vicinity of outfalls, river mouths, and sheltered embayments.

# Section 4 AIR & CLIMATE

Airborne emissions and their deposition in rivers, creeks and the Lake are a serious issue in the Toronto Region, as in other parts of the Great Lakes. Constant growth in the Toronto RAP area, particularly in the outer regions of the GTA, aggravates contaminant deposition as increased construction, automobile and energy use cause total emissions to go up. While there are no figures available specific to Toronto watersheds and waterfront, the Lake Ontario Lakewide Management Plan Stage I report estimated approximate annual loadings from atmospheric deposition to Lake Ontario as a whole, in the range of 64 kg PCBs, 16 kg total DDT, and 13 kg of dieldrin.

Development and economic patterns encourage large numbers of daily communters to and from the downtown core, aggravating air pollution.

Climate change also represents an important challenge for the health of our watersheds and the Lake, because it involves changes in air and water temperatures and local precipitation patterns. Issues of concern include: groundwater infiltration and discharge rates, transition of aquatic habitats from cold to warm water fisheries, freezing and thaw patterns that impact aquatic breeding, absence of spring freshettes, increased acidification of local watercourses, increased prospect of flash flooding in small watersheds, and reduced efficiency of stormwater ponds.

Due to the complex nature of atmospheric conditions, it is difficult to determine to what degree the Toronto RAP area is being affected by poor air quality and climatic change. Studies have been undertaken at the global, national and provincial levels in order to determine the effects of air pollution and climate change on human health and the environment. However, a lack of information exists to determine possible impacts at the local level. The following studies and initiatives may form the basis for a discussion of actions needed in the Toronto AoC.

Progress:

- The Ministry of the Environment has been monitoring air quality since the mid-70s. Five priority pollutants - carbon monoxide, ground level ozone, particulate matter, sulphur dioxide and nitrogen oxides - are measured regularly and compared to the province's Ambient Air Quality Criteria (AAQC). The Air Quality Index (AQI), a standardized air quality reading based upon the AAQC, is dependent upon measured levels of the 5 priority pollutants. In general, an exceedance of the AAQC by any of the 5 pollutants causes an AQI reading of moderate to poor. When the AQI reaches this level, impacts on human health and vegetation occur to varying extents. In 1997, the number of days an AQI reading measured moderate to poor across the GTA ranged from 22 in downtown Toronto to 79 in Stouffville. For more information visit: http://www.airqualityontario.com or call (416)246-0411.

- In order to alert residents to a forecasted poor air quality episode and the need to modify their activities accordingly, the Ministry of the Environment

began issuing Air Quality Advisories in 1993. In 1999, 5 advisories were called for the GTA between the months of June and August that lasted a total of 9 days. Citizens were asked to take public transit instead of driving and to stay inside if they suffer from any respiratory ailments. Children and seniors are particularly at risk. For more information on Air Quality Advisories, visit the Ministry of the Environment's website at www.ene.gov.on.ca.

The Gardiner Expressway and Lakeshore Blvd.crossing the Don River.

- Transportation is the leading cause of airborne emissions and so, a major ongoing culprit in pollutant deposition to lakes and rivers, as well as climate change. The total number of vehicle kilometers travelled increased by 17% across Ontario between 1988 and 1997, with further increases expected as population and economic growth continue. For regions such as the GTA, where the number of vehicles on the road has increased faster than infrastructure expansions, increased congestion compounds the pollution problem. Congestion leads to the further emission of pollutants as vehicles are less energy-efficient when idling. The Greater Toronto Services Board (GTSB) has addressed this issue in a recent report - *Removing Roadblocks: A Strategic Transportation Plan for the GTA and Hamilton-Wentworth*. The plan calls for a transportation investment partnership between the three levels of government and private organizations in order to improve transportation throughout the region. Improving and co-ordinating public transportation networks is one of the major components of this plan.

