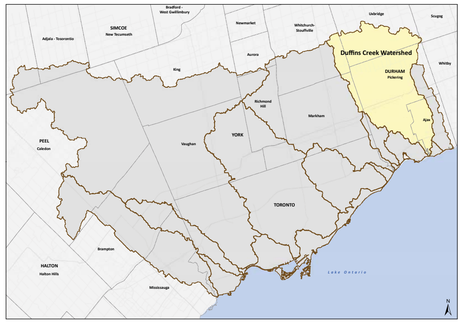
Facts and Figures

Municipalities	Durham, York, Ajax, Markham, Pickering, Uxbridge, Whitchurch-Stouffville
Tributaries	Stouffville Creek, Major Creek, Reesor Creek, West Duffins Creek, Whitevale Creek, Wixon Creek, Ganatsekiagon Creek, Urfe Creek, Main Duffins Creek, East Duffins Creek, Millers Creek
Length of Major Tributaries (km)	Main Duffins – 8, West Duffins – 41, East Duffins – 32
Mean Stream Flow (mouth)	2.6 m^3/sec
Area (km^2)	287
Population (2011)	102,290
Land Use	Rural – 71%, Urbanizing – 19%, Urban – 10%
Physiographic Regions	Halton Till Plain, Iroquois Plain, Oak Ridges Moraine
Natural Cover	40% of the watershed has Natural Cover: Forest – 25%, Meadow – 11%, Successional – 3%, Wetland – 2%
Native Plant & Animal Species	Plants – 650, Fish – 31, Birds – 135, Amphibians – 11, Mammals – 29, Reptiles – 6. Of these, 418 are considered Species of Regional Conservation Concern.



What We Are Doing

- TRCA and its partners have rehabilitated two former aggregate pits in the headwaters area of the Duffins to help improve water quality conditions in the watershed. The success of this work has been recognized with an award from the Ontario Stone, Sand and Gravel Association.
- Urban forest studies have been completed for the cities of Markham, Pickering, and the Town of Ajax; these studies have been completed through the collaborative efforts of TRCA, regional and local municipalities and neighbouring Conservation Authorities. The Town of Ajax has also developed a Strategic Urban Forest Management Plan. Collectively these documents will provide strategic direction for sustaining and expanding the urban forest.
- TRCA in partnership with the Town of Ajax have renaturalized 450 metres along the Lake Ontario shoreline on the Ajax waterfront that serve the community as parkland and beaches.
- Transport Canada and TRCA are working together to improve surface and groundwater quality by restoring streambank vegetation, creating and expanding forests, and implementing best management practices on farms.
- The Province of Ontario, Conservation Authorities, local municipalities, businesses, farmers and residents have developed a comprehensive Source Water Protection Plan that addresses activities that are deemed to be significant drinking water threats in the watershed. More than 43 threats to drinking water supplies have been identified preliminarily in the Duffins watershed.

What You Can Do

- **Divert** your downspouts away from paved areas and install a rain barrel to capture and reuse the rainwater that falls on your roof. This reduces run-off to sewers, prevents flooding and saves money on your water bill.
- **Reduce** or eliminate the use of salt, pesticides and fertilizers, which contaminate rivers, ponds and groundwater supplies.
- **Help restore** healthy populations of native Atlantic salmon back to the Duffins Creek. The Ontario Federation of Anglers and Hunters completes on-the-ground naturalization projects and educates the public about healthy water for fish and people through the Bring Back the Salmon program. **www.bringbackthesalmon.ca**
- **Volunteer** for community tree plantings, litter pick-ups or other stewardship events. Register for a volunteer opportunity at: **www.trcastewardshipevents.ca**

Donate to The Living City Foundation to support programs and initiatives in the Duffins Creek watershed at www.thelivingcity.org

visit **www.trca.on.ca/duffins-carruthers**

Join us on Facebook
www.facebook.com/TorontoConservation

Follow us on Twitter
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Duffins and Carruthers Watersheds

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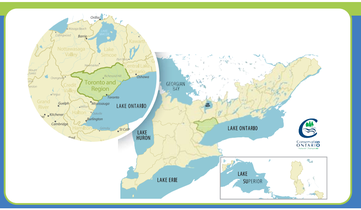
Duffins Creek Watershed
Report Card 2013

Toronto and Region Conservation (TRCA) has prepared this Watershed Report Card on the state of forests, surface water, groundwater and stormwater conditions.

