TURNING THE CORNER

theDon WATERSHED REPORT CARD

The Don Watershed Regeneration Council
The Metropolitan Toronto and Region Conservation Authority

May 1997

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FIGURES

The last time salmon was in the river was the 1890s. The prisoners in the Don Jail complained about too much salmon in their diet.

Respondent, Angus Reid, 1996

INTRODUCTION

Why a Report Card?

In 1994, the Don Watershed Task Force published a strategy entitled *Forty Steps to a New Don*. This Report Card fulfills step 39 of that plan: "Publish a Report Card every three years to mark and celebrate the progress in the Don's regeneration."

We believe that this first Don Report Card is an important initial assessment of the state of the watershed and our collective commitment to its regeneration. It is also an ambitious but realistic work plan for the next three years and beyond.

How to Read It

The Report Card is organized into six chapters which continue the three themes of *Forty Steps* - Caring for water; Caring for nature; Caring for community - and the three principles of regeneration - Protect what is healthy; Regenerate what is degraded; and Take responsibility for the Don.

The first three chapters are mainly concerned with the condition of the watershed and the community's relationship to it: How clean is the water? How much of the watershed is in wetlands? How often are local schools using the Don? The final three chapters focus more on our actions to regenerate the Don: How well are natural areas protected? What regeneration projects are underway? Are residents good stewards of the Don in their daily life?

How is The Don River Doing?

We are gradually overcoming 100 years of degradation!

The Don's general environmental health is declining, although at a slower rate than before, and in some areas is actually improving;

Overall, the health of the natural environment - the water and the land - is still declining but we are much closer to reversing this trend. Water quality is slightly improved, but still not clean and there is wildlife in the Don watershed, although only the most common urban species can be found.

With the substantial increase in community awareness and involvement in the Don over recent years, we are making a difference!

Over recent years, our attitude towards and involvement in the regeneration of the Don have improved dramatically. Community groups are planting trees, shrubs and wildflowers, and creating wetlands. Governments, other agencies, and businesses are contributing greatly. With continued effort, we can bring back the Don!

Indicators

This general impression of the Don's health is distilled from the 18 separate indicators that form the heart of the Report Card. An indicator is a sign. It is one measure of health that points to the condition of an entire system.

Most of the indicators in the Report Card are integrative: they relate to more than one topic. For example, increasing the area of **wetlands** in the watershed (Indicator 6) should also improve **water quality for aquatic habitats** (Indicator 3), increase and diversify **frog and fish** populations (Indicators 9 and 10), ameliorate the Don's unnaturally high flooding (Indicator 1) and enrich people's **responsible use and enjoyment** of the Don (Indicator 13).

In other words, everything really is connected to everything else.

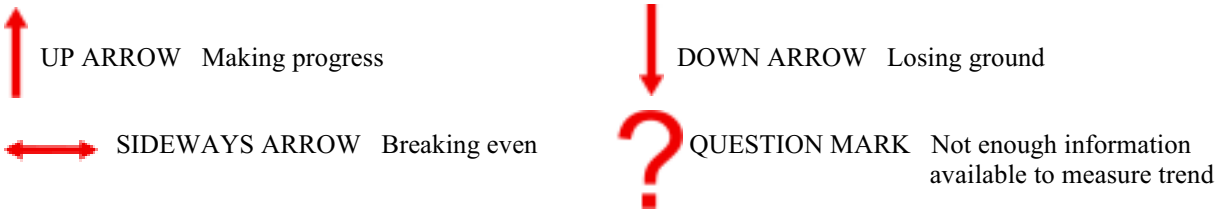
Targets

Each of the 18 indicators is accompanied by three sets of targets or specific aims to be achieved by the years 2000, 2010 and 2030. The year 2000 represents progress in the short term or targets that we believe are achievable by the next Report Card. In Indicator 15 (Regeneration Projects), for example, the short-term target is to double the current number of regeneration projects to 200.

The medium-term targets for the year 2010 are more challenging and need more time. Achieving the medium-term targets sets the stage for working towards the long-term targets on our far horizon of 2030. By then, continuing with our example of Indicator 15, all combined sewer overflow and stormwater problems in the watershed should be resolved. We have chosen 2030 for our long-term targets because we recognize that watershed regeneration is a long-term commitment requiring the participation of at least the next generation.

Evaluating Progress

In this first Report Card, we judge progress wherever possible by determining how much has been accomplished since the Don's regeneration strategy was set out in *Forty Steps*. As well, we compare conditions today with conditions 30 years ago to find general trends of improvement or decline. For each indicator, these judgments are expressed as arrows pointing up or down.



Report Card: A Community Effort

The 18 indicators were chosen through a year-long process of consultation with scientists, other technical experts and the public. A scientific workshop produced a long list of possible indicators for water quality and habitats, while seven public meetings throughout the watershed addressed the indicators concerned with community issues and stewardship. A final workshop of scientists and residents narrowed down the initial list of indicators.

Finally, targets and evaluation arrows were chosen for each indicator by the Don Council's Watershed Reporting and Monitoring Committee using information from background reports prepared by staff, consultants and volunteers.

Looking Ahead

The Don Watershed Regeneration Council pledges to work with the community and agencies to continue to implement *Forty Steps to a New Don* to develop monitoring programs, to further refine the Report Card targets as new data become available, and to support the efforts of everyone engaged in activities to regenerate the Don.

As this first Don Report Card goes to press, uncertainty surrounds the future of municipalities in the Toronto area. We stress that the work of regenerating the watershed proceeds according to the principles of ecosystem integrity. No matter what changes of boundaries, names or responsibilities may occur in local governments, those ecosystem principles - and our responsibilities as citizens of the watershed - remain unchanged.

In three years we will report again on conditions in the watershed and our collective successes in moving regeneration ahead. We look forward to this next stage in regenerating the Don watershed and in documenting progress.

Join us!

Tija Luste, Chair
Watershed Reporting &
Monitoring Committee

Mark Wilson, Chair
Don Watershed
Regeneration Council

CARING FOR WATER

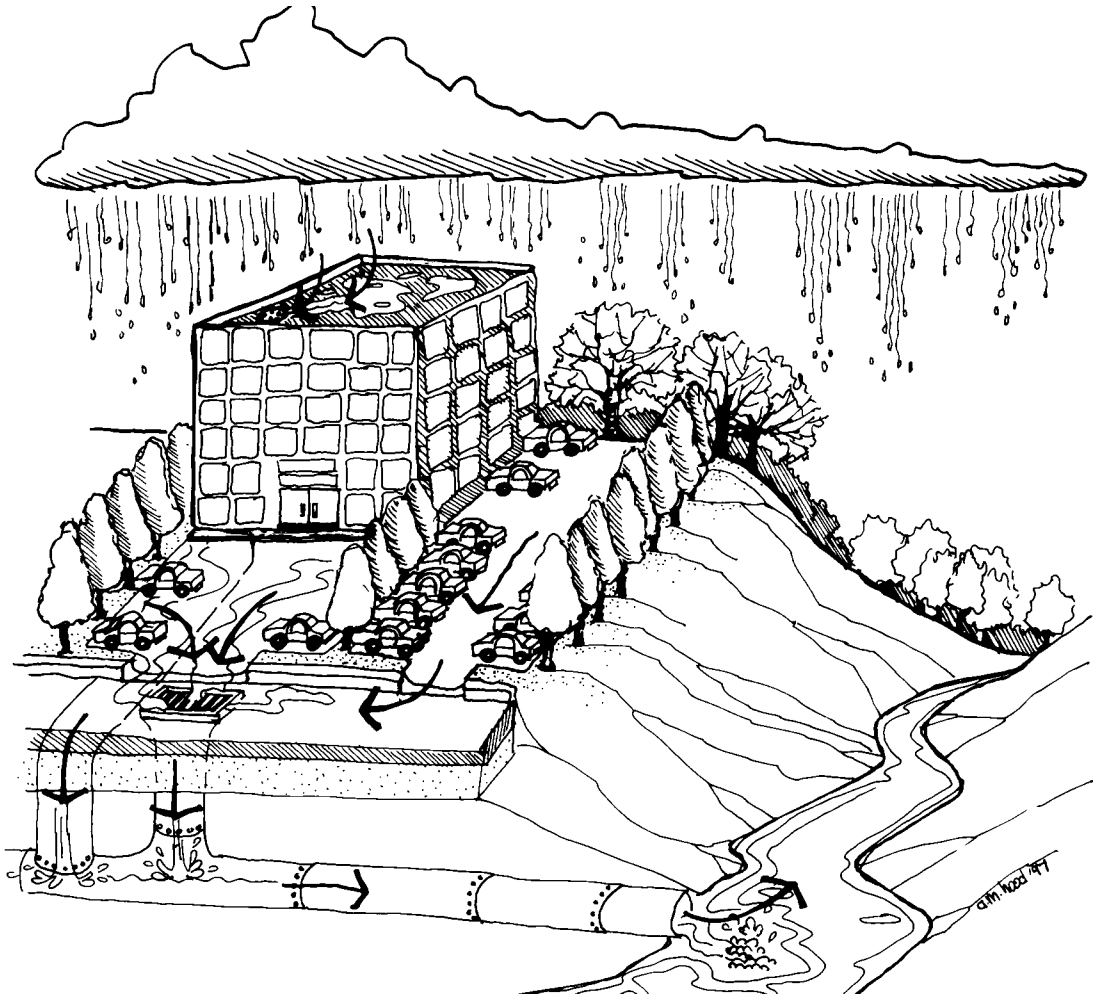
THE RIVER

Stormwater is the main despoiler of the Don River and its tributaries. Not industrial discharges. Not the one remaining sewage treatment plant on the river. But simply, the huge volume of dirty water that washes off urban pavements when it rains. Stormwater creates two related problems in the Don. It worsens the Don's flooding, which is already far greater than in a natural river system, and it worsens water quality by bringing a host of pollutants with it into the Don's network of streams.

Today, more than 80 percent of the Don watershed is urbanized. However, only 5.3 percent of the Don's urban area has controls to improve stormwater quality. Creating or enhancing stormwater controls in existing urban areas is of primary importance in regenerating the Don.

Yet, we have already proven that we can bring about positive change. During the past 30 years, for example, water quality in the Don, for at least one parameter - phosphorus - has actually been improving, as small sewage treatment plants along the river have been removed, and as industries have stopped discharging wastewater into it. And in terms of chemical pollution, recent tests by the Ministry of Environment and Energy show that all the fish caught in the G. Ross Lord Reservoir on the West Don are safe to eat.

Will children swim in the Don again? Bacteria counts indicate that parts of the upper river are actually safe for swimming in dry weather today. However, the exceedingly high bacteria counts in wet weather throughout the watershed make swimming a very long-term goal.



Flow Pattern

Traditionally, when a city and suburbs are built in a watershed, they change the natural flow of water in the system. The thousands of acres of paved surfaces - rooftops, roads, plazas, sidewalks, driveways and parking lots - prevent rainwater from seeping into the ground and making its way to local streams. Instead, eavestroughs, downspouts, gutters and underground storm drains remove the water from the city as rapidly as possible, taking it to the nearest stream.

The watercourse responds to this sudden influx of water by rising rapidly, creating annoying and dangerous flooding in heavy storms or during spring snow melt. The rushing water makes life very difficult for fish and other aquatic species, as the sediment laden stormwater scours stream bottoms and tears at streambanks. In dry weather, on the other hand, the river may become sluggish and warm, and smaller streams may dry up entirely, since they may no longer be replenished by a steady seepage of groundwater. In the Don watershed, this process of turning streams into storm sewers began in the late 18th century.

Urbanization has greatly affected flow volumes in the river. During the past 30 years, while precipitation has remained stable, the Don's volume has actually increased. Where has the extra water come from? Urbanization means more pavements, which means less rainfall seeping into the soil, less rainfall taken up by trees and other plants, and less rainfall staying around long enough to evaporate. Therefore more water reaches the river.

The challenge is to help the urbanized Don behave more like it did before European settlement.

Indicator 1: Flow Pattern

Flow (measured as volume of water) has doubled, worsening the ability of the river to maintain good habitat and river banks.

Where we were:

When there was less urbanization and less stormwater directed into the Don, its average volume was lower and its flow was steadier. In 1962, the Don's total yearly volume, measured at Todmorden Mills, was about 75 million cubic metres.