- In 1988, a conference held in Toronto, *The Changing Atmosphere: Implications for Global Security*, attended by 300 international climate change experts, encouraged the City of Toronto to adopt a 1990 emissions reduction goal. The City committed to reduce greenhouse gas emissions to 20% below the 1990 level by 2005. Municipal agencies such as the Energy Efficiency Office and the Toronto Atmospheric Fund have been working on initiating and funding emissions reduction projects for several years. However, recent studies show that significant progress has not been made towards reducing overall emissions. On the other hand, the efforts have mitigated rises in emissions that would have otherwise occurred as a result of population growth and increased economic activity. Increased effort will be required if the emissions target is to be achieved.

- In 1999, a symposium on Climate Change and Watershed Management was held in Toronto. It was agreed that a concerted effort by all levels of government would be required to assist Torontonians (and in fact all Canadians) in addressing the early implementation of adaptive management required to deal with the unavoidable impacts of climate change on watersheds. Recommendations included: an increased focus on the development of local climate change scenarios; substantial changes to related federal and provincial strategies and guidelines; improved communication and co-ordination among municipal departments; and extensive social marketing to mobilize changes in expectations, behaviour and technology.

# Section 5 HABITATS & WILDLIFE

The following describes some recent initiatives with relevance to the entire Toronto RAP area. Section 6 “Community Action & Watershed Highlights” contains many additional descriptions of site-specific habitat projects.

## 5.1 Habitats

- At the 1999 international Nations in Bloom competition, Toronto was awarded a “Green Oscar” for being considered the world’s greenest city. Toronto won against cities in 28 countries in a category of places with populations of more than one million residents. The judges were impressed by the city’s waterfront vision and recognition of heritage buildings. Toronto’s tree-advocacy project, a regular program to plant trees throughout the city and replace dying trees, was also unique.

Mimico Creek estuary

- Furthering its reforestation and conservation goals, the Toronto and Region Conservation Authority planted some 128,800 trees and shrubs on public, private and TRCA lands, in 1999.

- Land acquisition for conservation continues. The TRCA acquired an additional 121 hectares of land in local watersheds in 1998 and 362 hectares in 1999, bringing their total assets in watershed land to 13,623 hectares, just over 6% of the entire RAP drainage area.

- The amalgamated City of Toronto now has an Environmental Plan prepared in 1999 by the City’s Environmental Task Force. Recognizing that much of Toronto’s natural heritage is dependent upon the health of its waterways, the Plan includes several recommendations to preserve and improve water quality, habitats and natural landforms. Notable recommendations include: the development of policies, by-laws and other mechanisms to protect significant landforms such as rivers, ravines, beaches and bluffs; the elimination of the use of pesticides throughout the City of Toronto, including use on private lands; the development of a Natural Heritage Strategy and a Land Acquisition Strategy to create or enhance linkages between greenspaces and greenway corridors, and to continue to support work being done by a variety of agencies on waterway reclamation and habitat restoration.

## 5.2 Contaminants in wildlife

- Health Canada and the Canadian Wildlife Service conducted a nationwide study between 1987 and 1995 on contaminant levels in waterfowl and gamebirds. The results of the analysis showed that current contaminant levels, including those found in species within the Toronto area, do not pose a

health hazard to human consumers. This confirmed that consumption of wildlife (with the exception of fish) is not an impaired use on the Toronto and Region AoC.

- Studies of the Don River by the Sport Fish Contaminant Study Program from 1997-1999 revealed that rock bass, brown bullhead and carp from the G. Ross Lord reservoir were safe if consumed at no more than 8 meals per month. Both PCBs and DDT were detected, but only PCB concentrations exceeded objectives.

- Monitoring during 1999 at the mouth of the Don and Wilket Creek during wet and dry seasons found that the lawn insecticide diazinon exceeded International Joint Commission (IJC) water quality guidelines for the protection of aquatic life during both seasons. This points to the need for increased focus on reducing or eliminating commonly used chemicals, in addition to traditional priority pollutants.