Member of Conservation Ontario Natural Champions

Toronto and Region Conservation for The Living City

Where We Are



We are one of 36 Conservation Authorities across Ontario under the umbrella organization of Conservation Ontario.

What Does this Report Card Measure?

Surface Water Quality | Forest Conditions | Groundwater Quality | Stormwater Management

Why Measure?

Measuring helps us better understand our watersheds. It helps us to focus our efforts where they are needed most and to track the progress made. It also helps us to identify ecologically important areas that require protection or enhancement.

What is a Watershed?

A watershed is the area of land that catches rain and snow, which drains or seeps into a marsh, creek, river, lake or groundwater. Watersheds are the collectors, filters, conveyers and storage compartments of our fresh water supply.

Grading

A	Excellent
B	Good
C	Fair
D	Poor
F	Very Poor

The standards used in this Report Card were developed by Conservation Authorities to ensure consistent reporting across the Province of Ontario. They are intended to provide watershed residents with the information needed to protect, enhance and improve the precious natural resources that surround us.

Information contained in this Report Card is for communication purposes only. For more details, visit: www.trca.on.ca/reportcards

About the Indicators

This Report Card provides a snapshot of some environmental conditions in the Duffins Creek watershed.

Monitoring, measuring and reporting helps us better understand the watershed, the progress we've made in protecting it and the threats to its future health. Tracking the environmental indicators used in this Report Card provides watershed residents, and the general public with the information needed to protect, restore and improve the precious natural resources within our watersheds. Where possible, an arrow is included alongside grades to show whether conditions are improving, getting worse, or stable.

What Does this Report Card Measure?

Surface Water Quality

Total Phosphorous – High levels can trigger blooms of algae that choke waterways with plant life and deplete oxygen levels in watercourses.
***E. coli* Bacteria** – Indicate the presence of untreated human or animal waste.
Benthic Macroinvertebrates (BMI) – Bottom-dwelling stream insect larvae, snails, crayfish and clams are sensitive to many pollutants. The presence or absence of certain invertebrate species reflects the water quality conditions.

Forest Conditions

% Forest Cover – Woodlands absorb run-off, filter out pollutants and increase biodiversity. They also help reduce the impacts of climate change.
% Forest Interior – Large blocks of forest cover provide homes for many sensitive species of birds and other animals.
% Riparian Zone Forested – Vegetation along watercourses keeps the water cool, prevents erosion and provides homes for many species.

Groundwater Quality

Nitrate and Nitrite – These contaminants come from agricultural manure, fertilizers and leaky septic systems, and may indicate a possible health threat.
Chloride – High chloride levels indicate road salt may be reaching groundwater.

Stormwater Management

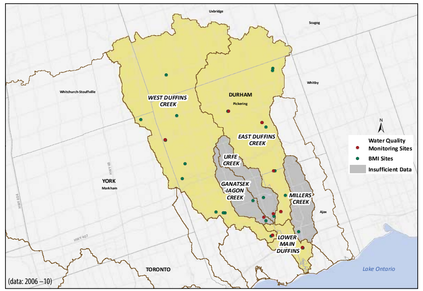
% of Developed Area with Stormwater Controls – Systems that manage the quantity and quality of stormwater run-off generated by our communities to protect watercourses. Stormwater management consists of practices that slow down, hold and reuse water.

Grading	
A	Excellent
B	Good
C	Fair
D	Poor
F	Very Poor

Surface Water Quality

Indicators
Total Phosphorous
E. coli Bacteria
Benthic Macroinvertebrates (BMI)

Grade: C ↘



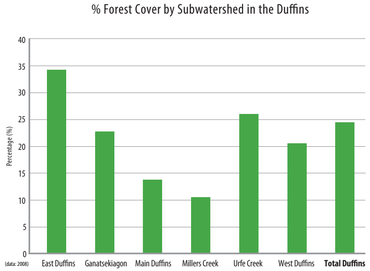
Water quality in the Duffins watershed is among the highest in the Toronto region. It is graded as "C" or "Fair" according to the provincially-scaled scoring system.