Where we are:

During the past few decades, there have been high, swift peak flows in storms with rising volumes, even though precipitation has remained the same. In 1990, the Don's total yearly volume, measured at Todmorden, was about 150 million cubic metres, double what it was 30 years ago. To help prevent further deterioration, stormwater detention ponds to hold back the amount of stormwater reaching streams have been required in new developments since 1980.

Where we want to be:

By 2000: Maintain flow volumes at today's levels, even with new development.

By 2010: Gradually decrease the Don's flow trend.

By 2030: Return to the lower, more even flows of 1962.

How to get there:

Municipalities should use every opportunity to retrofit and create better stormwater management through detention ponds, underground storage, and wetlands. Secondly, emphasize lot level source controls at homes, businesses, and institutional facilities to reduce the amount of stormwater reaching the Don. For example, disconnect downspouts from sewers and let the water pool onto the property, use rain barrels, turn hard surfaces into pervious ones such as lawns or gardens where possible.

I should redirect my rainwater from my downspouts into my backyard rather than into the sewer system.

Respondent, Angus Reid, 1996

Water Quality - Human Use

Sight, smell, and touch. These are the intimate means by which people relate to the river. Water that is relatively clear of sediment and free of smelly algal blooms is attractive to hikers, birdwatchers, cyclists, and school children. A river that people are not afraid to touch - if not for swimming, then at least for wading or canoeing - invites the community to its banks.

The Don has a long way to go to meet these tests of the senses and public perception. Water pollution is the overriding concern of a majority of people who live near and visit the Don. In a survey of Don watershed residents conducted by the Angus Reid Group in July 1996 for the Don Council, "dirty" or "pollution" were the first words that popped into the minds of 47 percent of the respondents.

It may surprise many people to learn that some parts of the Don - German Mills Creek and the Upper West Don - are actually "swimmable" according to the province's limit of no more than 100 fecal coliform bacteria per 100 millilitres of water. But that is in dry weather only, when the river is fed mainly by groundwater. (Fecal coliforms are not dangerous in themselves, but serve as an indicator of the presence of raw sewage, which can carry harmful bacteria, viruses, and other parasites.)

When it rains, and stormwater builds in volume, bacterial counts of more than 100,000 fecal coliforms per 100 millilitres are routinely recorded! If there were swimming holes on the Don, they would be posted by health authorities, just as the beaches at the lakefront are posted. Swimmers could develop ear, nose, eye, and throat infections; intestinal parasites; and skin rashes, especially children, the elderly, and people with compromised immune systems.

Indicator 2: Water Quality - Human Use

Despite good efforts, bacteria levels remain too high for swimming.

Where we were:

Despite many residents' memories of swimming in the Don as children, the river has probably been unsafe for swimming, according to today's standards, throughout this century except for occasional times in dry summers. In the middle of this century, 34 small sewage treatment plants released partially treated sewage to the river.

Where we are:

Bacterial counts have become worse since the mid-1960s, especially in wet weather when maximums can reach 107,000 fecal coliforms per 100 millilitres. This is due to increased volumes of dirty stormwater (see Indicator 4) and contributions from combined sewers. Yet in dry weather, counts as low as 20 coliforms per 100 mL have been recorded in German Mills Creek and the Upper West Don, well within the province's limit of 100 fecals/100 mL for safe swimming. In areas of the Lower Don where combined sewers exist, the following progress has been made: in City of Toronto 80% partial separation of combined sewer overflow (CSO) area (downspout disconnection is necessary for complete separation); in East York 65% CSO area eliminated; in Scarborough 70% partial separation; in Metro Toronto 65% of drainage area of the Main Sewage Treatment Plant has been separated.

Where we want to be:

People will enjoy being near the river, and will not be afraid to come in contact with the water. (See Indicator 3 for target for the "muddy" Don.)

By 2000: A funded plan for the virtual elimination of combined sewer overflows will be in place.

By 2010: The Don will be safe for swimming throughout the watershed in dry weather (i.e. less than 100 coliforms/100 mL).

By 2030: The river will return to a natural level of bacteria in both dry and rainy conditions.

How to get there:

A high priority in regenerating the Don and implementing *Forty Steps to a New Don* is dealing with the problem of combined sewer overflows, an infrastructure challenge which is the responsibility of governments. Secondly, stormwater detention and treatment as well as source controls such as stoop 'n scoop will help reduce non-point sources of bacteria.

Where do all the bacteria come from? Untreated human sewage flows occasionally into the Don primarily from combined sewers in the older parts of Metro Toronto (see Figure 1). When it rains heavily, these combined sewers, which carry both raw sanitary wastes and dirty stormwater, reach capacity and overflow through outfall pipes into the river. Illegal cross connections between sanitary and storm sewers, as well as feces from dogs and to a lesser extent waterfowl also contribute to bacterial pollution in the Don.

Water Quality - Aquatic Habitats

Fish and other aquatic creatures need cleaner water than we do for an occasional wade or swim, because they live in the water all the time. They "breathe" the water and eat plants or animals that also live in the water. Bacteria and parasites in sewage that affect humans do not, as a rule, harm aquatic life. But many other substances do, such as excess sediment, high concentrations of salt, low oxygen, metals, and a wide range of natural and manufactured chemicals from fertilizers to insecticides to paint. Many organic chemicals bioaccumulate in plants, invertebrates, and fish that have to live in this polluted water. These chemicals then biomagnify in the food web to much higher concentrations in predatory fish, reptiles, and birds, putting them at risk.

Where do the Don's chemical contaminants come from? The Angus Reid survey shows that 53 percent of us believe, incorrectly, that industry is the main source of the Don's pollution. In fact, industries are not allowed to discharge wastewater into the Don. It is stormwater, again, that is to blame.

As well as pushing combined sewers into overflow, stormwater carries with it into the river everything in its path that dissolves or floats. It brings a great many pollutants from vehicles, such as road salt, oil and grease, copper and other heavy metals, and organic chemicals such as carcinogenic benzene from exhaust. It brings leakages from old landfills and dirty melting water from contaminated snow dumps. It brings animal wastes, lawn and garden fertilizers and pesticides, and whatever people dump down storm drains, such as used motor oil, paint, and detergents. At poorly managed construction sites, stormwater brings tons of silt into the river.

Conventional water quality parameters used by government agencies include total suspended solids, phosphorus, biological oxygen demand, turbidity, chlorides (salt), bacteria, and sometimes individual trace metals and chemicals. Several of these parameters are measured routinely at five monitoring stations on the Don. For this Report Card, we have chosen one conventional parameter as an indicator of water quality: **total suspended solids**. Excess sediment from construction sites and agriculture is very destructive to aquatic habitats, as it scours streambeds, harms fish directly, and carries many chemical pollutants with it. Heavy sediment loads, measured as total suspended solids, also give the Lower Don its characteristic muddy colour.

Many scientists are now coming to believe that better indicators of water quality than conventional water sample tests are the species of creatures that live in the water, and their relative health. **Aquatic invertebrates** such as dragonflies, mayflies, caddisflies and stoneflies spend their entire life cycle in the water, and are highly sensitive to chemical contamination. Spills that would merely send fish in search of better habitats kill many invertebrates outright. Invertebrates such as worms, clams, and snails bioaccumulate chemicals, as do fish, and are easy to collect for testing.

I used to swim there when I was a kid.

Respondent, Angus Reid, 1996

Indicator 3: Water Quality - Aquatic Habitats

More pollution-tolerant species in the Don, but contaminants found in fish are declining.

Where we were:

There was more sediment in the Don in the 1960s and 70s than today, when North York and Scarborough were being urbanized and the Don Valley Parkway was being built. As recently as 1949, a biological survey of the Don indicated that 78 percent of the aquatic invertebrates throughout the watershed were sensitive species that are to some degree intolerant of pollution. No studies of chemical contaminants in fish flesh in the Don were done prior to 1981.

Where we are:

There is still too much sediment throughout most parts of the Don for healthy fish habitats. A 1984 survey of aquatic invertebrates found that only 41 percent of the species were intolerant of pollution and there were no sampling sites that had invertebrate communities that were primarily intolerant of pollution. Fish flesh studies since 1981 indicate declining concentrations of DDT and chlordane and stable levels of PCBs and lindane in the aquatic environment.

Where we want to be:

By 2000: 1) Add wet weather sampling of total suspended solids (TSS) to monitoring program.
2) Update the aquatic invertebrate data throughout the watershed to identify all members of the community (e.g. mayflies, caddisflies, worms, leeches, stoneflies, snails) to the species level.
3) Continue young-of-the-year fish monitoring program at 9 sites on the Don, and add 3 more sites - 2 in the headwaters and 1 in the Lower Don.
4) Continue and expand programs to identify and eliminate persistent toxins in the watershed.

By 2010: For aquatic invertebrates, increase the number of stations showing mainly pollution intolerant species from 0 to 3 (or 7%), increase those showing mainly moderately pollution tolerant species from 41% to at least 50%, and reduce the number of stations with mainly pollution tolerant invertebrates from 59% to 43%. (Targets to be confirmed after new survey.)

By 2030: 1) Sediment (TSS) will be less than 80 mg/litre more than 75% of the time.
2) A diverse group of invertebrate species will be found throughout the watershed. Restore the balance of species to the 1949 community of 13% pollution intolerant, 65% moderately tolerant, and 22% pollution tolerant.
3) Chemical contaminants will be within IJC's Aquatic Life Guideline.

How to get there:

How to get there: Set up required monitoring and research programs. Recognize sediment reduction as a priority and reduce sediment loads by controlling erosion at construction sites, farm fields, and at streambanks; providing erosion control training for all participants in the construction process, and strengthening municipal inspection and bylaw enforcement. Allow grit in stormwater to settle before release into the Don, treat stormwater to both slow its flow and improve quality wherever possible, and reduce use of road salt.

Measuring organic chemicals directly in the water is not very reliable since they tend to be released intermittently and in very small concentrations. A better method is to check the amount of chemicals that are accumulating within the fish that live in the waters. Fish bioaccumulate these chemicals even at relatively low concentrations in the water. Fish flesh studies carried out by the Ontario Ministry of Environment and Energy show that levels for most organic chemicals are declining.

Are these levels in fact safe? All of the fish tested at the G. Ross Lord reservoir - brown bullheads, rock bass, and carp - are edible. They meet the Ministry's highest requirements for human consumption based on tests for PCBs, mirex and pesticides. On the other hand, when young-of-the-year fish are tested and the results are compared to stricter guidelines that measure the biomagnification of chemicals within the food web (the aquatic life guidelines), PCB concentrations are too high. These aquatic life guidelines are stricter than the human consumption guidelines because they measure continuous impacts of chemicals on fish and those creatures that consume fish, as opposed to simply eating fish a few times per month.

Although we have chosen higher-level indicators of water quality for this Report Card (e.g. aquatic invertebrates rather than biological oxygen demand or specific chemicals in the water), it is vital to keep the Don's five provincial monitoring stations up and running. Regular measurements of conventional water quality parameters will be important in helping to determine, for example, why certain species of aquatic invertebrates may be missing in different parts of the Don, and keeping track of parameters such as chlorides, which may become a major problem for aquatic life in the future, if salt concentration increases.

Stormwater Management

Indicator 1 (Flow Pattern) is a measure of the physical condition of the river: how high does it rise during storms? Is its volume decreasing over time? Indicators 2 and 3 (Water Quality) address the pollutants in it, almost all of which are delivered by stormwater. Stormwater management has been chosen as a separate indicator in order to measure the actions that municipalities are taking to reduce the quantity of stormwater reaching the river and to improve its quality.

In terms of stormwater management, the upper and lower parts of the watershed are quite different. Because most development in York Region began in the 1980s, those areas north of Steeles Avenue were developed at a time when all resource management agencies recognized the importance of stormwater management. Until now, this has primarily meant that stormwater ponds have been constructed to help control the volume of water that gets into the streams and sometimes to control the quality of the water. It is important to note that other forms of stormwater control exist, especially source controls such as rainbarrels and downspout disconnection.

South of Steeles Avenue in the older urbanized sections of the watershed, however, there are virtually no stormwater ponds. Development is often so dense that creating them now is very difficult. Figure 1 shows where stormwater quantity controls, quality controls, and combined sewer overflow controls currently exist throughout the watershed. (Note: the Keele Valley landfill site has its own unique system for managing water).

Stormwater quantity ponds provide some improvement of water quality through the physical settling of sediments. But it's generally not enough. Ponds need to be designed somewhat differently in order to improve water quality significantly. For example, aquatic plants such as, cattails and bulrushes take up large amounts of pollutants, and a series of ponds does a better job than a single pond.