- While we have witnessed a decline in mercury concentrations in fish flesh over the past 20 years, many predatory fish from the Great Lakes still contain high levels of mercury. In an apparent contradiction, mercury levels are very low in the water column, comparable to levels found in the open ocean. This is believed to be because when mercury enters the water column in oxidized form, it is either transferred to the sediments where it enters the food chain of aquatic species or volatilized and returned into the atmosphere, i.e., it does not remain in the water column for very long.

## 5.3 Flora and fauna populations

Spadina Quay Wetland - a new home for pike, birds and beaver on the Toronto central waterfront.

- Many fish found in the Toronto RAP waters are stocked. In 1999, over 165,000 fish fry and yearling were released to Toronto area waters, including 15,666 Atlantic salmon, 28,669 brown trout, 50,976 Chinook spring fingerlings and 69,942 rainbow trout at various locations along the Toronto waterfront, and in the Humber, East Don and Rouge rivers.

- There have been reports over the last few years of Chinook salmon swimming up the Don River. Some were spotted in 1999, making their way up a newly installed fish ladder at the Pottery Road weir. While fish movement in the Don is a great news story, Chinook are among the 25 species of exotic fish that have been introduced to the Great Lakes since the early 1800s. The long-term goal is to achieve this kind of success with native fish species.

- Tommy Thompson Park on the Leslie Street Spit was recently designated an Important Bird Area (IBA) of Canada in 1999, one of approximately 1,200 IBA's across the country identified since 1996. Tommy Thompson Park was selected for its significant bird concentrations, specifically for nesting Ring-billed gulls and Black-crowned night herons, and this reflects the importance of this park as a significant habitat feature on the Toronto waterfront.

- Since 1990, artificial nesting structures in the form of "reef rafts" have been used successfully at both Tommy Thompson Park and the Toronto Islands. A "reef raft" involves suspending a reef structure beneath a raft to serve simultaneously as immediate nesting habitat for Common terns and habitat enhancer for a variety of fish. The raft was designed to mimic the terns' preferred habitat of an offshore island, near their onshore nesting area in Tommy Thompson Park. Today, there are a total of eight reef rafts in the Toronto Region, each hosting between 25 and 30 nests annually.

- The Peregrine falcon recovery plan was confirmed successful this year, when the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) downlisted our fastest raptor from "endangered" to "threatened". The recovery program was very active in 1999 in Toronto, where many of the territorial adults reside year-round. For details visit: www.peregrine-foundation.ca.

- Wildlife are often attracted to stormwater ponds since they are open water bodies that may be located in or near natural green spaces. In response to increasing concern that enhancing and naturalizing stormwater ponds could inadvertently expose wildlife to contaminants, 15 ponds in Southern Ontario were studied by scientists at the Canadian Wildlife Service in 1997 and 1998. Wildlife was found to use all 15 ponds, with a low to moderate diversity of species. Predictably, given the ponds' purpose, sediments were found to be contaminated, sometimes above the lowest effect level for aquatic life. The Canadian Wildlife Service recommends that a clear distinction be made between natural/wildlife wetlands and stormwater ponds, and that stormwater ponds be managed, monitored and maintained to minimize risks to wildlife. This issue highlights the fact that contaminants endure in our ecosystem, and the need for increased pollution prevention and the banning of harmful substances.

Black-crowned night heron

### The Headwaters: Oak Ridges Moraine

The Oak Ridges Moraine is a 160-kilometre ridge of glacial silt and gravel that absorbs snow and rain and feeds dozens of rivers, including six tributaries that flow to the Toronto waterfront, namely: Etobicoke Creek, Mimico Creek, Humber River, Don River, Highland Creek, and the Rouge River. The health of the moraine and each tributary is crucial to the overall health of the lake and waterfront.