The upper reaches are largely rural with a considerable amount of natural cover which slows run-off, increases water infiltration into the ground and acts as a natural filter, removing nutrients and contaminants before they reach the watercourse. There has been an overall decrease in phosphorus levels over the last 30 years, with conditions graded as "Fair" across the subwatersheds. However, the lower reaches face similar challenges to other urban watersheds. The long-term BMI data indicate a decline in condition, with Millers Creek receiving a failing "F" grade for BMI. The *E. coli* grade for the watershed was a "B," the lowest levels of *E. coli* within TRCA's jurisdiction, with the East Duffins Creek faring better than the other subwatersheds.

Forest Conditions

Indicators
% Forest Cover
% Forest Interior
% Riparian Zone Forested

Grade: C ↔



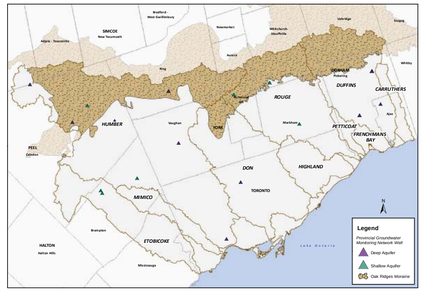
Overall, forest conditions are generally considered to be "Fair" in the Duffins. The Duffins has the highest proportion of forest cover, interior forest and riparian forest in TRCA's jurisdiction.

Roughly 25% of the watershed is forested and 3.4% has been designated as large blocks of interior forest habitat, including some of the best quality examples found in the Toronto region. East Duffins and Urfe Creeks have the highest amounts of forest cover in the watershed, earning them a "B" or "Good" grade, and the Main Duffins and Millers Creek with the lowest ("D" or "Poor" grades). However, in terms of interior forest cover, all the subwatersheds receive failing or "F" grades, except the East Duffins which is graded "C" or "Fair." In addition, 50% of the streambank (riparian) cover is made up of forest, which slows run-off, prevents erosion and keeps streams cool. The Ganatsekiagon Creek exhibits the highest amount of riparian cover in the watershed (61%), and receives an "A" or "Excellent" grade.

Groundwater Quality

Indicators
Nitrate and Nitrite
Chloride
Groundwater quality in the Duffins is not graded due to insufficient data.

NO GRADE



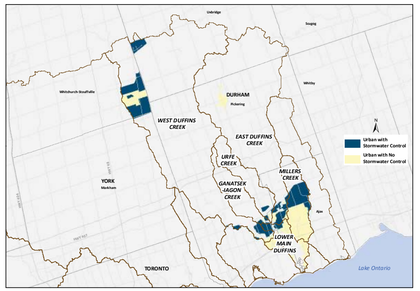
Overall, groundwater quality in TRCA's watersheds is "Good" with the best water quality found in the intermediate aquifer on the Oak Ridges Moraine.

The majority of the wells yield very good results for nitrates and nitrites, indicating little or no contamination from agricultural manure, fertilizers or leaky septic systems. However, several wells show chloride levels above the Canadian drinking water standard in urbanized portions of the watersheds, where road salt may be a factor or in deeper aquifers over shale bedrock that have naturally elevated chloride levels. There are 21 groundwater monitoring wells in the current monitoring network, concentrated in northern sections of TRCA's jurisdiction where wells still provide municipal drinking water. There is no data for the Mimico, Highland, Carruthers and Petticoat watersheds, and limited data for the other watersheds. Over time, TRCA intends to expand the network through partnerships with the regional municipalities of Peel, York and Durham.

Stormwater Management

Indicator
% of Developed Area with Stormwater Controls-Quality and Quantity *(i.e., stormwater management pond)*

Grade: D ↗



As of 2013, only 50% of the urbanized area within the Duffins has stormwater management controls, which contributes significantly to the "Poor" stormwater management grade of "D."

Stormwater infrastructure in older neighbourhoods of the watershed is less effective than current methods, however, it is largely still functioning and not due for replacement with newer technology. Since the majority of the Duffins watershed is rural, it is still relatively healthy in terms of water quality and quantity with the exception of a flood vulnerable area in the lower reaches. Whitchurch-Stouffville and Ajax have the highest level of stormwater controls in the watershed due to more recent development with better stormwater management infrastructure. To upgrade stormwater management to a "Excellent" condition will require the implementation of more stormwater holding and treatment ponds and other management initiatives in older areas. In addition, it is important that future developments within the rural areas of the watershed apply both conventional and low impact development stormwater management practices, such as detention ponds, permeable parking areas, bioswales, rain barrels, and green roofs to maintain healthy conditions.