Indicator 4: Stormwater Management

Stormwater management is now required for all new development; agencies and community groups working to retrofit older urban areas.

Where we were:

No stormwater management was required in new developments before 1980.

Where we are:

Stormwater is the major conveyor of pollutants into the Don, including bacteria. Stormwater management (for both quality and quantity control) is now required for new developments. Quantity controls for new developments have been required since 1980; consequently 15.9% of the urbanized area in the watershed has quantity control, in the form of stormwater ponds. However, only 5.3% of the urbanized watershed area has quality control. In the older areas, urbanized before 1980, there is virtually no stormwater control.

Where we want to be:

By 2000: 1) Identify all opportunities for stormwater quantity and quality control in currently uncontrolled areas.
2) Select and initiate five stormwater retrofit projects in five sewersheds or tributaries where there is no stormwater control today, as defined by the above study.

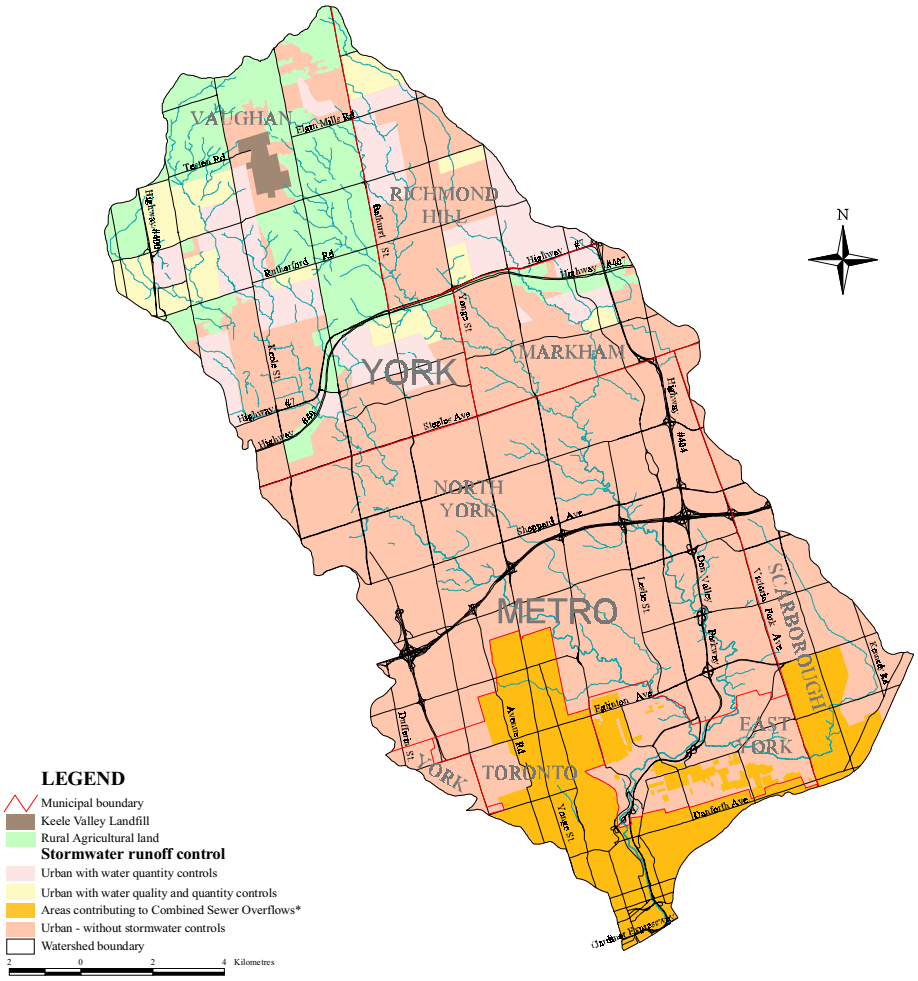
By 2010: 1) Retrofit all existing stormwater ponds for quality.
2) Implement lot-level source control measures in 50% of areas where practical.

By 2030: 1) Stormwater retrofits will be completed in all sewersheds or tributaries where there is no stormwater control today.
2) Lot-level measures will be in place in 75% of areas where practical.

How to get there:

A high priority for implementing *Forty Steps to a New Don* is stormwater quality control. Municipalities should increase capital expenditures for stormwater quality improvement projects such as enhancing present quantity ponds, building underground storage with treatment of stormwater, and creating wetlands wherever possible. Source controls to reduce the amount of stormwater should be emphasized, such as downspout disconnection and rainbarrels.

Figure 1: Stormwater Management in the Don - Stormwater Quantity, Quality and Combined Sewer Overflow Controls Existing in the Watershed



* Assessment of Alternatives for Collection Treatment of Combined Sewer Overflows (CSO) in the Main Treatment Plant Service Area; Metro Works, July 1996 - Prepared by CH2M Gore and Storrie Limited.

CARING FOR NATURE

HABITATS AND WILDLIFE

Today the Don functions all too efficiently as a network of storm sewers. For it to function as a healthy natural system within an urban setting, the Don needs a great deal more area devoted to natural habitats: more woodlands, more wetlands, more meadows, and more trees and other vegetation along the river's banks to connect those habitats.

All of the Don's habitats, both aquatic and terrestrial, are degraded today. Yet there are fish in the river - 18 species at last count. That's far fewer than one would find in other rivers in the Toronto area. For example, 33 fish species are found in the Humber River and 30 in the Rouge River. The Don's 18 species are, nevertheless, a foundation for future health.

An even more hopeful sign is that some species of frogs and toads, creatures notoriously sensitive to pollution and other urban pressures, have been found throughout the watershed, from tiny headwater ponds to the muddy lower Don.

Nature in the city is important, not only to wildlife but to people too. In the Angus Reid survey of Don watershed residents, 85 percent of people interviewed disagreed with the statement "If you want natural sites, you should move away from the city."

Indicator 5: Woodlands

Mature woodlands are still being lost, particularly on the tablelands.

Where we were:

In the previous two centuries, land was cleared of forests to make way for agriculture, roads, and communities. In the 20th century, the Don has lost many forest remnants to urban development in the 1950s and 60s in North York and in the 1980s and 90s in York Region.

Where we are:

Eight percent of the watershed is woodlands, or 2,916 hectares. In Vaughan, Official Plan Amendment 400 provides greater protection for woodlands and other habitats. Other Don municipalities have Official Plans which provide less protection.

Where we want to be:

By 2000: 1) No present significant woodlands (over 1 hectare) will be lost, even with development.
2) Establish targets for street trees and backyard trees.

By 2010: Plant trees in an additional 650 to 700 hectares.

By 2030: Ten percent of the watershed will be woodlands*, or more than 3600 hectares. (15% will be the target in Vaughan due to its relatively healthy state.)

*The IJC's Areas of Concern program has targeted 30% forest cover for healthy watersheds, while World Wildlife Fund has suggested 25%. For the highly urbanized Don, these targets are probably unreachable.

How to get there:

Protect all remaining woodlands, and plant trees and woodland shrubs through partnership projects wherever possible.

This is a huge city, and there is room for lots of parks and green lands.

Respondent, Angus Reid, 1996

Types of Habitat

One key to a healthy watershed is a diversity of habitats. Small, cool headwater creeks support a different community of fish, aquatic invertebrates and plants than the broader, warmer river downstream. Shady woodlots with heavy canopies support a different community of birds and small mammals than sunny, open, grassy meadows. As fertile nurseries for waterfowl, fish, and amphibians, wetlands are vital at a river's mouth and at many places throughout the watershed. Streamside, or riparian, vegetation is important in shading streams, creating a richer environment for fish, insects, mammals, and birds, and allowing connections between different habitats for migrating animals.

Another important key to a watershed's health is the total amount of natural areas it contains. Studies by the Ministry of Environment and Energy in southwestern Ontario indicate that once the wild lands in a watershed fall below 30 percent of its total area, stresses show up among many invertebrates inhabiting watercourses. Several other studies show that the number of bird species declines sharply at that same 30 percent threshold. Today, the Don retains only about 12 percent of its wild lands.

Water quality, too, improves with greater amounts of natural areas. Wetlands, for example, filter and cleanse contaminated water, riparian vegetation helps prevent bank erosion, meadows and woodlands help rainwater filter into the soil.

For all these reasons, the Don watershed needs more woodlands, more wetlands, more meadows, and more riparian vegetation.

Indicator 6: Wetlands

Filling wetlands is less acceptable today, and wetlands are being regenerated across the watershed.

Where we were:

Until recently, wetlands were viewed negatively as "swamps," and were routinely "reclaimed" or filled in for farming and urban development. The most dramatic example is the filling of the Don's entire mouth at Ashbridge's Bay in the early 20th century.

Where we are:

Only 0.14% of the watershed is wetlands, or 49.5 hectares of the watershed's total 36,042 hectares. But wetlands are viewed as ecologically valuable today and are beginning to be created. In 1996, for example, seven hectares of habitat wetlands were created on the Don through local projects.

Where we want to be:

By 2000: Create at least 12 new hectares of habitat wetlands.

By 2010: Wetlands will occupy 0.28% of the watershed (12 new hectares every three years)

By 2030: 1) Wetlands will occupy 0.5% of the watershed or another 130.5 hectares (approx. 12 new hectares every 3 years).
2) A major wetland will thrive at the mouth of the Don. (See Indicator 15)

How to get there:

Protect all existing wetlands and create more, through projects in the valleys and habitat enhancement at stormwater ponds. Each municipality should add habitat creation to all retrofit projects and should identify new sites for wetlands.

I think the river should be fit for animals and humans alike.

Respondent, Angus Reid, 1996

Indicator 7: Meadows

Amount of meadow shifts up and down; not enough information to assess heath.

Where we were:

In the urbanizing watershed, meadows have been ignored or viewed as vacant land awaiting development.

Where we are:

Medow occupies 3.5% of the watershed or 1,261 hectares. We do not know what the optimal amount of meadow habitat is for the watershed.

Where we want to be:

In nature, meadows are transitional habitats, existing for about 20 years before becoming woodlands. Meadows should not replace woodlands or wetlands in the regenerating watershed, but should be created where possible.

By 2000: 1) Identify areas as long-term, perpetual meadows, e.g. hydro corridors and roadsides.
2) Determine the optimal ratio of meadow to woodland in the Don watershed. (See Indicator 14)

By 2010: Medows will occupy 4% of the watershed. (To be confirmed)

By 2030: Medows will occupy 5% of the watershed or an additional 541 hectares. (To be confirmed)

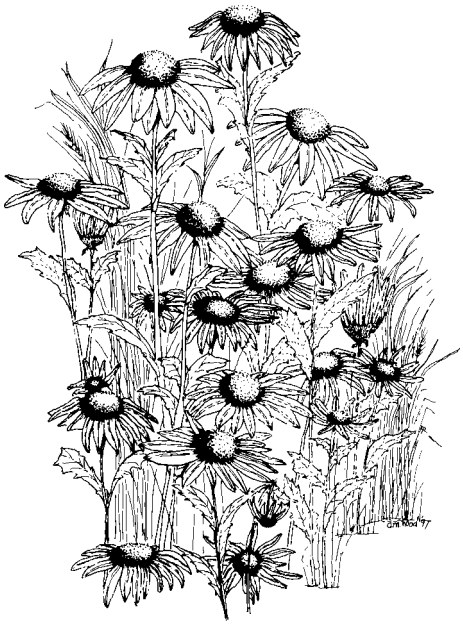
How to get there:

Replace lawns and turf with meadows through park and schoolyard naturalization projects, in empty lots, hydro corridors, roadsides, institutions, and residential areas. Reduce mowing and eliminate pesticide use wherever possible.

The long-term targets for habitat are averages for the entire watershed: 10% woodlands (except in Vaughan where due to its relatively healthy state 15% was targeted), 0.5% wetlands, 5% meadows, and 75% stream length with riparian cover. In reality, different areas of the watershed have different amounts of land as natural habitat. For example, some municipalities have wide and deep stream and valley corridors with a lot of natural area, and some have narrow headwater streams with more tableland.

I like the feeling of the Don River and the feeling of country.

Respondent, Angus Reid, 1996



Black-Eyed Susan

Indicator 8: Riparian Habitat

No dramatic changes in status or effort to date.

Where we were:

During agricultural development, streamside trees and shrubs were often stripped to create more room for farm fields. When urban development followed, the degraded streams were often channelized or piped.