There is a consensus among organizations trying to protect the Moraine that a piecemeal approach as each new development application comes forward will result in more incremental degradation. Efforts are underway to convince the provincial government to adopt and enforce a provincial policy for protecting the entire Moraine. Visit the following websites for the latest on this critical issue:

City of Toronto: *www.city.toronto.on.ca/moraine/index.htm*
Federation of Ontario Naturalists: *www.ontarionature.org*
Save the Oak Ridges Moraine (STORM) Coalition: *www.stormco.org*

## EDUCATION

Changes to provincial curriculum in 1998 substantially altered the prominence of the environment in education. While significant components of environmental education are contained in the new curriculum, the new guidelines downplay the importance of the local environment and the need to cultivate close connections to our ecological systems. Significant opportunities to relay the watershed message however, remain in Grades 7 and 8.

Despite such changes, the quest to instill nature appreciation into the minds of Toronto area young people continues to thrive. In 1999, 164,068 people participated in educational programs held at conservation centres across Toronto and the GTA - about a 12% increase above the number of participants in 1998.

Section 6

# COMMUNITY ACTION & WATERSHED HIGHLIGHTS

Activities at the watershed level made a significant contribution to RAP efforts in 1999. The following sections highlight the achievements made along the Toronto area waterfront and its tributaries.

## 6.1 Waterfront

1999 was a high profile year for the Toronto waterfront – visions and strategies for redevelopment and renewal were accompanied by the completion of projects designed to achieve those same goals.

The Music Garden on the central waterfront sets a new standard for waterfront design.

- Released by Mayor Mel Lastman, the City of Toronto waterfront vision, ***Our Toronto Waterfront: the wave of the future!*** (1999), includes a vision for the reclamation and development of 2000 acres of wetland, green corridors, parks, forests and wildlife habitat along the 46km waterfront shoreline and adjacent lands, that will increase total parkland in Toronto by 66%. The vision also addresses the renewal and beautification of Toronto's 30 lakeside neighbourhoods as well as revitalization of the Port Lands - a 1000 acre land mass of which some 45% is vacant or underused. The completed Waterfront Trail is envisaged to link the revitalized waterfront from west to east. $72 million has already been committed to the project by the City of Toronto. New jobs, more housing units and a suitable forum for the 2008 Olympic games, are among some of the additional benefits hoped to be achieved through the Toronto Waterfront restoration project. A Task Force chaired by Robert Fung was established to make recommendations on implementing the Mayor's vision.

- The proposed design of the ***Port Union Waterfront Improvement Project (PUWIP)*** was unveiled in 1999, and the approvals process and fundraising continue. The purpose of the PUWIP is to safely reconnect the Village of Port Union to its waterfront, from which is was cut off with the construction of the Grand Trunk Railroad in 1858. The PUWIP design includes a public amenity area along the waterfront, several safe crossings (underpasses) of the rail line, 3.8kms of Waterfront Trail between Highland Creek and the Rouge River, and a pedestrian bridge over Highland Creek.

- Officially opened in 1999, the ***Spadina Quay Wetland*** located at the foot of Spadina Avenue adjacent to the Spadina Marina on the waterfront side, is an integral part of the Harbourfront vision. This 0.35 hectare shoreline habitat enhancement project has transformed a vacant parking lot into an ecologically diverse wetland in a highly urbanized section of the Toronto waterfront. As well as providing a high quality spawning ground for Northern pike and habitat for other aquatic plants and wildlife, the wetland establishes a contin-

Humber Bay shores

uous park along the water's edge for the use and enjoyment of local residents and visitors.

- The ***Humber Bay Shores waterfront park*** opened in 1999. This beautiful parkland with trail connections, habitat features, and stormwater management facilities, represents the culmination of many years of dedicated work by numerous organizations and individuals, as well as an investment of approximately $20 million by the TRCA and the City of Toronto.

- The ***Waterfront Regeneration Trust***, one of the organizations charged with coordinating the Toronto and Region RAP, completed its transition in status from a provincial crown agency to an independent, non-profit, charitable organization. The Trust will retain its identity, and continues to carry out the mission of bringing together people, ideas, and resources for the regeneration of waterfront communities and their adjacent lands.