Where we are:

Only 57% of the Don's streambanks have riparian vegetation, or 183 kilometres of its total length of 319 kilometres.

Where we want to be:

By 2000: 1) Identify all opportunities for riparian planting to achieve long-term target of 75% riparian vegetation, or an additional 56 kilometres.
2) Begin planting.

By 2010: Complete plantings in the above plan.

By 2030: Riparian habitat will be present along 75% of streams.

How to get there:

Citizens, agencies, businesses, and municipalities plan and organize planting projects at all streams in the watershed. Encourage natural regeneration.

The graphs in Figure 2 show how much habitat each municipality has relative to the overall watershed target. We recognize that by the very nature of their geography, some municipalities may not be able to create the full amount of habitat for a very long time, while others have already exceeded the baseline target. Every municipality in the Don watershed should strive for as much natural habitat as possible!

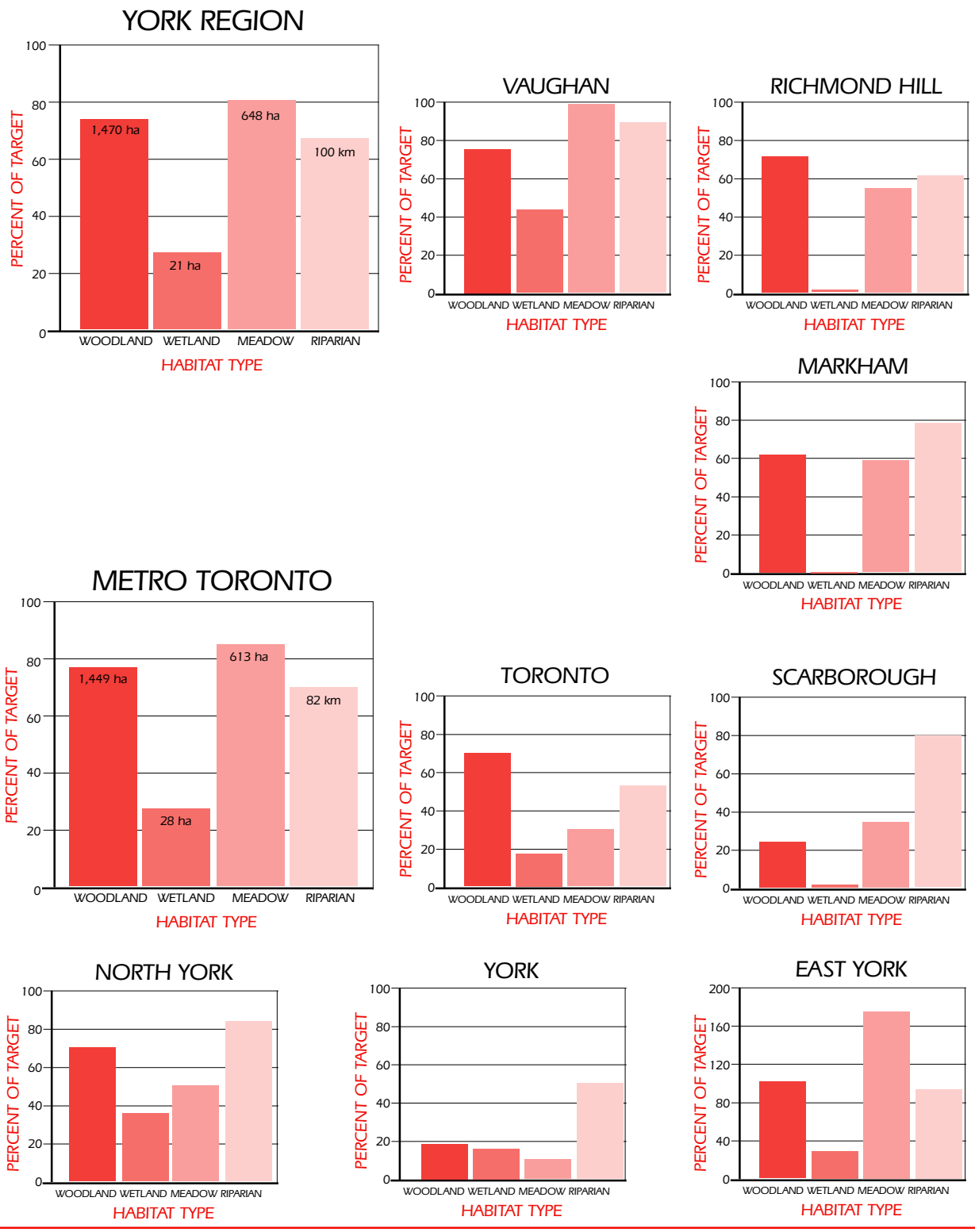
Note: These bar charts show the current status of the four habitat types within each municipality relative to the municipal targets for 2030. In almost all cases these are the same as the overall Don watershed targets. Due to historical and geographic constraints, it is recognized that there will be differences in the ability of the individual municipalities to reach these targets, but that these differences will not compromise reaching the watershed targets.

Note: Due to its relatively undeveloped state, and the significance of its headwater areas, the woodlands target for Vaughan has been set at 15% of the total area of Vaughan which lies in the Don watershed.

Note: These numbers do not include habitat being created by regeneration projects currently under construction.

Figure 2: Natural Habitat in Don Municipalities

Existing Habitat as a Percent of Municipal Targets for 2030



Wildlife

The area of habitat in the watershed is one measure of ecosystem health. But have the plants and animals actually moved in, to live and reproduce there? That is, are the habitats good enough, rich enough, and connected enough to function as healthy ecosystems?

Most birds and mammals move around between different locations. Reptiles are less mobile than birds, but are silent. All species of frogs, however, advertise their presence by song at some time of the year, making them easy to monitor. Wood frogs "quack" and spring peepers "peep" in very early spring; leopard frogs "snore" in late spring. In early summer treefrogs "gurgle," and in the heat of summer green frogs "gunk."

Amphibians are sensitive animals, and using them as key indicators in the Don watershed is a positive step in itself. It means that the Don's water quality and wetland habitats are already good enough to support at least some frog species. Even the lower Don supports populations of American toads today. But whether other, more sensitive species are widespread in the Don is not yet known.

Frogs indicate many things about the quality of habitats. They indicate the presence of clean, still waters, which all frogs need during their egg and tadpole stages. (Often human collectors are as great a menace to frog populations in these stages as pollution or predatory fish.) Since many frog species hibernate in the forest under logs and leaves, they indicate good quality of upland forest close to wetlands. Also, many frogs hibernate in the mud at the bottom of ponds; frequently in nature, they die if the water freezes to the bottom. The presence of frogs in this situation indicates good linkages between habitats, as the area is able to be repopulated.

Indicator 9: Frogs

Not enough data.

?

Where we were:

Good data do not exist on frog populations of 30 years ago. But since frogs are impacted by development, the upper watershed probably had more frogs in the 1960s than today.

Where we are:

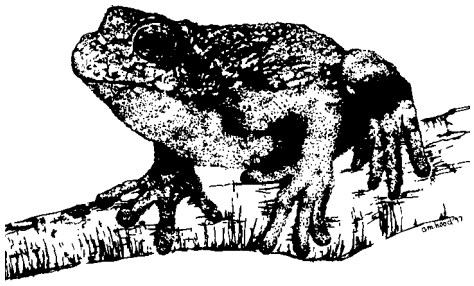
According to informal reports, American toads are found throughout the entire watershed, green frogs might be found widely, and spring peepers and grey treefrogs may only be in the headwaters.

Where we want to be:

By 2000: 1) Complete baseline monitoring data for frogs, including:
in Spring: American toads and spring peepers.
in Summer: Green frogs and grey treefrogs.
2) Establish targets for 2010 and 2030.

How to get there:

Organize volunteer monitoring programs at the appropriate times throughout the watershed.



Grey Treefrog

Tadpoles are in there!
Tadpoles are in the river!

Respondent, Angus Reid, 1996

Indicator 10: Fish

More pollution-tolerant species, and fewer sensitive species, than historically found.

Where we were:

Eighteen fish species were surveyed in the Don in 1949, with fair diversity of species in different habitats.

Where we are:

There are still 18 species, mostly small, with less diversity than in 1949. Brook trout have disappeared while goldfish have appeared. Today's four most common species are creek chub, blacknose dace, white sucker and longnose dace, all small and pollution tolerant. Throughout the Don numerous barriers such as weirs prevent fish migration or recolonization of smaller tributaries. In a 1991 survey, 12 of 50 sampling stations produced no fish at all, and only 13 approached a healthy southern Ontario stream in diversity of species represented.

Where we want to be:

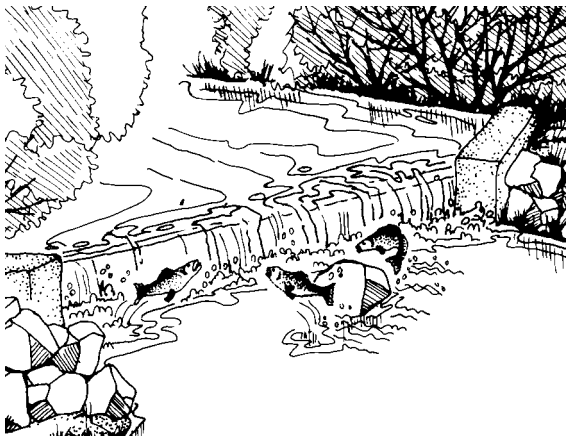
By 2000: Increase access to the Upper East Don Watershed for migratory species such as suckers and salmonids by removing or modifying three weirs, two at Pottery Road and one on the East Don between Lawrence Ave. and the 401.

By 2010: 1) Common species such as creek chub and others will be reestablished in areas where no fish are currently found.
2) Species which were once widespread in the Don such as common shiner, Johnny darter, and mottled sculpin will have an expanded range.

By 2030: There will be self-sustaining populations of target species such as redside dace, mottled sculpin, smallmouth bass, largemouth bass, rainbow darters, northern pike, and rainbow trout in appropriate habitats as outlined in MTRCA's Don Fisheries Management Plan.

How to get there:

Proceed with removing or modifying instream barriers, institute stormwater controls, control erosion from construction sites, plant riparian vegetation, create wetlands, and improve aquatic habitats. (See Indicators 1, 3, 4, 6, and 8.)



In summary, different species of frogs indicate healthy waters, low human impact, the availability of deep pools, the association of upland forest and wetlands, and good habitat linkages.

Fish, too, tell a lot about water quality and upstream land use practices. Many people are surprised to learn that there are any fish in the Don at all. Sampling in 1984 and 1991 showed 18 different species of fish in the Don.

Just as in the terrestrial landscape, there are different types of aquatic habitats and different groups of species inhabiting them. In addition there are migrants that swim through in the spring attempting, usually unsuccessfully, to spawn. (For several years, salmon have been seen swimming upstream as far as the Pottery Road weir.)

The seven types of aquatic habitat in the Don are: small coldwater streams, small warmwater streams, medium-sized coldwater and warmwater streams, large river habitat, estuary, and lakes (four online ponds and a reservoir). Each habitat supports a different fish community, and all are degraded today, with fewer species living in them than in the past. In fact, the Don's 18 species compare poorly with the Toronto area's other rivers: 30 species in the Rouge, 33 in the Humber, and 36 in the Credit.

CARING FOR COMMUNITY

PEOPLE

People living in the Don watershed enjoy and value its streams, natural areas, parks and trails. According to the Angus Reid survey, 90% of people interviewed agreed that the Don was "important and necessary to my community," and 75% said it was "important and necessary to me personally." Forty-three percent had visited the Don within the previous year. Since the watershed is home to about 800,000 people, this could mean that at least 344,000 people visited the Don last year, some of them numerous times.

For a river that people also recognize as polluted and degraded, these survey results are a vote of confidence. They underscore the need that city residents have for natural areas nearby, to use for recreation and spiritual renewal.

The Don is also a rich educational resource within walking distance of a great many schools in the watershed, useful for science, ecology, and nature studies, geography, art, cultural history, and physical education. Yet an informal survey of Boards of Education in the watershed showed only 9 percent of elementary schools may have had classes visit the Don in 1995-96. In the upper grades, use of the Don varied widely, depending upon the Board.

Awareness

More than a quarter of the residents interviewed in the watershed survey were able to correctly define the term "watershed" (a region that drains into a river or other body of water). Of those, 35 percent knew that they lived in the Don watershed.

Indicator 11: Public Understanding and Support

Almost all residents of the watershed believe the Don River is important to them.

Where we were:

People have always cared about the Don. But until 1994, there was no comprehensive watershed regeneration plan.

Where we are:

Ninety percent of Don watershed residents surveyed believe that the Don is "important and necessary" to their community. Twenty-five percent know what a watershed is, but only a third of those know they live in the Don watershed. Sixty-one percent know stormwater goes into the Don but 53 percent incorrectly believe that industry is the river's main source of pollution. Several hundred people throughout the watershed act as volunteers to help the Don's regeneration.

Where we want to be:

By 2000: 1) Maintain current levels of public support.
2) 3000 people will be active volunteers for the Don - committed to its regeneration through actions and/or donations.

By 2010: 1) Eighty percent will know that stormwater goes directly into the Don and is its major source of pollution.
2) Ten thousand people will be active volunteers for the Don.

By 2030: Ninety-five percent of watershed residents will understand and care for the Don.

How to get there:

All Don regeneration partners cooperate to create a communications plan.
Set up a Don volunteer program throughout the watershed.

Even more survey respondents knew that the Don needs help: 71 percent agreed that the Don was "very polluted" and 47% said that "dirty" or "pollution" was the first thing that came to mind when they heard "Don River." Sixty-one percent understood that the water from storm drains goes directly into the river, and 77 percent knew that the water in the Don ends up being recycled into our drinking water in Lake Ontario.

This level of watershed awareness among the public is impressive.

When people understand what a watershed is, and where stormwater goes, they are more likely to be better stewards of stormwater and streams.

Yet there is misinformation among watershed residents too. Fifty-three percent of the interviewees thought that most of the pollution in the Don comes from industry. In fact, there is very little direct pollution from industries; the overwhelming majority of contaminants in the water comes from stormwater. (See "The River.")

Indicator 12: Classroom Education

Not enough data.

Where we were:

The Don Council's survey is the first of its kind. It is difficult to judge previous school exposure to the Don.

Where we are:

Nine percent of elementary schools responding to the survey had classes visiting the Don. In the upper grades, exposure to watershed curriculum varied from 5% to 90%, depending upon the Board of Education. Currently provincial and/or Board level curriculum guidelines for watershed studies are in place. The Don Council's grade 7 teachers' kit, "Don Watershed Education Program," is in the hands of 50 teachers from 20 schools representing all the Boards in the watershed, although it is not yet known how many teachers are using it.

Where we want to be:

By 2000: 1) Twelve percent of elementary schools in the watershed will have classes visiting the Don.
2) Establish a baseline for junior high and high school students who will take watershed studies for at least one semester during their school career.

By 2010: 1) Sixty percent of elementary schools in the watershed will have classes visiting the Don.
2) One hundred percent of junior high and high school students will take watershed studies for at least one semester during their school career.

By 2030: All students will study the Don watershed as an integral part of their school life.

How to get there:

Board of Education curriculum heads encourage teaching of the Don Watershed Education Program, and expand the project to higher grades. Don volunteers and staff promote the Don in the electronic media, visit schools and classes at all levels to promote the Don as an outdoor classroom, and support teachers during visits to the Don.

Classroom Education

At our public meetings which were held to select the Report Card indicators, there was a strong demand for the schools to educate children and young adults about watershed issues.

The Don Council conducted an informal telephone survey of senior school curriculum heads or consultants in science/geography at the eight Boards of Education in the watershed. The purpose of the survey was to find out the percentages of upper grade students who are exposed to watershed studies in the curriculum. Where possible, information was also obtained from the Outdoor Education Centre staff.

In addition, a written survey was mailed to all elementary school principals in the watershed, to learn how many classes visit the river and its natural areas.

These surveys revealed that education focusing on the Don is somewhat sporadic. Provincial and Board-level curriculum guidelines for watershed and river teaching are in place. Within that context, the Don Council is piloting a watershed education program for selected grade 7 classes throughout the watershed, in which many Boards are participating. But most Boards stressed that implementing the curriculum guidelines depended upon the interest of individual teachers and their comfort levels in teaching science and geography. Also, schools that are closer to the Don River may be more likely to provide student field trips on watershed study and ecology.

For descriptions of each Board's secondary school programs, see Table 1.

Of the elementary schools that responded to the written survey, only 9 percent had classes visit the Don during the 1995-96 school year, for purposes as widely varying as cross-country running, nature study, and special education field trips. One of the best programs is at Johnsview Village Public School in the York Region Board of Education, where *all classes* visit the Don at least three times each year, learning about the river and its plants and wildlife.

Table 1: Board of Education Programs on the Don River - Survey of Board of Education Administrators

The following table details the percentage of grade 7, 8, 9, 10, 11, 12 and OAC students, within each Board of Education, who are exposed to watershed studies in the curriculum. These numbers are based solely on interviews with Board of Education Science and Geography curriculum heads and are, therefore, only approximations.

SCHOOL BOARD	STUDENTS EXPOSED TO WATERSHED STUDIES ANNUALLY	POINTS OF INTEREST
Toronto	10%	Some students are exposed to this material via the Outdoor Education Centre experience. Curriculum exists, but individual teacher's interests and background often dictate what is taught. Grades 9 and 10 study river and watershed issues.
East York	90%	All of the students are exposed to watershed curriculum at the Outdoor Education Centre. Here they are provided with authentic tasks to perform and real life applications relevant to watershed ecology. This Board is experimenting with the use of the computer GIS in nine different schools. Many classes participate in the Metro Zoo Adopt-a-Pond Program. This Board has developed an Amphibian Tracking program using transmitters and an extensive habitat monitoring program as well. In addition, the "Bring Back the Birds" lessons include data sharing with Mexico and the United States.
North York	90%	All grade 7 students spend one week in residence at the Outdoor Education Centre. Mandatoy watershed study in grades 7 - 10; including the history and land use of the Don and Humber rivers. Grades 11 to OAC have optional watershed study available. The Board is experimenting with CD ROM which includes a river study component and is also involved in the ECOWATCH program.
Scarborough	10%	In this Board, watershed study depends on the teacher's emphasis, transportation factors, focus on regular routines, and use of the Outdoor Education Centre. Grade 9 students study river systems. Grade 11 students study watershed in the context of physical geography. Grade 12 students are exposed to this curriculum in the environmental studies programming.
City of York	less than 5%	Only about 20 percent of the Grade 8 - OAC classses have the opportunity to visit the Outdoor Education Centre.
Metro Separate	less than 10%	Watershed study is largely dependent on the school's proximity to the river. Environmental curriculum is not watershed focused.
York Region	15%	Watershed study largely depends on individual teacher's interests. Grade 9 students are exposed to this content via Canadian Geography. Grade 11 students study watersheds in Physical Geography.
York Separate	5%	All of the grades 7 and 8 students are involved in river/watershed studies. This Board is also involved with the Metro Zoo's Adopt-a-Pond project and coordinates with local conservation authorities on a variety of other topics.

Responsible Use and Enjoyment

The Don is well used and appreciated by local communities, according to the Angus Reid survey of residents. Even though people may not visit the Don regularly, 75% said the Don was personally important to them. More men than women go to the Don (50 vs 36%); more people between ages 35 and 54 (51%); and more residents of the Lower Don than the Middle or Upper (49%, 41%, and 32% respectively).

Walking is the favourite activity, followed by cycling. (See Figure 3 for breakdown of activities in the Don.) In our multicultural society, there are other uses of the Don that were not elicited by the telephone survey, such as collecting snails, herbs, and reeds for food, medicines, or cultural holidays.

One enjoyable activity that can create problems in the Don is mountain biking. Off-trail biking harms vegetation and causes erosion, often leaving deep scars on ravine and valley slopes. It is also a use of the Don that can make the favourite activity, walking, less enjoyable. There are other activities that are probably not at this point compatible with regenerating the Don, such as collecting wildflowers and tadpoles. With such heavy use of the Don as was indicated by the watershed survey, it is important that we be environmentally responsible in our use of the watershed's natural areas. First we must determine just what "environmentally responsible" means in terms of current conditions in the Don.

Indicator 13: Responsible Use and Enjoyment

Many watershed residents using and enjoying the parks system; increasing attention is being paid to conflicting uses.

Where we were:

No survey information is available for previous decades.

Where we are:

Forty-three percent of survey respondents had visited the Don at least once in the previous year, which means at least 344,000 residents actively use the Don. Walking was the most popular activity (38% walked more than 10 times in the previous year) and cycling was second (17% cycled at least 10 times). Issues of conflicting uses and irresponsible uses of the Don's resources are arising. All eight Don municipalities have identified important cultural heritage sites in the watershed, which are being included in the Don Council's heritage sites inventory report, "The Don Millennia," and on Community-Based Maps of trails.

Where we want to be:

By 2000:
1) Complete 50% of Don Council's Community-Based Maps of trails.
2) Improve and increase year-round access points.
3) Local governments and their LACAC's should develop preservation master plans for their important cultural heritage sites, along with property owners and other partners.
4) Local governments should identify conflicting and problem uses in the Don and develop management plans.

By 2010:
1) Complete continuous trail network from the lakefront to the headwaters, with way-finding signs.
2) Complete all community trail maps and start process for updating them.

By 2030: Expand marked trail network to include the Don's smaller streams and creeks, and to link the Don to the GTA's other watersheds.

How to get there:

Responsible use and enjoyment of the Don is a multi-stakeholder concern, and should be worked on through partnerships among businesses, institutions, government, and citizens' organizations such as Green Tourism, local heritage preservation bodies and historical societies, and hiking, biking, and skiing groups.

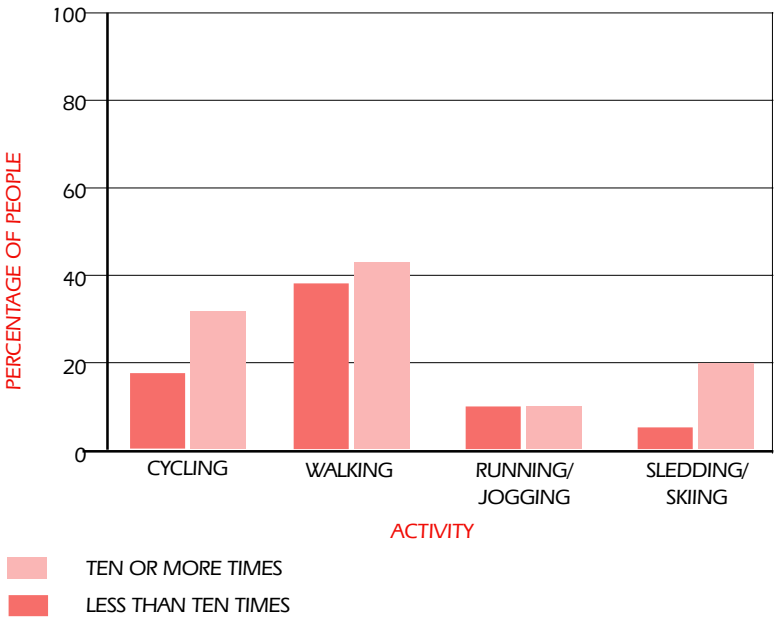
I want my children to grow up in a city that's environmentally conscious. It is critical for the city to not lose touch with nature—it's a means of escaping the concrete jungle. Do birdwatching, it's healthy for everyone!
Respondent, Angus Reid, 1996

Secondly, we believe that certain aids and amenities encourage the public's responsible enjoyment of the Don. Good walking trails, clear and informative trail maps, trail signage, access points near public transit stops, convenient parking, and washroom facilities at major nodes all facilitate responsible use and enjoyment.

Figure 3: People's activities in the Don

(From survey of 600 Don residents —Angus Reid, July 1996.)

"Thinking about the last twelve months including last summer, approximately how many times have you been to the valley and ravines of the Don River watershed for each of the following activities?"



PROTECT WHAT IS HEALTHY

PROTECTED NATURAL AREAS

The emphasis in section two, "Caring for Nature," was to create more habitats in the Don. Yet creating more makes little sense if what already exists is not protected. "Protect what is healthy" is the first principle of regeneration in *Forty Steps to a New Don*.