- ***Toronto Bay Initiative*** , a community organization dedicated to a clean, green and accessible Toronto Bay, fully incorporated and established a Board of Directors in 1999. They hosted several successful events, including a boat tour with over 100 participants, and the Big Summer Splash! to raise awareness of water quality in the Bay.

Etobicoke and Mimico Creeks
Working Towards Healthy Watersheds

## 6.2 Etobicoke and Mimico Creeks

- The ***State of the Etobicoke and Mimico Watersheds*** report was completed, and the ***Etobicoke-Mimico Creek Watersheds Task Force*** was established by the Toronto and Region Conservation Authority in mid-1999, to guide the development of a management strategy for the Mimico and Etobicoke watersheds. The group met twice in 1999, and is full swing into developing a vision and watershed strategies, selecting indicators, and setting long term targets.

- A major landuse in the Etobicoke and Mimico watersheds is ***Pearson International Airport,*** which has historically been a large source of spills and runoff of glycol, jet fuel and hydraulic oil. The Greater Toronto Airports Authority (GTAA) has recently constructed a six-bay Central De-icing Facility and a series of stormwater control facilities, as well as an underground storage tank and online analyzer to automatically contain contaminated runoff. Additional stormwater management facilities are under construction.

Mouth of Mimico Creek

- At ***Heart Lake Conservation Area*** in Brampton, in the headwaters of the Etobicoke Creek, the Toronto and Region Conservation Authority is undertaking extensive shoreline restoration to assist the fish communities. Gabion baskets will be removed and shrubs and wetland vegetation will be planted.

- The City of Brampton completed a draft report for its ***Stormwater Retrofit Study*** and, in partnership with the City of Mississauga, the retrofit of three existing ponds was initiated in the Derry / Hwy 410 area.

## 6.3 Humber River

- The Humber was designated a ***Canadian Heritage River*** in 1999, largely because of it's outstanding human heritage and recreation values. In the watershed, 269 archaeological sites and 799 listed or designated historic buildings, cemeteries, mill sites and other historic sites have been identified. The Humber is the 26th river in Canada and the sixth in the province of Ontario to be designated a Canadian Heritage River.

- In the ***Granger Greenway*** 830 metres of the inter-regional trail system was recently completed, including a pedestrian bridge over the East Humber River, connecting the McMichael Canadian Art Collection with the New Kleinburg Forest.

- The Great Lakes 2000 Cleanup Fund approved the ***Humber River Instream Barrier Mitigation Project*** which assisted with the alteration of three of the Humber River's most crucial barriers to permit fish movement. This includes a section of the Old Mill dam and Raymore Park dam in the City of Toronto, and the weir at Doctors McLean Park (Fundale Park) in the City of Vaughan. In October 1999, the Raymore Park Fishway and Doctors McLean Park Fishway were officially opened, allowing migratory fish to move upstream into the watershed for the first time in many decades. Plans are being finalized to modify the remaining three priority barriers on the river.

- In 1999, 682 students participated in the ***Yellow Fish Storm Drain Marking Program*** painting 1,330 yellow fish near storm drains to raise public awareness of the connection between dumping wastes in the storm sewer and the effects on the Humber River. Community groups, assisted by TRCA, planted approximately 9,000 trees and shrubs on public lands in 1999. According to a 1999 survey by TRCA, 5,268 students from 28 schools in the Humber Watershed (about one in three) visited the Humber River or local natural area for environmental education in 1998-99.

- The ***Canadian Millennium Partnership Program*** has joined the Humber Watershed Alliance, the TRCA and other partners in restoring the Humber River watershed. CMPP will provide $400,800 to help initiate various projects related to habitat restoration, community outreach, and trail development.