Throughout the Don watershed, 15 percent of remaining natural habitats are owned by the MTRCA for conservation purposes, or about 645 hectares of the total 4200 hectares of woodland, wetland, and meadow habitat. Municipalities, too, own some natural areas and also use their Official Plans to assign protective designations to some privately owned natural areas. Still, many of the watershed's wild areas, particularly on the tablelands, are vulnerable to development. Don watershed residents recognize the importance of public ownership in protecting natural areas. According to the Angus Reid survey, 70 percent of respondents agreed with the statement, "The MTRCA should own land next to the Don in order to protect it from development."

The best protected areas are the streams themselves and their floodplains, which are formally protected through MTRCA's Valley and Stream Corridor Management Program and other local regulations. Due to the topography of the watershed, what this means is wide ribbons of protected greenspace in the lower and middle watershed, but only thin threads in the headwaters, where the "valleys" are often small ravines or slight depressions. Preserving natural areas on the tablelands is vitally important. Vaughan's Official Plan Amendment 400 is a good model for protecting valuable natural areas while still allowing for development.

In this first Report Card, we are concerned with Official Plan policies that aim to protect natural areas. How well those policies translate into practice will be examined in future Report Cards.

Public Ownership and Protection - MTRCA

The best way for natural lands to be protected is for Conservation Authorities, other conservation groups such as The Nature Conservancy, and municipalities to own them outright. Natural areas come into public ownership in several ways: through direct purchase, through gifts, through expropriation, and through the development process, in which valleys and some tableland features such as woodlands are given to municipalities or MTRCA.

Valley and stream corridors were first recognized as being unsuitable for new development in the wake of the massive flooding of Hurricane Hazel in 1954 for reasons of safety. In fact, today's approach to acquiring natural areas in order to preserve and link woodlands, to contribute to the overall health of the ecosystem, or to provide access for people is a by-product of MTRCA's original work in flood protection and erosion control. Recently, provincial funding to Conservation Authorities has been reduced, so cooperative efforts among them, municipalities and private owners to protect natural areas are increasingly important.

Public Ownership and Protection - Municipalities

Municipalities acquire natural areas through purchase, gifts, and the development process. How well protected those lands are depends upon the determination of municipal governments and other factors.

A patchwork of land use planning designations governs the protection of natural areas throughout the watershed at the municipal level. Some municipalities have designations such as local Environmentally Significant Areas, Natural Areas, Hazard Lands or Open Space which can prohibit development or allow for passive recreation, golf courses and other forms of active recreation. Municipal by-laws are also critical in protecting natural features, such as development by-laws, tree by-laws to protect trees from cutting, ravine by-laws and special zoning to protect tablelands adjacent to ravines.

The greatest challenges for protecting habitats are in the upper reaches of the Don in York Region. To begin with, that's where most of the remaining natural areas are. Secondly, since the stream and valley corridors are so narrow, most natural areas are on tableland, where there is very little public ownership.

The City of Vaughan's Official Plan Amendment, OPA 400, is in many ways a good model for the upper watershed. Vaughan is one of the fastest growing municipalities in the Greater Toronto Area. Its present population of 129,000 is expected to rise to 265,000 to 2016. Three "urban villages" to house a total of 120,000 people are planned within large areas totalling 2,600 hectares. Today, that land still consists mainly of farmland and woods, and it is owned by more than 100 different landowners and developers. Some of it is on the

sensitive recharge area, the Oak Ridges Moraine, which contains part of the headwaters of the East Don.

The sites for the three future communities were planned in order to avoid, and therefore protect, significant natural features such as major woodlands. Through a woodlot acquisition program, the City will collect a supplementary charge of $1,000 per house from developers, and will then use that money to purchase woodlands at $150,000 per acre. This win-win plan compensates developers fairly for woodlands they own and are prevented from developing, and will preserve more than 120 hectares of woodlands that are considered of high or moderate significance. Unfortunately, however, this arrangement applies only to Vaughan's urban villages and not to other areas that may be developed.

Table 2 summarizes the types of natural areas that are found within the watershed's eight municipalities, and how well local Official Plans protect them. As part of the preparation for the Report Card, a survey on stewardship practices was sent to the eight municipal and two regional governments in the watershed (see Indicator 18). Table 3, which was compiled from responses to that survey, focuses specifically on ravines, stream and valley corridors, ESAs and Locally Significant Areas, and whether local governments have Official Plan policies to protect them. How well these policies are achieved will be addressed in future Report Cards.

Indicator 14: Protected Natural Areas

More natural areas are being protected, but we have a long way to go.

Where we were:

Before Hurricane Hazel in 1954, there was little land in public ownership, and floodplain development was unregulated.

Where we are:

Six hundred forty-five hectares, or 15% of the watershed's natural areas (woodlands, wetlands, and meadows) are in public ownership through MTRCA, in addition to municipally owned public lands and private lands under protective designation. Very little tableland is publicly owned and/or designated for conservation, and in the headwater areas the remaining natural areas, almost all on tableland, are extremely vulnerable to development.

Where we want to be:

By 2000: 1) Identify specific areas for protection in order to meet targets in Indicator No. 5, 6, 7 and 8.
2) Protect all vulnerable and significant natural areas.
3) Establish targets for the protection of meadows and riparian habitat.

By 2010: All natural areas (woodlands and wetlands) will be protected, including newly created natural areas.

By 2030: Maintain high levels of protection.

How to get there:

Initiate partnerships with municipalities for stewardship programs. Amend municipal Official Plans where necessary to ensure that all new development will protect remaining natural areas. Publicly acquire critical parcels of land.

Provincial and Agency Environmental Designations

The three most recognized designations for natural heritage lands are Areas of Natural and Scientific Interest (ANSIs), Provincially Significant Wetlands, and Environmentally Significant Areas (ESAs). The Don watershed contains 13 ESAs, such as Bakers Woods, Wilket Creek Forest, and the East Don Valley Swamp. It contains four ANSIs, including the Don Valley Brick Works with its famous interglacial geological sediments. At present, the watershed contains no provincially designated wetlands. Municipalities can also designate ESAs or Locally Significant Areas.

Whatever the designation, however, no guarantees are written in stone. Landowners can always appeal the designations and development restrictions to the Ontario Municipal Board.

Table 2: Municipal Official Plan Provisions for Protection of Natural Areas

MUNICIPALITY	SUMMARY OF PROTECTION
City of Toronto Official Plan Part 1 - City Plan 1993	While the city doesn't have extensive areas of natural habitat, what it does have is largely protected under fairly strict Environmentally Significant Areas and Natural Area designations.
City of York Official Plan 1974	What little Don watershed habitat York has is designated Open Space, but this still permits multiple recreation uses.
Borough of East York Official Plan 1995	East York has a substantial share of the natural areas in the Lower Don; and while most of the areas are designated Open Space and are part of the valley and stream corridor, this designation permits utilities, roads, public transit and accessory parking lots, maintenance facilities and commercial uses.
City of North York Official Plan 1994 Consolidation	Most natural areas are within the Valleyland Impact Zone, (VIZ) which encourages a greater degree of conservation and protection in development. Within the VIZ, most natural areas are designated Open Space, which permits both passive and active recreational uses.
City of Vaughan Amendment No. 400 to the Official Plan 1995	Almost all of the natural areas in Vaughan, including valley and tableland areas, are identified under OPA 400. An assessment of each area's function will determine significance; and it is the city's policy to protect significant areas and restrict uses to passive recreation.
Town of Richmond Hill Official Plan 1981; Sched. A December 1989; OPA 118, OPA 30	Only those natural areas in the stream corridor (approximately half of the total natural area in Richmond Hill) are protected under the Hazard Lands designation; and while this prohibits structures, it allows for golf courses. The remaining natural areas, mostly on the tableland, are largely designated residential, industrial and/or mixed use.
City of Scarborough Official Plan Consolidation 1991	Most of the natural areas in Scarborough are within the Environmental Impact Zone, which permits no structures unless demonstrated that the natural environment can be adequately protected. However, the land use designation is largely Open Space, permitting recreation, amusement areas, and golf courses.
Town of Markham Official Plan 1987	With the exception of a few woodlands and meadows, the natural areas in Markham are designated Open Space or Hazard Lands, permitting recreation, nurseries, and other uses deemed compatible with conservation objectives.

I believe natural sites should be maintained within the city, and not reserved for the far north only.

Respondent, Angus Reid, 1996

Table 3: Municipalities Having Official Plan Policies or Amendments to Protect Natural Areas

NATURAL FEATURE	YES *	NO *
Ravines and/or Stream and Valley Corridor	City of Toronto, East York, City of York, Scarborough, Metro Toronto, Vaughan, Markham, Richmond Hill, York Region	
Environmentally Significant Areas	City of Toronto, East York, Vaughan, Markham, Metro Toronto, Richmond Hill, York Region	City of York, Scarborough
Locally Significant Areas	City of Toronto, East York, Metro Toronto, Richmond Hill, York Region	City of York, Scarborough, Markham, Vaughan

* If not listed under Yes or No, no response was provided.

Public Protection of Private Land

Owners of ecologically valuable land have been and are often eager to continue to be good stewards of that land for the benefit of the local natural system, the public, and future generations. Owners of ravines, woodlots, marshes, ESAs and ANSIs can enter several types of cooperative arrangements with MTRCA or local municipalities.

Stewardship agreements may be informal handshake agreements in which private owners agree to protect their significant lands in partnership with MTRCA. These agreements are not legally enforceable and are vulnerable if the owner sells the land. *Easements* are specific rights acquired from landowners. *Covenants on title* prevent owners from carrying out certain activities on their land, such as clearing woods, filling ravines, or building structures. For practical purposes, *easements* and *covenants* can provide almost the same protection as outright public ownership at reduced cost.

Don Valley Brick Works

REGENERATE WHAT IS DEGRADED

REGENERATION PROJECTS

Almost 100 regeneration projects have been undertaken on the Don since 1994, when *Forty Steps to a New Don* was published. These projects are either completed or in progress. They include creating wetlands, detaining and treating stormwater and combined sewer overflows, removing barriers in streams, naturalizing schoolyards and parks, restoring streambanks, planting trees, wildflowers, and aquatic plants and creating or enhancing habitats in many other ways.

The number and variety of projects are impressive, and attest to the strong commitment to regenerating the Don among watershed municipalities, agencies, businesses and community groups. These projects represent the hopeful beginnings of efforts to heal degraded areas in the watershed.

Our goal is to double the number of regeneration projects by the next Report Card. Priority should be given to infrastructure retrofits to solve the serious problems of stormwater control and combined sewer overflows, and to meet the targets of habitat creation as set out in Indicators 5, 6, 7 and 8.

What is a Regeneration Project?

A regeneration project aims at one or more of the following four goals: creating aquatic habitat, creating terrestrial habitat, improving water quality, or controlling water quantity (flooding and excess stormwater). It is an active, in-the-ground project that aims at improving the health of the natural system. It may be implemented as a partnership between local governments, community groups, businesses, and provincial agencies.

Regeneration projects require shovels, elbow grease and money. Although tree planting is the most popular regeneration activity on the Don today, there are many other things that communities can do.

Who is Doing What?

The current list of regeneration projects was compiled using data from the Don Council's Community-Based Projects Committee and the Metro Toronto RAP document *A Path to Clean Waters*, (May 9, 1996). A survey was also sent to the eight Don watershed municipalities to identify any projects that had been overlooked. Figure 4 maps the regeneration projects undertaken in the watershed since January 1994.

Current regeneration projects fall into two major categories. Many projects are habitat enhancements such as creating marshes, naturalizing streambanks and channels, turning stormwater quantity ponds into marsh environments, naturalizing schoolyards and parks, stabilizing slopes and streambanks, enhancing aquatic habitats using plants and "fish furniture," and planting native trees, shrubs, and wildflowers. Other projects deal with the problems of water quantity and/or water quality such as separating combined sewers, providing for storage and treatment of combined sewer overflows, disconnecting roof leaders from the sewers, disconnecting cross connections between the storm and sanitary sewers, and removing culvert barriers.

Project Highlights

Chester Springs Marsh is an emerging wetland in the Lower Don just south of the Bloor Viaduct. A habitat creation project by the Task Force to Bring Back the Don, it consists of two ponds on each side of the river, designed to take overflow from the Don when it floods. The pond on the east side of the river is people-oriented, with paths and viewing stations. There are terrestrial plantings of native trees and shrubs, aquatic plants put in by citizen volunteers, and habitat enhancements such as dead trees to attract kingfishers and woodpeckers, sunning rocks for turtles, and rock cairns for snakes. The pond on the west side of the river contains many similar features but is inaccessible to people, and designed to attract sensitive nesting waterfowl and other animals. Volunteer monitors will be watching for pike (spawning in the shallow reeds and then returning to Lake Ontario), wood ducks (nesting in the animals-only pond), and bullfrogs (overwintering in the bottoms of the ponds - a long-term goal). Chester Springs represents the first two of five planned marshes in the Lower Don, an attempt to bring back portions of the river's once huge estuary marshes.

The Don Valley Brick Works is an extensive restoration project in the heart of the watershed, below the forks of the Don at Bayview Ave. and the Don Valley Parkway. The Brick Works combines architectural restoration, geological interpretation, and natural habitat creation. A key feature of the project is the "daylighting" of Mud Creek, which once flowed through the deep quarry and was used in the manufacturing of bricks. Mud Creek is being rerouted from its storm sewer and brought back into the quarry, creating a series of five connected ponds which both

Figure 4: Don Watershed Regeneration Projects Since January 1994

clean the water before the creek enters the Don, and provide habitat for many species of fish, birds, reptiles, and other animals. The famous north face of the quarry, which contains geological sediments and fossils from the last interglacial period, will be highlighted and interpreted. Restoration of a number of the historical buildings will bring alive the century of brick-making on the site.

Harding Park, one of the six concept sites proposed in *Forty Steps to a New Don*, was recently completed by the Town of Richmond Hill. Located in the headwaters of German Mills Creek, Harding Park was originally a manicured neighbourhood park with a sports area and a conventional stormwater detention pond. While retaining and improving the baseball diamond and children's playground, the regeneration project created a series of three ponds to treat the stormwater brought in from the neighbourhood streets: two settling ponds and a wet meadow for final cleansing before the water enters the creek. Between the ponds are "hickenbottom drains" that regulate the flow of water. This system removes about 60 percent of the sediments in the stormwater, up to 40 percent of heavy metals, and 40 percent of phosphorus through settling alone. The aquatic plants such as bulrushes and cattails, as well as the wildflowers and grasses in the wet meadow, take up additional pollutants. Plantings of birch, aspen, oaks, purple flowering raspberry, dogwoods, and other native trees, shrubs, and wildflowers enrich the terrestrial habitat surrounding the ponds, attracting butterflies, ducks and other waterfowl.

Future Report Cards will track not only the number of regeneration projects, but how well they are working. Monitoring programs will be set up to document water quality improvements following major infrastructure retrofit projects and how well habitat goals are being met.

Indicator 15: Regeneration Projects

Excellent number and range of projects to date.

Where we were:

Before the ecosystem approach to regeneration took hold, restoration projects were most often single purpose, such as simple erosion control without attempting at the same time to improve habitat and water quality or meet the needs of the community.

Where we are:

Almost 100 projects have been undertaken throughout the watershed in the two years since the publication of *Forty Steps to a New Don*. Many of them are multipurpose projects that improve stormwater control or improve water quality in other ways, as well as enhance terrestrial and aquatic habitats. Ninety-eight percent of residents support the watershed's regeneration, according to the Angus Reid survey.

Where we want to be:

By 2000: Double the number of regeneration projects to at least 200, concentrating especially on the creation and enhancement of the Don's woodlands, wetlands, meadows, and riparian habitat.
(See Indicators 5-8)

By 2010: Major capital projects in all the Don's municipalities should be completed or in progress:
Scarborough, East York, and Toronto - eliminate combined sewer overflows
North York - retrofit stormwater system, including downspout disconnection
Richmond Hill - retrofit stormwater system, including stormwater pond upgrades to water quality ponds
Markham - complete Settlers' Park and Pomona Park concept sites, and retrofit the stormwater system
Vaughan - complete stormwater pond retrofits and improve sediment control at construction sites.

By 2030: Major CSO and stormwater projects will be completed.

How to get there:

Municipalities should include environmental enhancement in all capital projects. The Don watershed is part of the Toronto Area of Concern and it should be a priority for federal and provincial funding such as Great Lakes Clean-Up Fund. Local projects can be supported through partnerships among business, government, and community groups.

TAKE RESPONSIBILITY FOR THE DON

STEWARDSHIP

The third principle of regeneration, "Take responsibility for the Don," refers to changing daily habits and practices so that all of our actions benefit the watershed ecosystem. All of us - whether individuals, provincial agencies, businesses and institutions, or municipal governments - are ultimately responsible for the Don's degraded condition and for helping the watershed to regenerate.

Already, Don watershed residents show a high degree of environmental consciousness and stewardship in several areas, according to the Angus Reid survey. Forty-five percent of residents interviewed have installed an energy efficient appliance, 44 percent use a backyard composter, 39 percent have a water saver on their shower, and 38 percent take their old paint, oil, and other hazardous household wastes to a disposal depot. Most survey respondents were willing to support the Don's regeneration financially. But in other actions that affect the Don more directly, such as the use of pesticides and disconnecting downspouts to keep stormwater on their property, fewer residents have changed old habits. Our good practices of home stewardship have not yet spread to include watershed stewardship.

Among businesses, several bright lights shine throughout the watershed: companies that participate in regeneration projects, support Don-related community groups, donate money for conservation, clean up their own manufacturing processes, treat stormwater on site, or naturalize their properties. To date, the Don Accord, an opportunity for businesses and other groups to show active commitment to the Don's regeneration, has 19 signatories from the business community. Yet there is an opportunity for many more cooperative efforts among businesses.

As for municipalities, a stewardship survey sent to the eight local and two regional governments in the watershed as part of this Report Card process revealed that there is a lack of consistency in routine stewardship policies across the watershed. For example, some municipalities have policies to reduce the use of salt, pesticides, and fertilizers, or to naturalize parks, or to control sediment entering streams during construction, while others do not. By the next Don Report Card, a major target is for all local governments to have watershed stewardship policies in place.

I promise I won't pour any more oil down the sewer!

Respondent, Angus Reid, 1996

Personal Stewardship

As well as showing high environmental consciousness, watershed residents also scored high in volunteerism in the Angus Reid survey. Almost half of all the respondents (46 percent) said they had volunteered their time or money to a community group during the previous year. Of these people, 20 percent had volunteered for an environmental group. Almost four-fifths (77 percent) expressed a willingness to support the Don's regeneration with their pocketbooks, agreeing with the statement "I support the efforts to clean up the watershed even if it means a small fee being added to my water bill to cover some of the costs." However, a majority of survey respondents, 65 percent, admitted that they didn't know or couldn't think of anything further they could be doing to contribute to the Don clean-up.

If we all contribute, the cumulative efforts of even a fraction of the 800,000 individuals living in the watershed could have a swift and dramatic impact on the Don's regeneration. Not only changes in daily stewardship activities will benefit the watershed's health, but ravine owners have special opportunities and responsibilities, and all homeowners can contribute to habitat creation through changing landscaping practices in front and backyards.

Indicator 16: Personal Stewardship

Support is present, but most people do not know what they can do to help the Don.

Where we were:

There were no previous surveys of the habits of watershed residents, but since most watershed-friendly activities became popular only recently, urban environmental stewardship as we know it today did not exist 30 years ago.

Where we are:

Although Don residents showed a high degree of environmental stewardship in general, only 35% had ideas on how they could help the Don specifically. At the same time, 36% used pesticides or herbicides on their lawns, and only 21% had disconnected their downspouts from the sewers. No information exists on ravine stewardship in the Don.

Where we want to be:

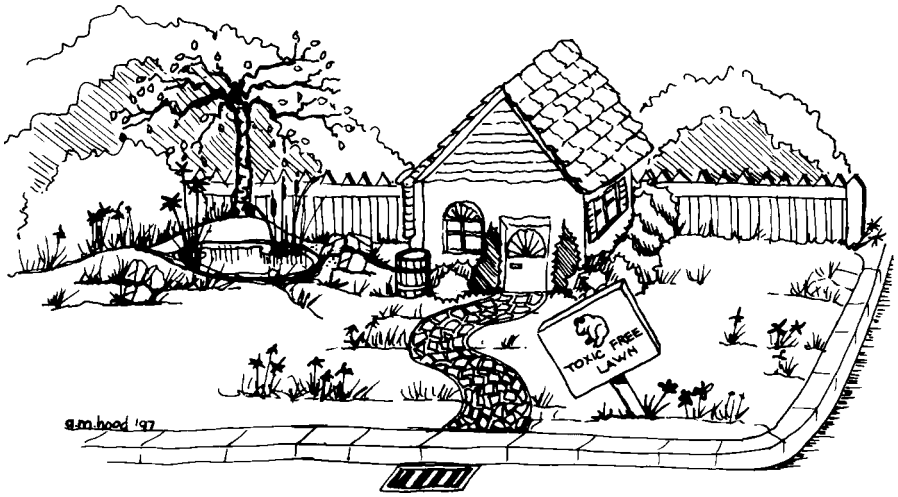
By 2000: Forty percent of residents will know how they can help the Don, and will be doing at least one positive thing.

By 2010: Fifty percent of residents will be doing something positive for the Don.

By 2030: Personal stewardship of the watershed will be an integral part of daily life.

How to get there:

In public education programs, media stories, and municipal incentive programs, emphasize 1) 'property hygiene' (reduce use of pesticides and sidewalk salt, practise stoop 'n scoop, disconnect downspouts, etc.); 2) creation of backyard habitats; and 3) special responsibility of ravine owners.



Business and Institutional Stewardship

Most of the suggestions for Don-friendly activities for homeowners apply on a larger scale to the many commercial enterprises and institutions in the watershed. A great deal can be done through landscaping, treatment of stormwater on site, and alternatives to winter salt and lawn and garden chemicals that will ultimately improve water quality in the Don and enrich its wildlife habitats. In addition, businesses and institutions can show leadership in the Don's regeneration through donations of money for public land acquisitions, land stewardship agreements, organizing ravine clean-ups, educational activities, and many other creative efforts.

An important way for organizations to show their commitment to regenerating the Don is by signing the Don Watershed Council's Don Accord. As of the fall of 1996, 19 businesses had signed this charter (out of 71 signatories, the others being community groups, municipalities, and institutions), which pledges them to consider the impact of all their actions on the Don River and to uphold the three principles of regeneration (Protect what is healthy, Regenerate what is degraded, and Take responsibility for the Don). They may also participate in "Don Challenges," making commitments to undertake specific projects to improve the health of the watershed.

Indicator 17: Business and Institutional Stewardship

Despite some business leadership, overall progress is slow.

Where we were:

Watershed stewardship is a recent concept. There is little information on past activities.

Where we are:

There is proven leadership and interest from some watershed businesses and institutions in the Don's regeneration. But there are no broad survey data about what is being done. Nineteen businesses have signed the Don Accord as of December 1996.

Where we want to be:

By 2000: 1) Collect baseline data on business stewardship and best management practices, and establish targets for 2010 and 2030.
2) At least 100 businesses will sign the Don Accord.

By 2010: To Be Determined.

By 2030: To Be Determined.

How to get there:

Administer business stewardship survey. Develop stewardship programs in collaboration with businesses. Demonstrate the connection between environmental stewardship and economic benefit.

I'll contribute to improving the quality of life for the future. As far as I'm concerned it's an investment.

Respondent, Angus Reid, 1996

Business Stewardship Highlights

Lever Pond's has been an enthusiastic supporter of the local Toronto Task Force to Bring Back the Don for several years. The company, which manufactures a range of phosphate-free home detergents and soaps at its plant at the mouth of the Don, donates funds to the Task Force, and employees also participate in the Task Force's regeneration projects such as tree plantings and the creation of Chester Springs Marsh. (See "Regeneration Projects.") A signatory of the Don Accord, Lever Pond's has contributed funds toward MTRCA's regeneration of the Don Valley Brick Works and purchase of Milne Hollow. The company also monitors its stormwater closely to ensure that the rainwater picks up no contaminants on its way to the Don. Lever Pond's is currently reviewing a study involving more sophisticated handling of stormwater on its riverside property for the future.

Tremco Ltd., located near the East Don in Leaside, is a manufacturer of coatings and sealants. Over the past several years, the company has invested significant amounts of money in control systems to prevent any chemicals from entering the Don. Entirely on its own volition, and although there has been no history of spills, Tremco has spent nearly $1 million building an elaborate chemical containment system involving concrete dikes and a large underground containment tank. The facility is designed to contain any spills in the area as well as the highest rainfall over a 24-hour period. The company has also voluntarily removed its old underground storage tanks and maintains a well trained emergency response team. Tremco monitors groundwater regularly for possible contamination, and has also controlled erosion on the valley slope at the rear of its property with plantings including wildflowers.