- Significant progress has been made by the TRCA towards engaging different cultural groups in environmental management work. With the financial assistance of Environment Canada and the Trillium Foundation, over 200 new multicultural groups have been contacted and participated in a variety of watershed management projects such as the planting of vegetation, the installation of bird boxes and creek clean-up events. This award winning ***Multicultural Outreach Project*** also resulted in a video which advocates a variety of strategies for engaging new Canadians in environmental actions.

Removal or mitigation of old dams and weirs allows fish passage to headwaters for spawning

**Don River**

- The vision of the Task Force to Bring Back the Don of a ***natural Don River mouth*** is more popular than ever, 11 years after the concept was first released. The vision calls for the re-establishment of a natural river mouth bordered by park space to replace the man-made Keating Channel. Visit the Don website to see the latest design for a naturalized river mouth at: www.city.toronto.on.ca/don/index_2000.htm.

- The newly restored ponds at ***Riverdale Farm*** have a green growth on the water's surface that some have mistaken for algae or some form of evil sludge, which is in fact a tiny native aquatic plant called duckweed. Duckweed reproduces abundantly in quiet water and serves as an important food source for waterfowl, beaver and muskrat. The final stage of the restoration project will see the installation of a series of moist, marshy depressions (i.e. drainage swales) and two storm-scepters (filters that remove oil and grit from storm water). In addition, a small settling pond will be constructed to provide additional water to the ponds and improve water quality.

- The ***Bartley Smith Greenway*** that follows the west branch of the Don River through the centre of the City of Vaughan is one of the current targets for the Don Valley regeneration project. In 1999, the City committed $174,000 to the Greenway for the stormwater pond retrofit at Killian Lamar, trail system construction and plantings at Rupert's Pond, and the start of trail work in the Highway 407/Hydro Corridor. The City of Vaughan has agreed to a capital budget allocation of $180,000 for the year 2000, and the TRCA and the City have agreed on construction priorities.

- The ***Baker Sugar Bush*** is the largest remaining stand of sugar maples on the Don River and one of the best examples of old growth forest remaining in Southern Ontario. It operated as a maple syrup producing sugar bush from 1820 to 1998, and the Province of Ontario assisted the TRCA, City of Vaughan, and the Regional Municipality of York to acquire the property in September 1999, protecting this historically and environmentally significant property for future generations.

- ***Mud Creek*** has now been "daylighted" or "unburied" where it enters the Don River, and a small pond has been created between the Bayview extension and the river. Naturalization of Mud Creek was undertaken to foster Pike spawning in the lower ponds of the Don Valley Brick Works.

- ***Bring Back the Don Day*** on 18 September 1999 was a huge success. More than 1,200 people of all ages attended the 10th anniversary celebration, riding the "Oriole" riverboat, taking a train through the valley, and enjoying an evening Gala at the Brick Works with sunset tours of the restored Weston Quarry garden, including wetlands and wildflower meadows.

**Highland Creek**

- As part of the ***Markham Branch Restoration Project***, the structural work to remove the channel and allow the creek to flow through a naturalising valley corridor has been completed. Additional plantings of native shrub and tree material will take place over the coming years by ***Friends of Highland Creek***

- The ***William Alexander Dempsey Eco Park*** was established in the Centennial Creek subwatershed, with three stormwater ponds and wetlands.

- The TRCA completed the ***Highland Creek State of the Watershed*** report. It is available to download at www.trca.on.ca.

**Rouge River Watershed**

- In 1999, TRCA property staff began the process of transferring ownership of ***1,364 hectares of Rouge Park*** land from the Provincial government. The Province added 660 of those hectares, mostly located along the Little Rouge Corridor, to the Rouge Park system in April 1999 making it the largest urban park in North America. The ownership transfer to the TRCA also includes the management of more than 100 lease properties.

- In 1999, over 100 land owners were contacted about land and water stewardship on their properties through the ***Rouge Park Stewardship Program***. As well, a new landowner incentive project called the River Keeper Recognition Program acknowledges the contributions of local residents, companies and institutions who own or manage land in the Rouge watershed and have made the extra effort on their properties to help restore healthy aquatic ecosystems. To recognize these efforts, participants receive a 5" x 17" white aluminum sign that features the term "River Keeper" and a framed certificate with the landowner's name and project description.

- Additional 1999 Rouge Watershed projects included:
  ~Little Rouge Wetland Creation Project (Save the Rouge Valley Inc.),
  ~Peregrine Falcon Project (Canadian Peregrine Foundation),
  ~Little Rouge Restoration Project (Save the Rouge Valley Inc.),
  ~Wildlife Habitat Structures (N.E.S.T.),
  ~Earth Day Planting (Earth Day Scarborough),
  ~Reptiles and Amphibian Project (Toronto Zoo), and the
  ~Beare Road Restoration (Friends of the Rouge Watershed).

# Section 7 MONITORING

- Substantial progress has been made in developing a watershed monitoring framework and network in the Toronto Region. The Toronto and Region Remedial Action Plan and the Great Lakes Water Quality Board of the International Joint Commission held a public workshop on watershed monitoring and management in Toronto in May 1999. A summary report can be viewed on-line at www.ijc.org/boards/wqb/toronto.html.

  TRCA has taken a lead role in developing the monitoring framework, which includes a long list of technical indicators in the areas of water quality, water quantity, aquatic habitat and species, terrestrial habitat and species, and groundwater. Each indicator has a proposed monitoring protocol and will eventually contribute to a delisting timeline and assessment of those beneficial uses which require further assessment. The development of an improved monitoring network incorporates a full partnership approach in order to improve access to data, ensure timely reporting, and avoid the duplication of efforts.

- The above mentioned framework will help integrate and coordinate the wide-ranging monitoring activities currently underway in the Toronto AoC watersheds. Ongoing agency monitoring includes monitoring by MOE (reconnaissance surveys, drinking water surveillance program, intake pipe monitoring, Ontario beach monitoring, Yong-of-the-Year fish monitoring, Ontario Sport fish contaminant studies, tributary toxics discharge monitoring, and flow monitoring), municipal works departments (Toronto Lake and Stream monitoring, municipal intake compliance monitoring), Environment Canada (water survey of Canada suspended sediment loadings; precipitation) and TRCA (waterfront studies of sediment chemistry, benthos, and clam biomonitoring on a project basis; fish sampling; habitat assessments, flow monitoring, snow conditions, and precipitation).

- In 1999, TRCA, in discussion with the City of Toronto and the Ministry of Environment began to address the need to resume regular stream water quality monitoring. Since 1996, the MOE has only monitored two stations in the RAP area, down from 35 in 1995, as part of the Provincial Water Quality Monitoring Network (initiated in 1964). Continuous monitoring is required if this valuable data set is to be useful in the future. The City of Toronto intends to monitor several of the abandoned stations, as part of its Lake & Stream Monitoring Program.

- An assessment of the six tributaries that discharge to the Toronto area waterfront, and detailed analyses of sampling results, was released, summarising

Community member taking a water sample in Toronto Bay

data collected between 1991 and 1992. Sources: Boyd, Duncan. *Assessment of Six Tributary Discharges To The Toronto Area Waterfront Volume 1: Project Synopsis and Selected Results* Ontario Ministry of the Environment, May 1999 and Boyd, D., D'Andrea, M., and R. Anderton. *Assessment of Six Tributary Discharges The Toronto Area Waterfront Volume 2: Technical Appendix and Data Summary.* Ontario Ministry of the Environment, May 1999.

- In just a few short years, an extremely successful volunteer frog monitoring program has been implemented across the Toronto Region, involving in 1999, 36 volunteers in the Don Watershed, 7 volunteers in the Humber Watershed, and 51 volunteers in the Rouge Watershed, at more than 100 stations.