Pasteur Mérieux Connaught, formerly Connaught Laboratories, which still occupies part of the site originally acquired in the early 20th century on the West Don between Bathurst and Dufferin Streets south of Steeles Avenue, was the first business signatory of the Don Accord. The company, Canada's foremost producer of human vaccines, is in its second year of an ambitious three-year program to reforest a riverside corridor in the northern section of G. Ross Lord Park adjacent to company property. In cooperation with the Evergreen Foundation and Metro Toronto Parks and Culture, Connaught employees and their families are planting a variety of native trees and shrubs, purchased by the company, to create woodlands and riparian vegetation in the five-hectare site. Connaught also has plans to intensify its internal recycling efforts and use the money saved for further habitat enhancement, such as planting wildflowers and renewing the tree inventory on its own property.

Langstaff EcoPark in Vaughan, located between Langstaff Road and Highway 7, is another good example of industry's leadership and cooperation in regenerating the Don. A two-kilometre stretch of the Upper West Don, surrounded by a 750-hectare industrial park with 1500 businesses, is being transformed by the local business community into a streamside natural park with a 2700-metre nature trail. The main feature of the project, Keffer Marsh, is designed to create natural aquatic and terrestrial habitats, and provide passive recreation for people who live and work in the Langstaff area. The result of cooperative multi-stakeholder planning, the EcoPark was conceived by a steering committee with members from the Vaughan Rotary Club, the Vaughan Chamber of Commerce, the City of Vaughan, the Evergreen Foundation, the Don Watershed Regeneration Council and the MTRCA. Funding has been received from The Conservation Foundation of Greater Toronto, the City of Vaughan, the Rotary Club of Vaughan, and the Great Lakes Clean-Up Fund.

Golf courses offer promising opportunities to improve water quality, riparian vegetation, and natural habitats in the Don. There are 11 golf courses in the Don. The Audubon Cooperative Sanctuary Program encourages golf clubs to take leadership in conservation efforts such as protecting water resources, enhancing natural habitats, and reducing pesticide use through Integrated Pest Management programs. Six Don watershed golf clubs are members of the Audubon Program, but none has yet earned certification - a distinction that signifies achieving the high standards of the program in six specific areas. The six golf courses are:

- Bayview Golf and Country Club,
- Donalda Golf Club,
- Ladies Golf Club of Toronto,
- Maple Downs Golf and Country Club,
- Rosedale Golf Club, and
- Thornhill Country Club.

If we could clean up the Don, we would have something to show the world!

Respondent, Angus Reid, 1996

Municipalities

In preparation for this Report Card, a stewardship questionnaire was sent to all ten local and regional municipalities in the watershed. It elicited information on whether our local governments have adopted policies on reducing the use of salt, pesticides and fertilizers, reducing sediments and erosion at construction sites, protecting groundwater and surface hydrology, and encouraging the naturalization of parks and open spaces. These specific practices were chosen because they are fairly routine, are well understood, and could be implemented by each and every municipality immediately. Other more complex stewardship practices such as stormwater management and the protection of natural areas are dealt with by Indicators 4 and 14, respectively.

While Table 4 only indicates which municipalities have good stewardship policies "on the books," the next Report Card will evaluate how well these policies are being *implemented* and *enforced*. This will be an important measure of how well local governments are responding to the 98 percent of watershed residents who support the Don's regeneration.

Indicator 18: Municipal Stewardship

Most municipalities have watershed-friendly practices and policies in place.

Where we were:

No comparable survey specific to the Don was done prior to the 1990s on environmental policies and practices in municipalities.

Where we are:

The adoption of specific ecosystem stewardship practices such as protecting groundwater, encouraging naturalization of parks, reducing sediment and erosion, etc. is inconsistent across the watershed's municipalities. Even simple policies such as reducing the use of pesticides are not in place across all municipalities.

Where we want to be:

By 2000: 1) All Don municipalities will have ecosystem stewardship policies and good management practices.
2) A method for measuring how well municipalities are implementing and enforcing their stewardship policies will be in place.

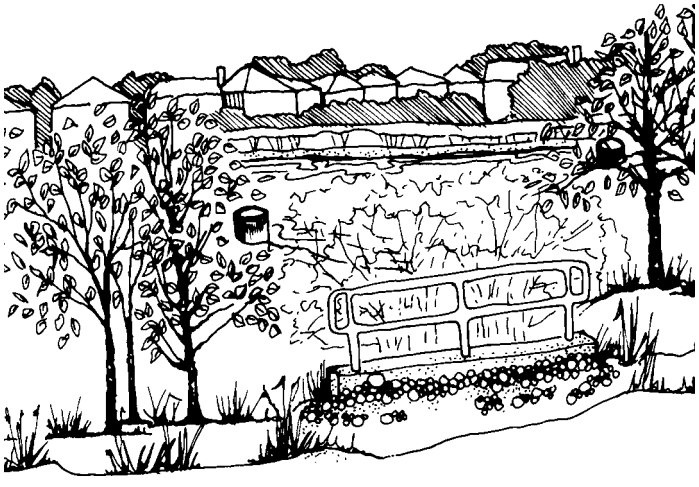
By 2010: To Be Determined.

By 2030: To Be Determined.

How to get there:

Municipalities should promote stewardship policies during Official Plan and Secondary Plan review, train staff in implementing the policies, and evaluate the effectiveness of policies. Municipalities should enlist their Environmental Advisory Committees for assistance.

Before



After

Table 4: Watershed-Friendly Practices and Policies of Municipalities

	Metro Toronto	City of York	City of Toronto	East York	North York	Scarborough	York Region	Vaughan	Richmond Hill	Markham
Policy or approved practices for reduction of a) salt b) pesticides c) fertilizer	 — YES YES	 NO NO —	 YES YES YES	 — — —	 YES YES —	 YES YES YES	 YES YES N/A	 NO — YES	 NO NO NO	 NO YES YES
Staff training for proper environmental use of salts pesticides and fertilizers	YES	—	YES	—	YES	YES	YES	—	YES	YES
Topsoil preservation by-laws to control sediment entering the stream during construction	NO	NO	YES	NO	YES	NO	N/A	—	NO	YES
By-laws controlling placing of fill and alterations to grades	NO	YES	NO	YES	YES	YES	N/A	YES	YES	NO
OP policy to protect groundwater resources	YES	NO	NO	YES	YES	NO	YES	YES	NO	YES
Required subwatershed plans prior to approval for new developments and/or infill developments	YES	—	NO	NO	YES	NO	—	YES	YES	YES
OP policy or approved practices encouraging naturalization of parks and open spaces	YES	NO	YES	—	YES	NO	YES	NO	YES	YES

— NO RESPONSE

N/A NOT APPLICABLE

GLOSSARY

ANSI - Area of Natural and Scientific Interest, designated by the Ministry of Natural Resources; there are four ANSIs in the Don watershed.

Aquatic invertebrates - creatures without backbones such as bugs, worms, clams or snails that spend at least a portion of their life cycle in the water; many species are very sensitive to different types of water pollution.

Bioaccumulation - the increase in concentration of toxic organic chemicals within living things such as fish due to the absorption and retention of chemicals; for example, PCBs will be higher in fish than in the surrounding water, and will be highest in top predators such as gulls.

Chlorides - the chemical signature of road salt, sodium chloride, as measured in water; road salt is currently on Environment Canada's hazardous substances priority list, to determine whether it is a significant danger to aquatic life.

Combined sewer overflow (CSO) - the release of untreated human sewage into streams or the lake when heavy rains cause combined sanitary and storm sewers in the older parts of the city to reach capacity and spill over before reaching the sewage treatment plant.

Cross connections - illegal hook-ups of sanitary sewage pipes to the storm sewers rather than sanitary sewer; this delivers continuous untreated sewage to streams not just in heavy storms, but whenever it rains.

Downspout disconnection - the practice of removing the downspout pipe, which collects rainwater from roof eavestroughs, from the storm sewer and redirecting the water onto the lawn or garden; this reduces the amount of stormwater reaching streams, and also puts less pressure on old combined sewers.

ESA - Environmentally Significant Area, designated by MTRCA; there are 13 ESAs in the Don watershed.

Fecal coliform bacteria - not harmful in themselves, these bacteria indicate the presence of untreated sewage in water, which often contains other disease-causing bacteria or viruses.

Floodplain - the flat area beside the river, which stores excess water when the river is in flood; floodplains are fertile for agriculture but dangerous for buildings.

Groundwater - water under the land surface that feeds wells and springs and provides cool, clean baseflow to streams.

Habitat - home; a place where certain groups of plants and animals live in balance.

Hectare - 2.47 acres, or 10,000 square metres.

Indicator - a sign; something measurable that provides information about a larger system of which it is a part; for example, good or poor water quality indicates how healthy the entire ecosystem is, and aquatic invertebrates - specifically the presence or absence of certain species - indicate the amount of pollution.

Instream barrier - a structure in the water such as a weir or dam that prevents fish from swimming upstream to a river's headwaters to spawn.

LACAC - an acronym for "Local Architectural Conservation Advisory Committee" - a committee of each municipal council appointed under the Ontario Heritage Act to advise Council on designating properties of architectural or historic interest and importance, as a measure towards preserving them.

Meadow - an open habitat of grasses, shrubs, and pioneer species of trees such as poplars, that is home to songbirds and rodents and a favourite hunting ground of hawks and foxes; in nature meadows are either permanent prairies or transitional habitats that eventually become woodlands.

MTRCA - The Metropolitan Toronto and Region Conservation Authority, one of 38 such Authorities in Ontario. The Authority is concerned with all aspects of watershed regeneration.

Naturalization - going "back to nature," choosing natural processes whenever possible; this can mean removing the concrete banks of a stream or stopping management practices such as mowing and spraying to allow meadows to emerge in parks, schoolyards, or residential neighbourhoods.

Regeneration project - a hands-on project to improve water quality, control water quantity, or enhance habitats both in the water and on the land; good regeneration projects achieve more than one of these goals, contribute to improving the health of the larger system, and usually involve partnerships between citizens' groups, government, and business groups.

Riparian Habitat - grasses, shrubs, and trees growing along the banks of streams.

Sanitary sewer - the underground sewer pipe that carries sewage from toilets and greywater from washing machines, showers, etc. to the sewage treatment plant.

Sediment - dirt; the silt that enters watercourses by natural erosion or construction activities; in small doses sediment helps supply nutrients to aquatic habitats; in large doses, it is a pollutant, carrying toxic chemicals and metals with it, scouring stream bottoms, and harming fish directly.

Source controls - practices that keep problematic substances out of the environment; for example, downspout disconnection keeps excess stormwater out of streams, and hazardous waste depots help ensure old paint, batteries, solvents, etc. do not end up in stormwater or natural areas.

Storm sewer - the underground pipe that carries rainwater off pavements and roofs into a nearby stream, or less often to a sewage treatment plant.

Stormwater management - practices that hold stormwater back from rushing into watercourses (water quantity control) and/or treat it to improve its quality (water quality control).

Stormwater - the rainwater and snow melt that flows across land and into streams and lakes; in urban areas, stormwater is very dirty, carrying oil and grease, road salt, metals, contaminated sediment and many other pollutants into watercourses; in the Don, stormwater is the main cause of water pollution.

Swimmable - a term from the Ministry of Environment and Energy signifying that water is safe for human contact - for wading and swimming but not drinking; the technical definition of swimmable is no more than 100 fecal coliform bacteria per 100 millilitres of water.

Target - a milestone to be aimed for in the future, generally measurable in numbers; for example, in this Report Card targets include 60% of elementary students to visit the Don by the year 2010.

Valley and stream corridor - a river or stream and its surrounding valley to the top of its slopes; this corridor is a dynamic system with many functions, including providing habitat and migration areas for animals, storing and transporting stormwater and snowmelt, and linking significant natural areas physically and biologically.

Watershed - the drainage area of a river and its network of tributaries; to determine what watershed you live in, ask what river or lake a drop of rain falling in your garden or on your sidewalk will eventually flow into.

Wetland - a soggy habitat such as a swamp, bog, or estuary that stores floodwaters and functions as a nursery to many species of fish, amphibians, and reptiles.

Woodland - a forest habitat with a diversity of native tree species and an understorey of shrubs and herbaceous plants, that is home to a variety of birds and other animals.

ACKNOWLEDGEMENTS

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Mark Wilson

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