- The Canada-Brazil Ecological Monitoring Exchange, coordinated by the Earth Council Institute - Canada, wrapped up its first year, with great results. Students from Brazil traveled to Canada and, in conjunction with students from Toronto, undertook community monitoring on the Don and Humber Rivers. They learned simple and effective monitoring techniques, and were inspired to protect and preserve their local environment through knowledge and experience.

# Section 8 SOURCES OF INFORMATION & CONTRIBUTORS

**Toronto and Region RAP milestone reports**


Metro Toronto Remedial Action Plan. July 1993. *Stage I: Environmental Conditions and Problem Definition*

The Metro Toronto and Region Remedial Action Plan, 1993. *Strategies for Restoring Our Waters.*

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Toronto and Region Remedial Action Plan. May 1999. *Assessment of Six Tributar Discharges to the Toronto Area Waterfront, Volume 2: Technical appendix and data summary.* Prepared by Duncan Boyd, Ontario Ministry of the Environment.

**Websites to visit for more information**

*Canadian Environmental Law Association:* www.cela.ca
Highlights current environmental concerns. Links include; WaterWatch, Children's Health Project, Pesticides, Cases and Campaigns, Publications and Resources.

*Canadian Water Resources Association / Association Canadienne des Ressources Hydriques:* www.cwra.org
Lists journals, books, events and information pertaining to water quality and watershed management.

*Center for Watershed Protection* : www.cwp.org
A US site that lists workshop schedules, model ordinances, publications, facts,contacts and new information about watershed protection

*City of Toronto:* www.city.toronto.on.ca.
See details about initiatives, reports and events occuring in the City of Toronto, including water conservation, homeowner stewardship, public works projects, and more.

*Environment Canada:* www.ec.gc.ca/envhome.html
Find current information about air quality, clean water, nature, climate & weather, and environmental predictions.

*Federation of Ontario Naturalists (FON)* : www.ontarionature.org
FON's work involves protecting nature through research, education and conservation actions.

*Green Ontario*: www.greenontario.org
Provides information on environmental issues and activities in Ontario and Canada including a directory, details about provincial strategies, community actions, funding and more.

*Ontario Ministry of the Environment:* www.ene.gov.on.ca
Lists various publications and studies, including several related to water quality and drinking water.

*Peel Region:* www.region.peel.on.ca
The Peel Region homepage contains two links of particular interest, "Water Quality in Peel" and "Environmental Issues" that examine and report on current local environmental issues and topics.

*Save The Oak Ridges Moraine (STORM*): www.stormco.org
This site provides maps and information about events, contacts and actions in relation to the the Moraine.

*The Sustainability Nework*: www.sustain.web.net
This site is dedicated to strengthening management skills in the environmental non-profit community.

*The Toronto and Region Conservation Authority* : www.trca.on.ca
Includes watershed management information for all the RAP watersheds, and activities and events in the Greater Toronto Area.

*Toronto & Regional Remedial Action Plan (Toronto and Region RAP):*
www.on.ec.gc.ca/glimr/raps/ontario/toronto/intro.html
Details information and action on work being done to delist Toronto as one of 43 an Areas of Concern within the Great Lakes Basin.

*Toronto Environmental Alliance (TEA)* : www.torontoenvironment.org
Provides information about challenges and actions for making Toronto a healthier and more beautiful city.

*US Environmental Protection Agency:* www.epa.gov/glnpo/aoc
Outlines the RAP program and the Areas of Concern in the US part of the Great Lakes basin and programs to improve environmental conditions.

*Water Information Network (WIN)*: www.riversides.org/newwin/win.html
Outlines local, provincial and international issues and actions about water.

*Waterfront Regeneration Trust:* www.waterfronttrust.com
Lists publications, events and information about waterfront development, Remedial Action Plans, Brownfield Redevelopment, the Waterfront Trail and Ecosystem planning.

*York Region Municipality* : www.region.york.on.ca
Includes York's official plan and environmental policies.

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Contributors:

| | |
|---|---|
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